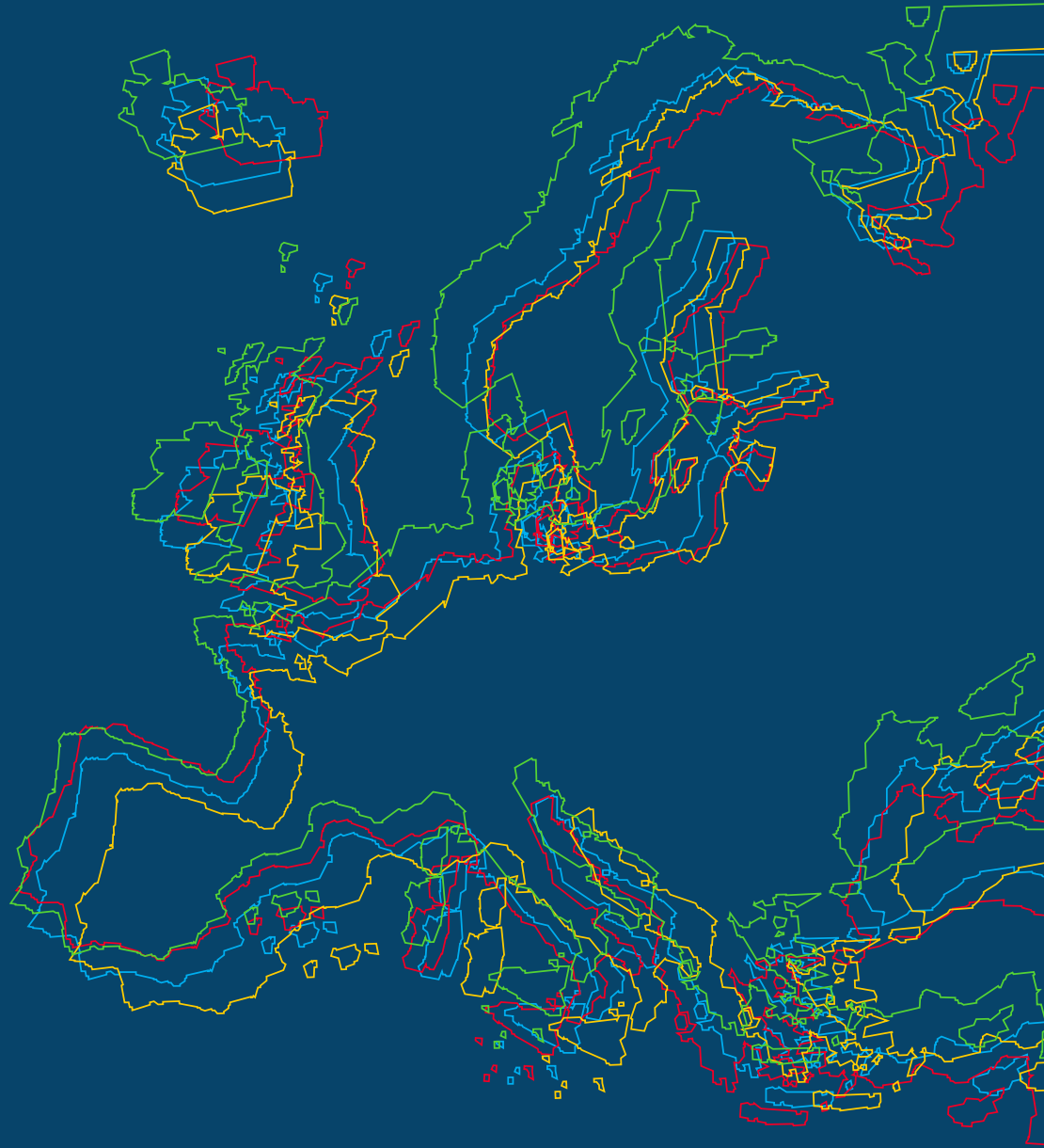




InRoad synchronising research infrastructure
roadmapping in Europe



InRoad Compendium

Country factsheets on research infrastructure roadmapping procedures, funding, evaluation and monitoring as well as national embedment of European Member States and Associated Countries



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Introduction

About InRoad

[InRoad](#) is a two-year Coordination and Support Action funded under the Horizon 2020 call for proposal "INFRASUPP-01-2016 policy and international cooperation measures for research infrastructure (RI)", starting January 2017 and ending December 2018. The main goal of InRoad is to support RI policy development by identifying and exchanging good practices about the strategic prioritisation process, the funding and the evaluation of RI of more than national relevance among the main stakeholders in EU Member States (MS), Associated Countries (AC) and at European level.

Information needs for increased coordination and objective of InRoad compendium

The increased coordination of priority setting and funding for RI of more than national relevance in Europe benefits from a wider awareness about relevant country-specific information including: national roadmapping procedures, funding conditions, evaluation and monitoring procedures as well as the embedding of RI in national Research and Innovation (R&I) systems, among others. As national system conditions are changing over time, EU MS/AC have been adapting their related RI-procedures thus outdated existing information. Some EU MS/AC have just recently created their first national roadmap and detailed information about their procedures are not yet much known across Europe. Information on national RI roadmapping procedures, funding instruments, as well as evaluation and monitoring procedures is scattered in different sources, often in a national language only, with different terminology and definitions, which hampers further increased coordination or alignment at European scale.

This compendium takes the above-mentioned limitations into account and compiles the presently available country information on four domains: 1) national RI roadmapping, 2) funding, 3) evaluation and monitoring procedures, as well as 4) national RI embedment in EU MS/AC. It serves as a structured, up-to-date, verified, and central data basis. It is intended as a medium to facilitate communication, exchange of good practices and thus supports increased RI coordination in Europe.

Scope, structure, and key facts of compendium

The compendium presents structured information on key facts of these four domains from 27 EU MS/AC that participated in the InRoad [consultation](#) from May to June 2017. The countries include: Austria, Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Lithuania, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom.

The key country facts comprise the domains 1) roadmapping and 2) funding, which are presented in the main section of the compendium. The country facts regarding detailed information on 3) evaluation and monitoring as well as 4) national RI embedment are organised in the annex.

The information from the first two domains is primarily retrieved from the InRoad consultation that was answered mainly by policy makers and funders. For the domains 3) evaluation and monitoring as well as 4) national RI embedment, consultation information was complemented by information collected during direct phone contacts and publicly available information.

The selected facts comprise structured information on:

1) Roadmapping, including roadmap existence, hyperlink to roadmap, RI definition and its possible deviation from European Strategy Forum for Research Infrastructures (ESFRI) RI definition, players in the roadmap process and their responsibilities, steps and actions in the roadmap procedure, criteria of decision-making in the roadmapping procedure, time-lines and life-cycles of the roadmap, main purposes, and interests in exchange of experience and coordination of roadmap procedures;

2) Funding, including organisation and main indicators for funding of RI, responsible organisms for RI funding, RI funding sources, details on national funding mechanisms, national operational program information, changes of funding schemes of RI, and relevant funding issues not addressed;

3) Evaluation and monitoring, including ex-ante impact assessment methodologies, procedures for selection of RI to be included in the roadmap, update / monitoring and ex-post evaluation of RI roadmap; and

4) National embedment of RI, including RI definition, RI in the national system, major national strategies for international cooperation in R&I and strategic integration of RI.

The country facts were selected based on two main criteria: only facts that could significantly characterise the main elements, procedures, and conditions of national RI roadmapping procedures, funding, evaluation and monitoring as well as national embedment were chosen. These facts are intended to increase the awareness of the target group (see next section) about relevant RI information from other countries.

In this respect, facts were selected to support the exchange of information on national priority setting and funding of RI of more than national relevance in Europe towards the European RI roadmapping process. All chosen facts were further checked to meet a high quality data standard with respect to using only official data from public sources or from the InRoad consultation as cited in the text or references.

Target group

National decision makers engaged in RI policies, funders, ESFRI-representatives, and other national experts may find the information of the compendium particularly useful. It provides them with a solid basis for targeted interaction on key issues for exchanging experience and/or increasing coordination with their peers or with ESFRI.

All other representatives from authorities who are engaged in further aspects of the roadmap itself, such as on funding, evaluation, monitoring, etc. may find the presentation of the information helpful, as well. It gives a comprehensive perspective of the national activities and their directly involved actors thus may stimulate internal national discussions on optimizing one's own system. Furthermore, the immediate beneficiaries of the RI, which result of successful implementation of roadmap, funding, evaluation and monitoring, includes scientists, but also technical staff operating and maintaining the RI, students, industry, NGOs as key categories of users. They produce scientific or technological output and create together with the RI-operators socio-economic impact. Their better understanding of the processes and units involved in the roadmapping and suggestions for further improvement may be supportive for the respective national decision makers, thus integrating knowledge from this end for the whole value-chain.

Country facts verification and planned next steps

The country information in the compendium was checked at national level by 22 out of 27 countries. Austria, Bulgaria, Hungary, Montenegro, and Norway did not send any feedback. This validation round led to a revision of the factsheets and the related publicly available information. In few cases the country level check led to slight differences in country fact sheets structure, e.g. outdated organizational charts were removed.

Having collected and structured country RI facts containing in this compendium and keeping pace with the dynamic adaptation of related RI-procedures and EU MS/AC criteria, the author group from DLR Project Management Agency proposes to consider this information collection as a an operative communication platform to keep the value of the country consultation and also enable updating

specific country information. **Submitted changes will be included in quarterly updates that will be published on the InRoad website <http://inroad.eu/>**

With the proposed platform, InRoad will contribute to build an open community including policy-makers and funders, RIs responsible managers, science and industrial experts. In the following years it is planned to sustain the update service e.g. via the successor of the Horizon2020 Str-ESFRI-Project.

Acknowledgements

The InRoad team would like to warmly thank all who acted as country representatives in the InRoad consultation. We thank also all experts of the InRoad Reflection Group for the involvement at EU level and for their input provided at country level. The valuable contribution of all participants was highly appreciated.

Following InRoad analyses and reports

Subsequent analyses will further support the target groups. Detailed information about evaluation and monitoring will be soon publicly available in the InRoad Report on Methodologies for RI Monitoring and Evaluation in Europe.

InRoad case studies will identify good practices that will contribute to the overall aim of InRoad. The case studies will specifically investigate how a reasonable RI roadmapping process could look like and which factors and conditions could promote increased coordination of national RI roadmapping processes towards the European RI roadmapping process including good practices of RI funding and RI business plans in the context of RI roadmapping.

The findings from these case studies are intended to be presented and discussed at ICRI 2018 - 4th International Conference on Research Infrastructures, September 2018 and the InRoad Validation Workshop, October 2018. The inputs from these discussions will feed into InRoad´s case study report that will be published subsequently.

Country Factsheets

Austria

Research Infrastructure in Austria: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
X		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
https://www.bundeskanzleramt.at/DocView.axd?CobId=54964 [Last access: 09/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
N/A	N/A

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
Federal Ministry of Science, Research and Economy (BMWFW)	x	x	x		
Federal Ministry for Transport, Innovation and Technology (BMVIT)	x		x		
Federal Ministry of Finance (BMF)	x		x		
Federal Chancellery (BKA)	x				
Austrian Council for Research and Technology Development (RFTE)	x				
Regional governments			x		

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning/ Preparation of Guidelines	Federal Ministries and bodies in question
2	Call	
3	Landscape analysis	
4	Mapping	
5	Eligibility Check	
6	Science-driven Evaluation	
7	Economic evaluation	
8	Evaluation of societal relevance	
9	Decision	Federal Government
10	Validation	

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
N/A	N/A	N/A

Source: Data derived from InRoad Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM		
Inventory/landscape analysis		
Evaluation procedures		
Strategic decision-making		
Timing of national and European RM	x	
Life cycle management	x	x
RI funding instruments		
Monitoring and evaluation of RI		
Prioritisation of RI		

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates
An Austrian Research Infrastructure Action Plan "Österreichischer ForschungsinfrastrukturAktionsplan 2014-2020" was published in February 2014. There have been no updates so far: https://www.bundeskanzleramt.at/DocView.axd?CobId=54964 [Last access: 09/2017].

Source: Data derived from RM, Desk Study, ESFRI Homepage.

9. Main purposes of the national RM on RI

- An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands
- An inventory of existing RI
- A guide with strategic RI priorities for setting research policy priorities
- An input for funding decisions on RI between institutional, regional and national stakeholders
- A list of strategic priorities, which are foreseen for funding
- A planning instrument to prepare for the negotiations at European (ESFRI) and international levels

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level			
Regional budget			
ESIF managed at regional level			
Research funding agencies			
Research Performing Organisations			
European Investment Bank			
Horizon 2020	x	x	x
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding

- Federal Ministry for Science, Research and Economy (responsible for budget and grants)
- Federal Ministry for Transport, Innovation and Technology (responsible for budget and grants)

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources

- National budget used throughout RI life cycle
- Regional budget
- European Investment Bank which is used for CERN and ESO
- H2020

Source: Data derived from InRoad Consultation on RI (2017).

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, repurposing)
Funding source	1. National budget	1. National budget; 2. EC	1. National budget; 2. EC	1. National budget; 2. EC	1. National budget	-	1. National budget
Funding instrument	- Budget	- Budget; - H2020 calls	- Budget; - H2020 calls	- Budget; - H2020 calls	- Budget	-	- Budget
Responsible funders/funding bodies	- Ministries	- Ministries; - EC	- Ministries; - EC	- Ministries; - EC	- Ministries	-	- Ministries
Covered costs	-	-	-	-	-	-	-
Period of time covered (years)	-	-	-	-	-	-	-

Source: Data derived from InRoad Consultation on RI (2017).

13. Details on national funding mechanisms

- RI funding decisions are linked with country's strategic priorities such as the Strategies, the Action Plan and Performance Agreements;
- Funding instruments are designed for potential combination among them;
- Competitive funding of national RI is linked to mandatory co-funding by universities and research organisations;
- No new additional instruments are being designed to fund RI in Austria.

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information

Total amount (EU amount and National amount)	All Programs (€M)	10,654,5
	Programs with ERDF (€M)	2,065,6
EU amount	All Programs (€M)	4,921,4
	Programs with ERDF (€M)	536,3
Thematic objective 1 (Research & Innovation)	Total funds (€M)	275,2
	ERDF (€M)	206,2
Investment category - ERDF	058. Research and innovation infrastructure (public) (€M)	37,6
	059. Research infrastructure and innovation (private and scientific parks) (€M)	0,0

Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 09/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 09/2017]).

15. Changes of funding schemes of RI

Austria does not plan to change the funding scheme of RI.

Source: Data derived from InRoad Consultation on RI (2017).

16. Relevant issue(s) not addressed

Further development plans are strictly dependent on available budgetary provisions.

Source: Data derived from InRoad Consultation on RI (2017).

Belgium

Research Infrastructure in Belgium: Fact sheet



1. Is there a National Roadmap for RI in place?

Yes	No	In planning
		x ¹

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap

Not applicable or no information presently available.

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).

Yes	No
	x

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure

The following table gives an overview of the main ministries and institutions, as well as their main functions regarding the RM procedure.

Administrations in charge of science policy at the federal, regional and community levels (shared competence) which are involved in the inter-federal coordination in the field of research infrastructures:

Federal:

- BELSPO - SPP Politique scientifique / POD Wetenschapsbeleid
- DG Energy of the SPF Economie/FOD Economie (a few energy or physics-related RI)
- Flanders
- EWI - Departement Economie, Wetenschap en Innovatie - Vlaanderen
- FWO - Fonds voor Wetenschappelijk Onderzoek

French-speaking community:

- DGENORS Ministère de la Communauté française de Belgique
- F.R.S.-FNRS - Fonds national de la recherche scientifique

Wallonia:

- Department of Research Programmes Service public de Wallonie - Direction générale opérationnelle de l'Economie, de l'Emploi & de la Recherche (SPW)

Brussels:

- Innoviris.Brussels

A coordination/consultation commission involving all these actors is organised for deciding on the Belgian position in international matters. The commission specialised in research infrastructures is called CIS/INFRA.

	Responsibility for RM	decision-making	funding	Scientific evaluation	Economic evaluation
BELSPO	x	x	x	x	in preparation
DG Energy of the		x	x	x	x

¹ No official national roadmap yet but a list of priorities validated by all Minister responsible for science policy/research.

SPF Economy					
EWI	x	x			x
FWO	x		x	x	x
DGENORS	x	x	x	x	
F.R.S.-FNRS		x	x	x	
SPW	x	x	x	x	x
Innoviris	x	x	x	x	x

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning	Coordination commission
2	Call	No common call but calls at the level of the different institutions involved
3	Landscape analysis	Coordination commission
4	Mapping	Coordination commission
5	Eligibility Check	See step 2
6	Science-driven Evaluation	See step 2
7	Economic evaluation	See step 2
8	Evaluation of societal relevance	See step 2
9	Decision	Coordination commission
10	Validation	Interministerial conference

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
<p>The national roadmap in preparation will not be based on a national call for proposals. It will first give an introduction to the Belgian R&D landscape and its interfederal context. It will then present the most relevant Belgian RIs as well as the Belgian participation to the ESFRI RIs. Finally, it will list the future priorities of membership for Belgium (to be validated by the Interministerial Conference on Science Policy, i.e. the different ministers of research). The participation of Belgium in ESFRI RIs is based mainly on the evaluation organised at the level of the different Belgian entities (Federal authority, Communities, Regions).</p>		
Eligibility criteria	Evaluation criteria	Feasibility criteria
Not applicable or no information presently available.	Not applicable or no information presently available.	Not applicable or no information presently available.

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM		
Inventory/landscape analysis	x	
Evaluation procedures	x	

Strategic decision-making	x	
Timing of national and European RM		
Life cycle management		
RI funding instruments		
Monitoring and evaluation of RI	x	
Prioritisation of RI		
Evaluation/monitoring of current participation of a country in a RI	x	

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates

National roadmap in preparation.

Since 2011, a list of priorities for the participation of Belgium in pan-European research infrastructures has been validated by the conference of ministers for science policy. The initial list has been updated/complemented in 2012 and 2014.

Source: Data derived from InRoad Consultation on RI (2017).

9. Main purposes of the national RM on RI

- An input for funding decisions on RI between institutional, regional and national stakeholders
- A list of strategic priorities, which are foreseen for funding
- A planning instrument to prepare for the negotiations at European (ESFRI) and international levels

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level	x	x	x
Regional budget			
ESIF managed at regional level			
Research funding agencies	x	x	x
Research Performing Organisations			
European Investment Bank			
Horizon 2020	x	x	x
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding

Not applicable or no information presently available.

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources

Not applicable or no information presently available.

Source: Data derived from InRoad Consultation on RI (2017).

Re-search Infra- struc- ture Life- cycle	Concept Phase	Design Phase	Prepa- ration Phase	tion/ Imple- menta-	Opera- tion Phase	Termi- nation Phase	Others (e.g. up- grade, repu- rosing)
Funding source							
Funding instru- ment							
Responsible fundors/funding bodies							
Covered costs							
Period of time covered (years)							

Not applicable or no information presently available.

13. Details on national funding mechanisms

Not applicable or no information presently available.

14. National Operational Program Information

Total amount (EU amount and Na- tional amount)	All Programs (€M)	
	Programs with ERDF (€M)	
EU amount	All Programs (€M)	
	Programs with ERDF (€M)	
Thematic objective 1 (Research & Innova- tion)	Total funds (€M)	
	ERDF (€M)	
Investment category - ERDF	058.Research and innovation infrastruc- ture (public) (€M)	
	059. Research infrastructure and innova- tion (private and scientific parks) (€M)	

Not applicable or no information presently available.

15. Changes of funding schemes of RI

Not applicable or no information presently available.

Bulgaria

Research Infrastructure in Bulgaria: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
https://ec.europa.eu/research/infrastructures/pdf/roadmaps/bulgaria_national_roadmap_2017_en.pdf#view=fit&pagemode=none [Last access: 09/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
	x

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
Ministry of Education, Youth and Sciences (MES)	x	x	x		
Ministry of Economy					
Ministry of Finance			x		
Research institutes					
Municipalities; Ministries of Regions			x	x	
External experts, and private companies					x
ESFRI				x	

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning/ Preparation of Guidelines	Ministry of Education, Youth and Sciences (MES)
2	Call	MES, including National Science Fund
3	Landscape analysis	Working group of experts
4	Mapping	
5	Eligibility Check	
6	Science-driven Evaluation	ESFRI & local authorities
7	Economic evaluation	External (to the MES) experts – private companies
8	Evaluation of societal relevance	
9	Decision	
10	Validation	

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
Not applicable or no information presently available.	<p>Demands and benefits of their scientific research:</p> <ul style="list-style-type: none"> • Development, maintenance and usage of research apparatuses and equipment • Scientific quality of the research and key beneficiaries of the research results (assessed through publications, patents, citations, number of consumers) • Institutional capacity (composition of the scientists, who perform the scientific research; availability of habilitated staff; number of PhDs, age profile, etc.) • Management of Programs for scientific research, financed on a competitive basis from national and international sources (number of current program and projects) • Activity in attracting funding from different sources • Social-economic benefits and relevance of the research results (availability of created product, technology, methodology, etc.). • Established partnerships – national, regional and European <p>(detailed information in 2.3 Annex Part 1)</p>	<p>The Research Infrastructure should meet the following requirements:</p> <ul style="list-style-type: none"> • To be of national interest • To guarantee the performance of high-quality scientific research that will produce considerable extra effect on economy • To be used by a large number of research groups and/or other users, including business representatives, carrying out hazardous or perspective scientific projects • To be complex and wide-range so that it could be used without constant methodical help • Long-term vision and plan for the achievement of specified scientific objectives, financial and operative reliability • To provide open and easy access for various scientists and research groups under specific and transparent conditions • To provide opportunities for “in situ access” and “remote access”

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities	x	
Planning and design of RM	x	x
Inventory/landscape analysis		
Evaluation procedures	x	
Strategic decision-making		
Timing of national and European RM		
Life cycle management		
RI funding instruments	x	x
Monitoring and evaluation of RI		
Prioritisation of RI		

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates
<p>A first Bulgarian Roadmap “BULGARIA NATIONAL ROADMAP FOR RESEARCH INFRASTRUCTURE” was published in 2010 and updated in 2017: http://ec.europa.eu/research/infrastructures/pdf/roadmaps/bulgaria_national_roadmap_2017_en.pdf#view=fit&pagemode=none [Last access: 09/2017].</p> <p>Further upgrades of the Roadmap are foreseen for 2020 and 2023. Decommissioning of the Roadmap is considered for 2020.</p> <p>The Centres of Excellence, which will be funded through structural funds in the near future, are included in the Roadmap.</p>

Source: Data derived from RM, Desk Study, ESFRI Homepage.

9. Main purposes of the national RM on RI
<ul style="list-style-type: none"> • A list to achieve agreement on the RI with institutional, regional and national stakeholders • A guide with strategic RI priorities for setting research policy priorities • An input for funding decisions on RI between institutional, regional and national stakeholders • A planning instrument to prepare for the negotiations at European (ESFRI) and international levels • A tool supporting and monitoring the implementation of RI • A (bottom-up) list of the scientific user community on desired RI • An inventory of existing RI

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI			
	Planning	Construction	Operation
National budget			x
European Fund for Strategic Investments (EFSI)		x	
European Structural and Investment Funds (ESIF) managed at national level		x	

Regional budget		x	
ESIF managed at regional level			
Research funding agencies			x
Research Performing Organisations			
European Investment Bank			
Horizon 2020			x
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding
<ul style="list-style-type: none"> • Ministry of Education and Science (MES) through investments, grants, salaries • Ministry of Economy (ME) responsible for investment • Municipality responsible for in kind contribution (lands, electricity and water supply)

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources
<ul style="list-style-type: none"> • National budget responsible for salaries and maintenance • European Fund for Strategic Investments (EFSI) which covers construction • European Structural and Investment Funds (ESIF) managed at national level which covers equipment • Regional budget that covers lands • Research Funding Agencies that are responsible for grants for research • H2020 that contributes with grants for research

Source: Data derived from InRoad Consultation on RI (2017).

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, re-purposing)
Funding source	1. MES	Institutions involved	1. Complementary sources; 2. Private	-	-	-	-
Funding instrument	- Budget	- Budget	-	-	-	-	-
Responsible funders/funding bodies	- MES	- MES; - MI; - Municipalities	- Research Institutes; - Universities	Institutions involved	-	-	-
Covered costs	- personnel	- personnel	- personnel, other	- personnel, other running	- personnel,	- decom	-

			running costs, investment	costs, investment	other running costs, investment	missioning costs	
Period of time covered (years)	1-3	1-2	2-3	3-4	3-6	-	-

Source: Data derived from InRoad Consultation on RI (2017).

13. Details on national funding mechanisms

- Funding decisions are linked with research and innovation smart and specialization strategies (RIS3)
- Funding instruments are designed to be combined with other instruments
- Call for Centers of Excellence are not complete yet and it's the strategy being followed
- New additional instruments may be used in the future, namely structural funds to support RI

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information

Total amount (EU amount and National amount)	All Programs (€M)	11,730,7
	Programs with ERDF (€M)	1,971,3
EU amount	All Programs (€M)	9,874,9
	Programs with ERDF (€M)	3,567,7
Thematic objective 1 (Research & Innovation)	Total funds (€M)	539,5
	ERDF (€M)	494,4
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	0,0*
	059. Research infrastructure and innovation (private and scientific parks) (€M)	22,7*

* Data under evaluated; some documents not found. Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 09/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 09/2017]).

15. Changes of funding schemes of RI

Bulgaria does not plan to change the funding scheme of RI.

Source: Data derived from InRoad Consultation on RI (2017).

16. Relevant issue(s) not addressed

Sustainability of the RI is not well defined in its monitoring scheme.

Source: Data derived from InRoad Consultation on RI (2017).

Czech Republic

Research Infrastructure in the Czech Republic: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
http://www.msmt.cz/file/36333_1_1 [Last access: 07/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
x	

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
MEYS	x	x	x	x	x
CLRI		x			

Source: Data derived from InRoad Consultation and Desk Study on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning	MEYS
2	Call	MEYS
3	Landscape analysis	CLRI
4	Mapping	MEYS
5	Eligibility Check	MEYS
6	Science-driven Evaluation	MEYS / International Evaluation Committee.
7	Economic evaluation	MEYS / International Evaluation Committee.
8	Evaluation of societal relevance	MEYS / International Evaluation Committee.
9	Decision	MEYS
10	Validation	Government of the Czech Rep.

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
Only those RI which fully comply with the definition of RI are eligible for RM process.	<ul style="list-style-type: none"> The RI is of excellent quality with respect to uniqueness, originality and importance The RI is highly relevant for future development in the research and innovation environment and inevitable for the 	<ul style="list-style-type: none"> Institutional background of RI Scientific and personnel capabilities

	competitiveness of the Czech Republic <ul style="list-style-type: none"> • Links to national R&D priorities (detailed information in 2.3 Annex Part 1)	
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Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedure		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM		
Inventory/landscape analysis	x	x
Evaluation procedures		
Strategic decision-making	x	
Timing of national and European RM	x	x
Life cycle management	x	
RI funding instruments	x	x
Monitoring and evaluation of RI		x
Prioritisation of RI		x

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and update
<p>The "Roadmap of Large RDI Infrastructures of the Czech Republic" was issued in 2010, updated in 2011 and lastly in 2015. The "Roadmap of Large Infrastructures for Research, Experimental Development and Innovation of the Czech Republic for the years 2016–2022" is the most recent roadmap: http://www.msmt.cz/file/36333_1_1 [Last access: 07/2017].</p> <p>The process of updating the Roadmap of Large Infrastructures of the Czech Republic continues to be synchronised with the ESFRI Roadmap updates in order to be able to provide the pan-European RI applying for the ESFRI Roadmap with involvement and participation of the Czech RI with both the political and financial commitment. The update of the Roadmap of Large Infrastructures of the Czech Republic in 2018 is connected with international peer-review evaluation of the existing RI and with possible funding granted by the MEYS in 2018 for a 3-year period until 2022.</p>

Source: Data derived from InRoad Consultation on RI (2017).

9. Main purposes of the national RM on RI
<ul style="list-style-type: none"> • An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands • An inventory and evaluation of existing RI • An input for funding decisions on existing RI • An input for the ESFRI roadmap update • A list of strategic RI, which are foreseen for funding, subject of governmental approval <p>Strategic considerations within the Road mapping process encompass the construction phase of a new RI, the operation phase of an existing RI, and the upgrades. Decommissioning is not consid-</p>

ered, since there are no RI on the RM within decommissioning phase. However, decommission costs are considered as eligible within RI budget. Only the so-called Large RI are considered in this exercise. These RI projects are subject of a multilayer evaluation with a strong international peer-review component (scientific excellence). Also the uniqueness and societal relevance are important aspects of the strategic RI planning. The Roadmap consists of New RI, which emerge both in the Czech Republic and ERA in the all the R&D fields, of existing RI, which have grown in relevance reflecting the socio-economic needs to the category of "Large RI", and of those RI, which are considered as the **principal components** of the Czech national research and innovation system. Over the last ten years a number of steps aiming at providing the Czech RI with a **stable legal and financial environment** were made. In the end of the evaluation process each RI is submitted by the Ministry of Education, Youth and Sports, as a central authority for RI, for the final adoption by the Czech Government in line with the national **R&D Support Act**. This political commitment (approval of the RI as being a "Large RI") implies a commitment for funding of these Large Infrastructures for a 4-year period with a possible prolongation of 3-years.

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI			
	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level		x ²	
Regional budget			
ESIF managed at regional level			x
Research funding agencies	x		
Research Performing Organisations			x
European Investment Bank			
Horizon 2020	x		x
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding
<ul style="list-style-type: none"> Ministry of Education, Youth and Sports responsible for targeted support grants, ESIF projects, and institutional support Academy of Sciences of the Czech Republic responsible for institutional support

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources
<ul style="list-style-type: none"> National budget mostly responsible for operation of RI³ H2020, which funds both individual and pan-European RI, projects namely the majority of operational costs. However, regarding the Czech RI the H2020 funding source is in minority compared to the national budget source used for operational costs.

² Also possible upgrades are eligible from this source.

³ The investments are mainly covered by ESIF (Operational Programmes).

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, repurposing)
Funding source	-	1. H2020	1. National budget; 2. H2020	1. ESIF	1. National budget;	-	1. ESIF
Funding instrument	-	- RI configuration	- Targeted support of RI; - Institutional support; - RI configuration	- Operational Programme Research, Development and Education	- Targeted support of RI; - Institutional support;	-	- Operational Programme Research, Development and Education
Responsible funders/funding bodies	-	- EC	- Ministry of Education, Youth and Sports; - Academy of Sciences; - EC	- Ministry of Education, Youth and Sports	- Ministry of Education, Youth and Sports; - Academy of Sciences;	-	- Ministry of Education, Youth and Sports;
Covered costs	-	- personnel, direct and indirect costs	- personnel, running costs (also indirect costs)	- personnel, direct and indirect costs, investments	- personnel, running costs (also indirect costs), less investments, membership fees	-	- personnel, direct and indirect costs, investments
Period of time covered (years)	-	-	2016-2019	2016-2019	2016-2019	-	2016-2019

Source: Data derived from InRoad Consultation on RI (2017).

13. Details on national funding mechanisms

- Only those RI listed on the National Roadmap could be funded from targeted support for RI. All RI funded with ESIF have to comply with RIS3 priorities. The specific call from ESIF (OP RDE) for RI is meant only for those RI listed on the National RI Roadmap, i.e. only for those which have been approved by the Czech Government and which are funded also from targeted support of national R&D budget
- Design of different funding instruments in the Czech Republic is prepared for their potential combination with other instruments
- It is envisioned the preparation of new future instruments for RI funding

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information		
Total amount (EU amount and National amount)	All Programs (€M)	32,291,4
	Programs with ERDF (€M)	11,783,8
EU amount	All Programs (€M)	23,979,7
	Programs with ERDF (€M)	11,940,7
Thematic objective 1 (Research & Innovation)	Total funds (€M)	2,497,3
	ERDF (€M)	2,421,1
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	635,7
	059. Research infrastructure and innovation (private and scientific parks) (€M)	134,3

Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 07/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 07/2017]).

15. Changes of funding schemes of RI
Czech Republic does not plan to change their funding scheme for RI.

Source: Data derived from InRoad Consultation on RI (2017).

16. Relevant issue(s) not addressed
ESIF are considered to be a part of the national budget.

Source: Data derived from InRoad Consultation on RI (2017).

Denmark

Research Infrastructure in Denmark: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
X		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
http://ufm.dk/en/publications/2016/files/danish-roadmap-for-research-infrastructures-2015-final.pdf [Last access: 07/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
X	

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
Ministry of Higher Education and Science	X	X	X		
Minister of Higher Education and Science	X	X	X		
The Danish Agency for Science and Higher Education (DAFSHE)	X		X	X	X
The Danish Agency for Science and Higher Education (DAFSHE)	X		X	X	X
National Committee on Research Infrastructures (NUFI)				X	X
Involved research institutions			X		
Private foundations and other stakeholders (regions, etc.)			X		

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning	The Danish Agency for Science and Higher Education (DAFSHE) after advice from the National Committee on Research Infrastructures (NUFI)
2	Invitation to submit proposals (since the Danish roadmap includes proposals, not applications, this step is not an actual call)	DAFSHE after advice from NUF1
3	Landscape analysis	
4	Mapping	
5	Eligibility Check	DAFSHE and NUF1
6	Science-driven Evaluation	DAFSHE and NUF1
7	Economic evaluation	DAFSHE and NUF1
8	Evaluation of societal relevance	DAFSHE and NUF1
9	Decision	The Minister of Higher Education and Science decides on the roadmap including the catalogue of proposals after advice from DAFSHE
10	Validation	

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<p>In the invitation to submit proposals, each proposal was requested to comply with the following specific criteria:</p> <ul style="list-style-type: none"> To be of national strategic interest and significance. To be permanent or long-term and be sufficiently mature. To be open. To be realisable with substantial co-funding from the research institutions. To be linked to international research infrastructures, if relevant. 	<ul style="list-style-type: none"> Scientific prospects Societal prospects Industrial prospects <p>(detailed information in 2.3 Annex Part 1)</p>	<p>Proposals must be sufficiently mature (technically, scientifically, financially) to be realisable within a five years implementation/construction period.</p>

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities	x	
Planning and design of RM	x	
Inventory/landscape analysis		x

Evaluation procedures	x	
Strategic decision-making	x	
Timing of national and European RM	x	x
Life cycle management	x	x
RI funding instruments		
Monitoring and evaluation of RI		x
Prioritisation of RI		x

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates

The first “Danish Roadmap for Research Infrastructures” was published in 2011. A new roadmap was published in 2015, thereby replacing the former one:

<http://ufm.dk/en/publications/2016/files/danish-roadmap-for-research-infrastructures-2015-final.pdf> [Last access: 08/2017].

The process for the 2015-roadmap was initiated in November 2014 when the former Danish Agency for Science, Technology and Innovation (DASTI) invited the research institutions' management to submit proposals. Information meetings were held in the following months. The deadline for submitting proposals was 30 April 2015. The evaluation process followed in the summer months and after this, the deliberation process in the Ministry followed in the fall months. The roadmap was launched in December 2015.

Source: Data derived from RM, Desk Study, and ESFRI Homepage.

9. Main purposes of the national RM on RI

- An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands
- A guide with strategic RI priorities for setting research policy priorities
- A list of strategic priorities, which are foreseen for funding

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget	x	x	In part
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level			
Regional budget			
ESIF managed at regional level			
Research funding agencies			
Research Performing Organisations	x	x	x

tions			
European Investment Bank			
Horizon 2020	x		x
Others ⁴	x	x	x

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding

- Minister of Higher Education and Science which is responsible for allocations from the National Fund for Research Infrastructures (part of the Ministry's section of the National Budget)
- National Budget for Denmark's memberships of international convention-based RIs and other special national RI collaborations for annual allocations
- National research institutions (e.g. universities) that fund roadmap-proposals, at least approx. 50% of the funding for the construction/implementation is of their responsibility. They are also responsible for funding the operation of RI.

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources

- Research performing organizations (RPO) that are responsible for Co-funding proposals in the roadmap. This can stem from the RPOs' basic funding or from external grants, etc.;
- The National Budget
- H2020 that in some ways via e.g. ESFRI projects or for design phases or the like of European RI;
- Private foundations and other stakeholders.

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, repurposing)
Funding source	-	-	1. H2020 for European projects	1. National Budget; 2. National research institutions Private foundations and other stakeholders	1. National research institutions for roadmap projects; 2. National Budget (memberships of international convention-based RIs or other special national RI collaborations)	1. National research institutions for roadmap projects	1. National budget (if major upgrades of existing RIs); 2. National research institutions
Funding instrument	-	-	-	- One-time grants up to 5 years	-	-	-
Respon-	-	-	-	- Minister for Higher Education	-National research institutions	- National research institutions	-Minister for Higher Education and Science

⁴ Private foundations and other stakeholders.

sible funders/funding bodies				and Science National research institutions Private foundations and other stakeholders ⁵	Private foundations and other stakeholders		National research institutions Private foundations and other stakeholders
Covered costs	-	-	-	- Personnel, investments in equipment, running costs, international memberships, etc.	-	-	-
Period of time covered (years)	-	-	-	- up to 5 years (prolongations can be approved)	-	-	-

Source: Data derived from InRoad Consultation on RI (2017).

13. National Operational Program Information		
Total amount (EU amount and National amount)	All Programs (€M)	2,252,2
	Programs with ERDF (€M)	399,2
EU amount	All Programs (€M)	1,540,4
	Programs with ERDF (€M)	206,6
Thematic objective 1 (Research & Innovation)	Total funds (€M)	104,1
	ERDF (€M)	87,6
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	N/A
	059. Research infrastructure and innovation (private and scientific parks) (€M)	N/A

Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 07/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 07/2017]).

14. Details on national funding mechanisms
<ul style="list-style-type: none"> There is a national strategy connected with RI funding in the form of the Danish Roadmap for Research Infrastructures 2015.

⁵ For their share of the funding.

- National Fund for RI within the National Budget is used primarily for proposals in the national RI roadmap.
- Denmark is not exploring to have new funding instruments for RI in the future.

Source: Data derived from InRoad Consultation on RI (2017).

15. Changes of funding schemes of RI

Denmark does not plan any changes for the funding schemes of RI.

Source: Data derived from InRoad Consultation on RI (2017).

Estonia

Research Infrastructure in Estonia: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
http://www.etag.ee/wp-content/uploads/2013/05/Eesti-teadustaristute-teekaart.pdf [Last access: 08/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
	x

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Consultation	Scientific evaluation	Economic evaluation
National Government		x			
Ministry of Education and Research	x				
Estonian Research Council	x				
Estonian Research Council's Research Infrastructure Expert Group				x	x
Research Policy Committee, Research and Development Council			x		

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning/ Preparation of Guidelines	Ministry of Education and Research, Estonian Research Council
2	Call	Estonian Research Council
3	Landscape analysis	NA
4	Mapping	NA
5	Eligibility Check	Estonian Research Council
6	Science-driven Evaluation, economic evaluation, evaluation of societal relevance	Estonian Research Council's Research Infrastructure Expert Group
7	Consultation	Research Policy Committee (committee advising the Ministry of Education and Research), Research and Development Council (adviser to the National Government)
8	Decision	National Government

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
The research infrastructure roadmap is a list of investment objects that are important for the state. The roadmap includes physical objects, service-providing structures and memberships in international research projects. Establishing the objects included in the roadmap offers Estonian researchers new possibilities to do leading-edge research in Estonia.	<ul style="list-style-type: none"> Importance, comprehensiveness and competitiveness for R&D in the national and international context Relevance of the vision and development goals Importance to the industry and enterprises (detailed information in 2.3 Annex Part 1)	The Estonian research and development strategy intends the development of RI, including the development of the digital infrastructure. <ul style="list-style-type: none"> Technical feasibility Institutional and personnel capabilities The creation of RI is well discussed and supported by the relevant research community and stakeholders

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM	x	
Inventory/landscape analysis		
Evaluation procedures	x	

Strategic decision-making	x	
Timing of national and European RM		
Life cycle management		
RI funding instruments	x	
Monitoring and evaluation of RI	x	
Prioritisation of RI	x	

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates

The first Estonian Roadmap "Eesti teadustaristute teekaart" was published in 2010 and has received one update in 2014: <http://www.etag.ee/wp-content/uploads/2013/05/Eesti-teadustaristute-teekaart.pdf> [Last access: 08/2017].

The Roadmap is a long term (10 to 20 years) planning instrument that lists RI of national importance, either new or in need of upgrading. An update of the RM is foreseen every three years.

The next Estonian National RI Roadmap is planned to be published in 2018. There is a study currently ongoing on the methodology how to measure the effectiveness of RI and the impact of the participation in ESFRI RI (ESFRI 06/17). This methodology will be used in Roadmap next update process.

Source: Data derived from RM, Desk Study, ESFRI Homepage.

9. Main purposes of the national RM on RI

- An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands
- A guide with strategic RI priorities for setting research policy priorities
- An input for funding decisions on RI for institutional and national stakeholders

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget			x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level	x	x	
Regional budget			
ESIF managed at regional level			
Research funding agencies			x
Research Performing Organisations			x
European Investment Bank			
Horizon 2020	x		
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding

- Ministry of Education and Research which is responsible for one time investments
- Estonian Research Council which is responsible for grants for core facilities

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources

- National budget to support RI
- European Structural and Investment Funds (ESIF) managed at national level which support investments for RI
- Research Funding Agencies (RFOs) which support use of core facilities
- H2020

Re-search Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/Implementation Phase	Operation Phase	Termination Phase
Funding source	National budget	1. National budget 2. H2020	1. National budget 2. H2020	1. ESIF national level 2. National budget	National budget	-
Funding instrument	grants	grants	grants	- Support for the RI-s of National Importance based on Roadmap - grants	- Support of use of core facilities - grants	-
Responsible funders/funding bodies	- RPO - Estonian Research Council	- RPO - Estonian Research Council - European Commission	- Estonian Research Council - European Commission	- Ministry of Education and Research	Estonian Research Council	-
Covered costs	Eligible costs	Eligible costs	Eligible costs	Investments	Personnel, running costs, etc.	-
Period of time covered (years)	2014-2020	2014-2020	2014-2020	2007-2013; 2014-2020	Ongoing	-

Source: Data derived from InRoad Consultation on RI (2017).

13. Details on national funding mechanisms

- The alignment of a project on the Estonian RI roadmap, and existing relation with RIS3 are evaluation criteria used for assessment of RI investment proposals and ultimately funding decisions;
- Design of funding instruments not thought in advance for potential future combination, planning of such type of action is not envisioned.

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information		
Total amount (EU amount and National amount)	All Programs (€M)	5,997,9
	Programs with ERDF (€M)	4,891,7
EU amount	All Programs (€M)	4,451,7
	Programs with ERDF (€M)	1,874,3
Thematic objective 1 (Research & Innovation)	Total funds (€M)	665,0
	ERDF (€M)	642,3
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	159,9
	059. Research infrastructure and innovation (private and scientific parks) (€M)	0,0

Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 08/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 08/2017].).

15. Changes of funding schemes of RI
Estonia does not plan any changes to the funding schemes of RI.

Source: Data derived from InRoad Consultation on RI (2017).

Finland

Research Infrastructure in Finland: Fact sheet


1. Is there a National Roadmap for RI in place?

Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap

http://www.aka.fi/globalassets/awanhat/documents/firi/tutkimusinfrastruktuurien_strategia_ja_tiekartta_2014_en.pdf [Last access: 09/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).

Yes	No
	x

Source: Data derived from InRoad Consultation on RI (2017).

Players and their responsibilities in the national RM procedure

	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation	Research policy and societal evaluation
Finish Research Infrastructure Committee Members: <ul style="list-style-type: none"> Ministry of Education and Culture Ministry of Economic Affairs and Employment Ministry of Health and Welfare Universities (rectors or vice-rectors of relevant) 	x	x	x		x ⁶	x

⁶ The RI are asked to present the estimated budget for the next 5 years. The FIRI Committee evaluates whether the budgets are in line with the host organisation's strategic plans.

universities are members) <ul style="list-style-type: none"> Chair of Rectors' Conference of Finnish Universities of Applied Sciences Research institutes (Directors of relevant Research institutes) Research Councils of the Academy of Finland 						
Academy of Finland ⁷	(x)		(x)			
International Experts				x	x	
Research Institutes, Universities, University Hospitals, Universities of Applied Sciences			x			
Ministries			x			

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

4. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning/ Preparation of Guidelines	Research infrastructure Committee and its secretariat
2	Call	Academy of Finland and Research infrastructure Committee secretariat
3	Landscape analysis	Research infrastructure Committee and its secretariat
4	Mapping	
5	Eligibility Check	Research infrastructure Committee and its secretariat
6	Science-driven Evalua-	International Experts

⁷ The FIRI- Committee is one of the decision-making bodies of the Academy of Finland and has the mandate to decide on roadmaps and funding. The Academy of Finland provides a secretariat for the FIRI Committee. Therefore, the Academy of Finland itself does not have direct responsibility for roadmapping or funding.

	tion	
7	Economic evaluation	International Experts (FIRI Committee)
8	Evaluation of societal relevance	International Experts
9	Decision	Research infrastructure Committee and its secretariat ⁸
10	Validation	

Source: Data derived from InRoad Consultation on RI (2017).

5. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<p>A RI must:</p> <ul style="list-style-type: none"> provide potential for world-class research and scientific breakthroughs, be of broad national interest and enhance the international impact, have a long-term plan for scientific goals, maintenance, financing and utilisation, be used by several research groups/users for high-quality research, be open and easily accessible to researchers, industry and other actors, have a plan for access to and preservation of collected data and/or materials, be extensive enough so that individual groups cannot manage them on their own, introduce new cutting-edge technology (if relevant). 	<p>For RI which are in operation or designing or implementation phase⁹:</p> <ol style="list-style-type: none"> Scientific quality and potential Open access and utilisation Relevance to the strategies of host institutions National and international relevance Feasibility and Sustainability <p>(for detailed information see link to document¹⁰)</p>	<p>The feasibility of the project is assessed on the basis of the technical, institutional (e.g. form of ownership, terms of use or membership) and personnel requirements during the whole life cycle of the RI: Planning costs</p> <p>Investment costs:</p> <ul style="list-style-type: none"> Construction/Building (incl. manpower) Acquisition of real estate Special technical equipment Supply/construction of devices and equipment <p>Operating costs:</p> <ul style="list-style-type: none"> Personnel costs (e.g. operation, maintenance, user support) Material costs (incl. membership fees or other payment of contributions to organisations) Costs of running the premises (rent, electricity) Other noteworthy investments (replacement purchases) required to keep the research infrastructure and equipment on an adequate level, reflecting the state-of-the-art <p>Decommissioning costs:</p> <ul style="list-style-type: none"> Costs of closing down the business and conservation of the resources developed

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

⁸ The secretariat prepares and presents the decisions, the FIRI Committee decides.

⁹ At the moment there is only one set of criteria that is used for all RI, whether they are in the designing phase or in operation. It is planned to separate criteria for RI at different life- cycles.

¹⁰ http://www.aka.fi/globalassets/30tiedepoliittinen-toiminta/firi/firi_national_criteria_ri_2017.pdf [Last access: 02/2018].

6. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM		
Inventory/landscape analysis		x
Evaluation procedures	x	
Strategic decision-making	x	
Timing of national and European RM	x	
Life cycle management	x	x
RI funding instruments	x	
Monitoring and evaluation of RI	x	x
Prioritisation of RI	x	

Source: Data derived from InRoad Consultation on RI (2017).

7. Timelines and Life-cycles: Publication and updates
<p>Finland's first Roadmap was published in 2009 and last updated in 2014: "Finland's Strategy and Roadmap for Research Infrastructures 2014–2020".</p> <p>http://www.aka.fi/globalassets/awanhat/documents/firi/tutkimusinfrastruktuurien_strategia_ja_tiekartta_2014_en.pdf [Last access: 07/2017].</p> <p>The Roadmap will be updated every five years.</p> <p>Finland is in the mid-term evaluation process of the national roadmap. RI are asked to show their action plans. Results will be finalised early next year (2018).</p>

Source: Data derived from RM, Desk Study, ESFRI Homepage.

8. Main purposes of the national RM on RI
<ul style="list-style-type: none"> • An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands • A (bottom-up) list of the scientific user community on desired RI¹¹ • An inventory of existing RI • A tool supporting and monitoring the implementation of RI • A guide with strategic RI priorities for setting research policy priorities • A list of strategic priorities, which are foreseen for funding • A planning instrument to prepare for the negotiations at European (ESFRI) and international levels

Source: Data derived from InRoad Consultation on RI (2017).

¹¹ In Finland the host organisation applies the RI for the roadmap and the organisations select the RI they want to commit. Therefore, the process is not entirely bottom-up.

9. Organisation and main indicators for funding of RI			
	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level		x ¹²	
Regional budget			
ESIF managed at regional level			
Research funding agencies	x	x	
Research Performing Organisations	x	x	x
European Investment Bank			
Horizon 2020	x	x	
Others			

Source: Data derived from InRoad Consultation on RI (2017).

10. Responsible Organism(s) for RI Funding
<ul style="list-style-type: none"> Academy of Finland through competitive project funding (everything else but maintenance), membership fees Universities through basic funding (maintenance etc.) Research Institutes that covers basic funding (maintenance etc.) University hospitals that cover basic funding (maintenance etc.) Universities of applied sciences that cover basic funding (maintenance etc.) Ministries through ear-marked one-time investment and more long time funding

Source: Data derived from InRoad Consultation on RI (2017).

11. RI Funding Sources							
Research In-frastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, repurposing)
Funding source	1. National budget; 2. RPO	1. National budget; 2. RPO; 3.	1. National budget; 2. RPO; 3.	1. National budget; 2. RPO; 3.	1. RPO	1. RPO 2.. National budget 2. RPO	1. National budget; 2. RPO; 3. H2020

¹² Have been used in some parts of Finland (Lapland).

		H2020	H2020	H2020			
Funding instrument	- Annual RI funding calls	- Annual RI funding calls; - H2020 calls	- Annual RI funding calls; - H2020 calls	- Annual RI funding calls; - H2020 calls	-RPO budget funding	-RPO budget funding - Annual RI funding calls	- Annual RI funding calls; - H2020 calls
Responsible funders/funding bodies	- Academy of Finland; - RPOs	- Academy of Finland; - RPOs; - EC	- Academy of Finland; - RPOs; - EC	- Academy of Finland; - RPOs; - EC	- RPO	- Academy of Finland; - RPOs	- Academy of Finland; - RPOs; - EC
Covered costs	- all, but running only RPOs	- all, but running only RPOs	- all, but running only RPOs	- all, but running only RPOs	- personnel running costs	-	-
Period of time covered (years)	up to 3	up to 5	up to 5	up to 5	-	-	-

Source: Data derived from InRoad Consultation on RI (2017).

12. National Operational Program Information		
Total amount (EU amount and National amount)	All Programs (€M)	8,421,9
	Programs with ERDF (€M)	2,568,6
EU amount	All Programs (€M)	3,749,8
	Programs with ERDF (€M)	789,1
Thematic objective 1 (Research & Innovation)	Total funds (€M)	386,7
	ERDF (€M)	309,4
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	64,4
	059. Research infrastructure and innovation (private and scientific parks) (€M)	5,7

Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 07/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 07/2017]).

13. Details on national funding mechanisms
<ul style="list-style-type: none"> Funding decision in Finland takes into account the country's strategic priorities as well as the strategies of host organizations that include also the local perspective; It is difficult to give a very specific answer, but in general Finland tries to see that e.g all the so called strategic funding Instruments (profiling funding of the Universities, Finnish centers of excellence funding and RI funding) are synchronized; Finland is not currently exploring or planning any new or additional instruments or mechanisms to fund RI.

Source: Data derived from InRoad Consultation on RI (2017).

14. Changes of funding schemes of RI

Finland does not plan to change the current funding scheme of RI.

Source: Data derived from InRoad Consultation on RI (2017).

France

Research Infrastructure in France: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
http://cache.media.enseignementsup-recherche.gouv.fr/file/Infrastructures_de_recherche/16/4/infrastructures_UK_web_615164.pdf [Last access: 07/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
	x

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
Federal Ministries	x	x	x	x	
Research alliances		x	x	x	
CNRS, CEA		x	x		x
Other institutions		x	x		x

Source: Data derived from InRoad Consultation and Desk Study on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning	MESRI (Ministry for higher education, research and innovation), Research Alliances, CNRS, CEA
2	Call	MESRI
3	Landscape analysis	CNRS, CEA, Research Alliances
4	Mapping	CNRS, CEA, Research Alliances
5	Eligibility Check	MESRI
6	Science-driven Evaluation	MESRI, Research Alliances
7	Economic evaluation	other institutions (actually, infrastructures themselves make the impact evaluation for different financing sources like ANR, CGI, Europe, financing institutions etc. At the moment the ministry of research is activating the group of RI to follow up together this activity and to suggest some common criteria. This work of the ministry is under way at the moment, so we don't have results so far)
8	Evaluation of societal relevance	MESRI, Research Alliances, CNRS, CEA
9	Decision	Cabinet of the minister of research
10	Validation	MESRI

Source: Data derived from InRoad Consultation and Desk Study on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
It is stated in the definition of the RI in the document French national strategy on research infrastructures, page 6. You notice them also in this document part 2, in the issue 1. RI definition	See the questionnaire attached with the list of criteria.	Concerning the ESFRI infrastructures, France is trying to organise the local landscape in coherence with the European landscape. A part of the national infrastructures are nodes of the European infrastructures.

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM	x	
Inventory/landscape analysis	x	
Evaluation procedures	x	x
Strategic decision-making	x	
Timing of national and European RM	x	x
Life cycle management	x	x
RI funding instruments	x	
Monitoring and evaluation of RI		x
Prioritisation of RI		x

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates
<p>The "Stratégie Nationale des Infrastructures de Recherche" was issued in 2008 and updated twice, first in 2012 and last in 2016: http://cache.media.enseignementsup-recherche.gouv.fr/file/Infrastructures_de_recherche/16/4/infrastructures_UK_web_615164.pdf [Last access: 06/2017].</p> <p>The Roadmap will be regularly updated in articulation with the ESFRI Roadmap. A new version is planned to be released in 2018. Updating of the Roadmap in parallel with the ESFRI Roadmap, attention is paid to ESFRI infrastructures. The national roadmap is a strategic steering tool of the government which is updated every four years according to a process that involves alliances, research performing organisations or supervisory institutions, after which listing may be recommended as an infrastructure or as a project.</p> <p>France shared information on the methodology to update the National Roadmap and to prioritise proposals for the 2018 ESFRI Roadmap.</p>

Source: Data derived from RM, Desk Study, ESFRI Homepage.

9. Main purposes of the national RM on RI

- An inventory of existing RI
- A tool supporting and monitoring the implementation of RI
- A guide with strategic RI priorities for setting research policy priorities
- An input for funding decisions on RI between institutional, regional and national stakeholders
- A tool to differentiate between institutional and regional RI versus RI of (more than) national relevance
- A planning instrument to prepare for the negotiations at European (ESFRI) and international levels

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level			
Regional budget	x	x	
ESIF managed at regional level	x		
Research funding agencies	x		
Research Performing Organisations	x	x	x
European Investment Bank	x		
Horizon 2020	x	x	x
Others			x

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding

French ministry for higher education, research and innovation responsible for ring-fenced budget for very large research infrastructures and international organizations. The budget is discussed annually with the ministry of economy during the preparation of the annual state budget.

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources

- Regional budget which is possible for all types of the infrastructures. Decisions depend on the regional policy;
- ESIF that it is possible for all infrastructures. Decisions depend on the regional policy;
- le Commissariat général à l'investissement, CGI, (The general committee for investments, placed at the prime minister level) can issue calls on strategic investments, for which the infrastructures can apply. Particular calls for important investments were launched;
- Research performing organizations that cover RI and projects;
- European Investment Bank that has been used mainly by international organizations for important investments, never to cover for the operational costs;
- H2020 for all types of infrastructures that apply for specific calls and selected;
- Agence Nationale de la Recherche (ANR) that support projects that are users of RI.

Source: Data derived from InRoad Consultation on RI (2017).

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, repurposing)
Funding source	1. RPO	1. RPO; 2. H2020	1. RPO; 2. H2020	1. RPO; 2. National budget; 3. H2020; 4. Regional budget; 5. CGI	1. RPO; 2. National budget; 3. H2020; 4. Pri-	1. RPO; 2. National budget	1. RPO; 2. National budget; 3. Regional budget; 4. CGI
Funding instrument	- RPO budget	- RPO budget; - H2020 calls	- RPO budget; - H2020 calls	- RPO budget; - Regional calls (ESIF), - Special state loans (from CGI); - Direct state dotation	- RPO budget; - Direct state dotation; - H2020 calls; - Users' fees	- RPO budget;	- RPO budget; - ESIF; - State loans; - Direct state dotation
Responsible funders/ funding bodies	- RPO	- RPO	- RPO; - Ministry of research	- RPO; - Regions; - CGI; - Ministry of research	- RPO; - ANR; - Ministry of research	- RPO	- RPO; - Regions; - CGI; - Ministry of research
Covered costs	- personnel, access costs	- personnel, access costs	- personnel, administrative costs	- personnel, investments	- personnel, running costs	- personnel, deconstruction, wastes	personnel, investments, running costs
Period of time covered (years)	2-10	4-6	2	2-5	20-40	1-20	1-3

Source: Data derived from InRoad Consultation on RI (2017).

13. Details on national funding mechanisms

- Funding decisions are linked with France's strategic priorities.
- The very large RI and the international organizations that are on the national roadmap, are considered as the national priorities and are financed directly from the ministry budget with a special budget line in the state budget.
- The RI and the Infrastructure projects are considered as research organization priorities and are financed by the RPOs.
- The design of funding instruments takes into account the possibility of their combination.
- The funding coming from CGI for future investments (PIA) is articulated with the national roadmap to give the coherence to the infrastructures' landscape.
- The regional funding is a co-funding resulting from the articulation between the national roadmap and the strategic policy of the regions."
- France is currently not exploring new or additional instruments or mechanisms for funding RI.

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information		
Total amount (EU amount and National amount)	All Programs (€M)	45,752,2
	Programs with ERDF (€M)	21,087,6
EU amount	All Programs (€M)	26,645,0
	Programs with ERDF (€M)	8,421,6
Thematic objective 1 (Research & Innovation)	Total funds (€M)	1,902,1
	ERDF (€M)	1,659,9
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	313,9*
	059. Research infrastructure and innovation (private and scientific parks) (€M)	61,5*

* Data under evaluated; some documents not found. Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 07/2017].) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 07/2017].).

15. Changes of funding schemes of RI
France does not plan any changes for the funding schemes of RI.

Source: Data derived from InRoad Consultation on RI (2017).

Germany



Research Infrastructure in Germany: Fact sheet

1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
https://ec.europa.eu/research/infrastructures/pdf/roadmaps/germany_national_roadmap_en.pdf#view=fit&pagemode=none [Last access: 07/2017]. https://www.bmbf.de/pub/The_National_Roadmap_Process_for_Research_Infrastructures.pdf [Last access: 07/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
x	

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure						
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation	Research policy and societal evaluation
BMBF	x	x	x			x
Federal Ministries		x	x			
Federal States		x	x			
German Council of Science and Humanities (WR)				x		
Other Institutions					x	

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning	BMBF, BMWi, Länder, WR, other institutions
2	Call	BMBF
3	Landscape analysis	
4	Mapping	
5	Eligibility Check	BMBF
6	Science-driven Evaluation	WR
7	Economic evaluation	other institutions
8	Evaluation of societal relevance	BMBF
9	Decision	BMBF, BMWi, other relevant ministries
10	Validation	

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> German share of planned development costs: EUR 50 million (EUR 20 million in case of humanities and social sciences). Operation costs of the RI must be guaranteed by the RI hosting institution for at least 10 years following the development phase. 	<ul style="list-style-type: none"> Scientific: evaluation process, potential, prospects Competing and complementary research infrastructures Utilisation <p>(detailed information in 2.3 Annex Part 1)</p>	<ul style="list-style-type: none"> Technical feasibility institutional and personnel capabilities of the responsible institution(s) Relevance to Germany as a location of science and research

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM	x	x
Inventory/landscape analysis	x	
Evaluation procedures	x	
Strategic decision-making	x	
Timing of national and European RM	x	x
Life cycle management	x	x
RI funding instruments	x	
Monitoring and evaluation of RI	x	
Prioritisation of RI	x	

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates

“Roadmap for research infrastructures. A pilot project” of the BMBF was established in 2013 and has received one update.

https://ec.europa.eu/research/infrastructures/pdf/roadmaps/germany_national_roadmap_en.pdf#view=fit&pagemode=none [Last access: 06/2017].

The next update is running. The evaluation procedure focuses mainly on the definition and planning phase. The implementation phases, as well as the operation phase, are also considered.

Source: Data derived from InRoad Consultation on RI (2017).

9. Main purposes of the national RM on RI

- An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands
- A guide with strategic RI priorities for setting research policy priorities
- An input for funding decisions on RI between institutional, regional and national stakeholders
- A list of strategic priorities, which are foreseen for funding
- A planning instrument to prepare for the negotiations at European (ESFRI) and international levels

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level			
Regional budget	x		x
ESIF managed at regional level			
Research funding agencies	x		x
Research Performing Organisations	x		x
European Investment Bank			
Horizon 2020			
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding

- Federal Ministry of Education and Research through grants
- Other relevant ministries through grants
- German Research Foundation through grants

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources							
<ul style="list-style-type: none"> National budget Regional budget Research Funding Agencies Research Performance Organisation 							
Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, re-purposing)
Funding source	1.Regional budget; 2.National budget	1.Regional budget; 2.National budget	1.Regional budget; 2.National budget	1. National budget	1.Regional budget; 2.National budget	1.Regional budget; 2.National budget	1.Regional budget; 2.National budget
Funding instrument	-grants	- grants	- grants	-grants	- grants	- grants	- grants
Responsible funders/ funding bodies	- RFOs; - RPOs; - State; - National ministries	- RFOs; - RPOs; - State; - National ministries	- RFOs; - RPOs; - State; - National ministries	-National ministries	- RPOs;	- RPOs;	- RFOs; - RPOs; - State; - National ministries
Covered costs	personnel, running costs, investment	personnel, running costs, investment	personnel, running costs, investment	personnel, investment	personnel, running costs, investment	personnel, running costs, investment	personnel, running costs, investment
Period of time covered (years)	-	-	-	up to 10 years	-	-	-

Source: Data derived from InRoad Consultation on RI (2017).

13. Details on national funding mechanisms
<p>Germany has a funding decision process based on country strategic priorities as follows:</p> <ul style="list-style-type: none"> Funding is envisaged for all RI that are included in the National Roadmap. The actual implementation of funding takes place following the Roadmap Process. Germany designs funding instruments thinking of their potential combination with other funding sources.

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information		
Total amount (EU amount and National amount)	All Programs (€M)	44,738,2
	Programs with ERDF (€M)	18,327,0
EU amount	All Programs (€M)	27,913,4
	Programs with ERDF (€M)	10,773,8
Thematic objective 1 (Research & Innovation)	Total funds (€M)	4,032,2
	ERDF (€M)	3,819,1

Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	800,3
	059. Research infrastructure and innovation (private and scientific parks) (€M)	90,0

Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 07/2017].) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 07/2017].).

15. Changes of funding schemes of RI

Germany is not planning any changes for the funding schemes of RI.

Source: Data derived from InRoad Consultation on RI (2017).

Greece

Research Infrastructure in Greece: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
X		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
http://www.gsrt.gr/Financing/Files/ProPeFiles20203/ex-ante-1-2_Nov%202016%20V.11.pdf [Last access: 12/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
X	

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
General Secretariat for Research and Technology (GSRT)	X	X	X	X	X
Research Centres			X		
Universities			X		
Ministry of Economy and Development			X		
Independent experts				X	X

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning/ Preparation of Guidelines	General Secretariat for Research and Technology (GSRT)
2	Call (organisation and coordination of the Procedure)	GSRT (Directorate of Policy Planning)
3	Landscape analysis	GSRT (Directorate of policy planning)
4	Mapping	GSRT (Directorate of policy planning)
5	Eligibility Check	GSRT (Directorate of policy planning)
6	Science-driven Evaluation	Independent experts
7	Economic evaluation	Independent experts GSRT
8	Evaluation of societal relevance	Independent experts GSRT
9	Decision	General Secretariat for Research and Technology (GSRT)
10	Validation	General Secretariat for Research & Technology and Ministry of Economy & Development

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> Compliance with the definition of research infrastructure. <p>(Reference to the definition of RI in EU Regulation 651/26.6.2014)</p> <ul style="list-style-type: none"> Contribution to the RIS3 priority areas: <ol style="list-style-type: none"> Its main activities are fully aligned to product / process / organizational innovation of RIS3 priority sectors. The majority of the RI deliverables and services contribute to the RIS3 priority sectors. 	<ul style="list-style-type: none"> Scientific, technological potential & maturity of the RI. Effective networking & synergies within the knowledge triangle. Access policy, governance and sustainability. Innovation potential and contribution to private sector innovation. Contribution to National and Regional Growth & Socioeconomic Benefits 	<ul style="list-style-type: none"> Maturity and feasibility of the RI.

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities	x	
Planning and design of RM		x
Inventory/landscape analysis	x	
Evaluation procedures	x	
Strategic decision-making	x	
Timing of national and European RM	x	

Life cycle management	x	
RI funding instruments	x	x
Monitoring and evaluation of RI	x	x
Prioritisation of RI	x	

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates

The first Greek "National Roadmap for Research Infrastructures" was launched in December 2014. It was updated in 2017:

http://www.gsrt.gr/Financing/Files/ProPeFiles20203/ex-ante-1-2_Nov%202016%20V.11.pdf [Last access: 08/2017].

This updated multiannual investment plan for RI is not considered a static document and it foreseen to be revised and updated in 2019.

Source: Data derived from InRoad Consultation on RI (2017).

9. Main purposes of the national RM on RI

- To support the decision-making process in compliance with strategic priorities in research, aiming to enhance the effectiveness of investment planning for research infrastructures, at national and regional levels
- To support the development of an evidence-based national strategy in the framework of international negotiations, linked to EU priorities and, where appropriate, the European Strategy Forum on Research Infrastructures
- To contribute to the Greek strategy for the ERA-National roadmap 2015-2020 objectives

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget	x		x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level	x	x	x
Regional budget	x		
ESIF managed at regional level			
Research funding agencies	x		
Research Performing Organisations	x		
European Investment Bank			x (indirectly)
Horizon 2020	x		x
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding

General Secretariat for Research and Technology (GSRT) of the Ministry of Education, Research and Religious Affairs in collaboration with the Ministry of Economy & Development, which is responsible for ring-fenced budget.

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources

- ESIF managed at national level (Operational Programme Competitiveness, Entrepreneurship and Innovation 2014-2020/EPAnEK)
- Regular budget of research organizations that participate in ESFRI infrastructures already established (annual fees, operational costs)

Source: Data derived from InRoad Consultation on RI (2017).

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. up-grade, repurposing)
Funding source	- regular state budget	1. ESIF	1. ESIF	1. ESIF	1. ESIF	-	-
Funding instrument	-	-Operational Program Competitiveness, and Entrepreneurship 2007-2013	- Operational Program Competitiveness, and Entrepreneurship 2007-2013	- Operational Program Competitiveness, and Entrepreneurship 2014-2020 (EPAnEK)	-EPAnEK 2014-2020 as well as - regular budget of the participated in ESFRI – ERIC infrastructures PRO	-	-
Responsible funders/ funding bodies	-	- GSRT in collaboration with the Ministry of Economy & Development	- GSRT in collaboration with the Ministry of Economy & Development	- GSRT in collaboration with the Ministry of Economy & Development	- GSRT in collaboration with the Ministry of Economy & Development	-	-
Covered costs	-	- personnel, events, feasibility studies	- personnel cost, infrastructures, investment	- personnel, infrastructures, consumables, events, travels	- personnel, infrastructures, consumables, events, travels	-	-
Period of time covered (years)	-	2014-2016	2017-2018	2018-2019	2019-2020	-	-

Source: Data derived from InRoad Consultation on RI (2017).

13. Details on national funding mechanisms

- Greece takes funding decisions for RI that take into account the national RI, which should be in line with the RIS3 priorities and where appropriate to ESFRI
- RI are mainly funded through ESIFs. However, different sources of national funding directly or indirectly support national RI. Also H2020 funding is crucial

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information

Total amount (EU amount and National amount)	All Programs (€M)	24,963,6
	Programs with ERDF (€M)	10,417,7
EU amount	All Programs (€M)	20,350,1
	Programs with ERDF (€M)	8,149,5
Thematic objective 1 (Research & Innovation)	Total funds (€M)	1,160,6
	ERDF (€M)	939,2
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	92 committed
	059. Research infrastructure and innovation (private and scientific parks) (€M)	N/A

* Data under evaluated; some documents not found. Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 08/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 08/2017]).

15. Changes of funding schemes of RI

Greece is not planning any changes for the funding schemes of RI.

Source: Data derived from InRoad Consultation on RI (2017).

Hungary

Research Infrastructure in Hungary: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
		x

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
Not applicable or no information presently available.

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
	x

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
National Research Development and Innovation Office	x		x		
Ministry of Human Capacities	x		x		
Ministry of Economy	x		x		
Hungarian Academy of Sciences					
Higher Education Institutions					

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning/ Preparation of Guidelines	
2	Call	
3	Landscape analysis	
4	Mapping	
5	Eligibility Check	
6	Science-driven Evaluation	
7	Economic evaluation	
8	Evaluation of societal relevance	
9	Decision	
10	Validation	

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
Not applicable or no information presently available.	Not applicable or no information presently available.	Not applicable or no information presently available.

Source: Data derived from InRoad Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM		
Inventory/landscape analysis		
Evaluation procedures	x	
Strategic decision-making		
Timing of national and European RM		
Life cycle management		x
RI funding instruments		
Monitoring and evaluation of RI		x
Prioritisation of RI		

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates
<ul style="list-style-type: none"> A Hungarian Roadmap is currently under preparation and is expected to be release in November 2017 The life-cycle is not considered to be relevant for the Roadmap

Source: Data derived from RM, Desk Study, ESFRI Homepage.

9. Main purposes of the national RM on RI
<ul style="list-style-type: none"> A (bottom-up) list of the scientific user community on desired RI An input for funding decisions on RI between institutional, regional and national stakeholders An input for funding decisions on RI between institutional, regional and national stakeholders A list of strategic priorities, which are foreseen for funding An inventory of existing RI

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI			
	Planning	Construction	Operation
National budget			
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level			

Regional budget			
ESIF managed at regional level			
Research funding agencies			
Research Performing Organisations			
European Investment Bank			
Horizon 2020			
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding

- National Research Development and Innovation Office responsible for one time grants
- Ministry of Economy responsible for funding (financing)
- Ministry of Human Capacities responsible for funding (financing)

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources

- National budget responsible for annual constant funding
- Research Funding Agencies responsible for National Research Development Innovation Office
- Research Performance Organization responsible for Hungarian Academy of Sciences
- H2020

Source: Data derived from InRoad Consultation on RI (2017).

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, repurposing)
Funding source	-	-	-	-	-	-	-
Funding instrument	-	-	-	-	-	-	-
Responsible funders /funding bodies	-	-	-	-	-	-	-
Covered costs	-	-	-	-	-	-	-
Period of time covered (years)	-	-	-	-	-	-	-

* Not answered.

13. Details on national funding mechanisms

- The background document on Research Infrastructures Roadmap is part of the S3 strategy.
- In Hungary, the design of different funding instruments does not take into consideration their potential combination with others.
- Hungary is currently exploring or planning any new or additional instruments or mechanisms to fund RI.
- In the case of Higher Education Institutes a new fund will be introduced in 2018 so that RI can be financed as well.

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information		
Total amount (EU amount and National amount)	All Programs (€M)	29,646,7
	Programs with ERDF (€M)	9,740,6
EU amount	All Programs (€M)	25,013,9
	Programs with ERDF (€M)	10,756,8
Thematic objective 1 (Research & Innovation)	Total funds (€M)	2,232,1
	ERDF (€M)	2,148,9
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	32,2
	059. Research infrastructure and innovation (private and scientific parks) (€M)	0,0

Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 08/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 08/2017]).

15. Changes of funding schemes of RI
Hungary does not plan any changes for the funding schemes of RI.

Source: Data derived from InRoad Consultation on RI (2017).

Iceland

Research Infrastructure in Iceland: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
		X ¹³

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
Not applicable or no information presently available.

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
N/A	N/A

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
Ministry of Education, Science and Culture Department of Education and Science					
Science and Technology Policy Council (STPC)					
Other relevant ministries					
Research Institutes and universities					
Research infrastructure fund					

Not applicable or no information presently available.

¹³ A national roadmap is presently in the preparation phase in accordance with the STPCs Strategy and action plan 2017-2019. Information presented in the Fact sheet reflects the present situation of RI financing.

5. Steps and Actions in the national RM Procedure ¹⁴		
Step	Action	Responsible actor
1	Planning/ Preparation of Guidelines	RI fund, MESC
2	Call	RI fund
3	Landscape analysis	
4	Mapping	
5	Eligibility Check	RI fund
6	Science-driven Evaluation	RI fund
7	Economic evaluation	
8	Evaluation of societal relevance	
9	Decision	RI fund
10	Validation	

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure ²		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> Applicants are not eligible to apply for installation or build-up of instruments that cost less than 2 million ISK. Price quotes from the manufacturer/service provider must accompany the proposal to confirm the amount applied for. Salaries can be applied for in connection with Build-up and Upgrade/operation up to 5 million ISK, given that this does not exceed 75% of the total cost of salary used for this purpose. Applications for retroactive funding will be rejected. If the total cost increases by 5% or more, the grantee must get permission from the Infrastructure Fund before proceeding with the purchase. 	<ul style="list-style-type: none"> Not applicable or no information presently available. <p>(detailed information in 2.3 Annex Part 1)</p>	<ul style="list-style-type: none"> The infrastructure is important for research progress in Iceland and for the proposer's research. The infrastructure creates new possibilities in research and/or is related to research projects already being funded by the Icelandic Research Fund. The infrastructure is important for education and training in the relevant scientific field. The infrastructure facilitates cooperation between institutions, or between institutions and companies. Budget plans are realistic. Infrastructure realised with support from the fund is accessible to other research groups as capacity allows.

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

¹⁴ Information applies to the Research infrastructure fund procedure.

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM	x	x
Inventory/landscape analysis	x	
Evaluation procedures	x	
Strategic decision-making	x	
Timing of national and European RM	x	x
Life cycle management	x	x
RI funding instruments	x	x
Monitoring and evaluation of RI	x	x
Prioritisation of RI	x	x

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates
In April 2017 the Ministry of Education, Science and Culture published a report pointing out the need of a national roadmap for RI in Iceland. In the fall of 2017, the Science and Technology Policy Council published its Strategy and Action Plan for 2017 – 2019 where one of the action points was the implementation of a national roadmap for RI. The preparation phase has started at the Ministry of Education, Science and Culture and the roadmap is expected to be ready by 2019.

Source: Data derived from InRoad Consultation on RI (2017).

9. Main purposes of the national RM on RI
<ul style="list-style-type: none"> • A planning instrument to prepare for the negotiations at European (ESFRI) and international levels • A list of strategic priorities, which are foreseen for funding • A (bottom-up) list of the scientific user community on desired RI • An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands • A guide with strategic RI priorities for setting research policy priorities

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI			
	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			

European Structural and Investment Funds (ESIF) managed at national level			
Regional budget			
ESIF managed at regional level			
Research funding agencies			
Research Performing Organisations	x	x	x
European Investment Bank			
Horizon 2020		x	x
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding
<ul style="list-style-type: none"> • The Ministry of Education, Science and Culture through grants • Other relevant ministries through grants • The Infrastructure Fund through grants

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources
<ul style="list-style-type: none"> • National budget • Research Performance Organisations • Horizon2020

Source: Data derived from InRoad Consultation on RI (2017).

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, repurposing)
Funding source	1. National budget	1. National budget	1. National budget	1. National budget; 2. H2020	1. National budget; 2. H2020	1. National budget	1. National budget
Funding instrument	-	-	-	- Infrastructure Fund	- Infrastructure Fund	-	- Infrastructure Fund
Responsible funders/funding bodies	- Research Institutes; - Universities	- Research Institutes; - Universities	- Research Institutes; - Universities	- Research Institutes; - Universities	- Research Institutes; - Universities	- Research Institutes;	-

Covered costs	-	-	-	-	-	-	-
Period of time covered (years)	-	-	-	-	-	-	-

Source: Data derived from InRoad Consultation on RI (2017).

13. Details on national funding mechanisms

- The funding decisions are not related to strategic priorities at the moment, but this is likely to change in the near future as there is a development process for a roadmap for Iceland.

Source: Data derived from InRoad Consultation on RI (2017).

14. Changes of funding schemes of RI

- There is a plan of new funding schemes.
- The plan is to make allocations from the Infrastructure Fund more closely linked to a national RI strategy than they currently are.

Source: Data derived from InRoad Consultation on RI (2017).

Ireland

Research Infrastructure in Ireland: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
https://ec.europa.eu/research/infrastructures/pdf/roadmaps/ireland_national_roadmap.pdf#view=fit&pagemode=none [Last access: 07/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
	x

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
<ul style="list-style-type: none"> Department of Jobs, Enterprise and Innovation Department of Education and Skills 	x	x			x
Higher Education Authority (HEA)			x	x	
Science Foundation Ireland			x	x	
Main ministries and corresponding departments: <ul style="list-style-type: none"> Department of Jobs, Enterprise and Innovation Department of Education and Skills 	x	x	x		
Other research funding agencies			x		

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning	Agency driven: TBC for new roadmap (Old roadmap was with HEA)
2	Call	Driven through the ministry (old ministry was Dept. Education & the agency coordinating it was HEA. New Ministry is Dept of Enterprise & Innovation but operational and management plans still to be finalised)
3	Landscape analysis	DJEI, DES,
4	Mapping	Through the PRTL I exercise
5	Eligibility Check	Driven through RFO
6	Science-driven Evaluation	Driven through RFO
7	Economic evaluation	Driven through RFO
8	Evaluation of societal relevance	Driven through RFO
9	Decision	Driven through RFO
10	Validation	Driven through RFO & Ministry

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
Previously through PRTL I calls	Previously through PRTL I calls (detailed information in 2.3 Annex Part 1)	<ul style="list-style-type: none"> • Scientific excellence • Societal and business relevance • Collaboration rather than duplication

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM		
Inventory/landscape analysis		x
Evaluation procedures		
Strategic decision-making	x	
Timing of national and European RM		
Life cycle management		
RI funding instruments	x	x
Monitoring and evaluation of RI		
Prioritisation of RI		

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates

The Irish Roadmap "RESEARCH INFRASTRUCTURE IN IRELAND - BUILDING FOR TOMORROW 2007" was published in 2007. The RM has not received any update so far. http://edepositireland.ie/bitstream/handle/2262/71211/forfas061221_research_infrastructure.pdf?sequence=1&isAllowed=y [Last access: 07/2017].

It is planned to revise the 2007 RM but no definitive timelines are in place yet. Ireland is currently carrying out the exercise of RI prioritisation. The National Programme for RI investment will work on the update of the National Roadmap. For that purpose, a national open research committee has been established.

Source: Data derived from InRoad Consultation on RI (2017).

9. Main purposes of the national RM on RI

- An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands
- A (bottom-up) list of the scientific user community on desired RI
- An inventory of existing RI
- A tool supporting and monitoring the implementation of RI
- A guide with strategic RI priorities for setting research policy priorities
- An input for funding decisions on RI between institutional, regional and national stakeholders
- A list to achieve agreement on the RI with institutional, regional and national stakeholders
- A list of strategic priorities, which are foreseen for funding
- A tool to differentiate between institutional and regional RI versus RI of (more than) national relevance
- A planning instrument to prepare for the negotiations at European (ESFRI) and international levels

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)		x	
European Structural and Investment Funds (ESIF) managed at national level			
Regional budget			
ESIF managed at regional level			
Research funding agencies		x	x
Research Performing Organisations			x
European Investment Bank			
Horizon 2020			x
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organisations for RI Funding

- Science Foundation Ireland
- Irish Research Council
- Health Research Board
- Higher Education Authority

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources

- National budget through HEA core grant to HEIs for foundation investment in research infrastructures
- European Fund for Strategic Investments (EFSI)
- Research funding agencies that have grants to support RI related to their thematic remit
- H2020 which support research projects associated with RI

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, re-purposing)
Funding source	-	-	-	-	-	-	-
Funding instrument	-	-	-	-	-	-	-
Responsible funders/funding bodies	-	-	-	-	-	-	-
Covered costs	-	-	-	-	-	-	-
Period of time covered (years)	-	-	-	-	-	-	-

Not applicable or no information presently available.

13. Details on national funding mechanisms

- Each funding agency would consider the strategic priorities nationally in making decisions.
- Design of different funding instruments is thought for their potential combination with others. There is a consultation with stakeholders when a funding instrument is being developed; there is representation of other agencies usually involved.
- New instruments are being prepared. Ireland is in the process of developing proposals for research funding of the next budget.

Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information

Total amount (EU amount and National amount)	All Programs (€M)	6,131,1
	Programs with ERDF (€M)	818,4
EU amount	All Programs (€M)	3,354,0
	Programs with ERDF (€M)	409,2
Thematic objective 1 (Research & Innovation)	Total funds (€M)	177,7
	ERDF (€M)	142,0
Investment category - ERDF	058.Research infrastructure and innovation (public) (€M)	0,0

	059. Research infrastructure and innovation (private and scientific parks) (€M)	0,0
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Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 07/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 07/2017]).

Israel

Research Infrastructure in Israel: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		

Source: Personal information from D. Horn.

2. Link to the roadmap
<p>Links to roadmaps in Hebrew: 2013: (engl. Version) [Last access: 09/2017]. http://horn.tau.ac.il/vatat/roadmap2013hebrew.pdf (hebrew Version) [Last access: 09/2017]. 2016: http://horn.tau.ac.il/publications/2016roadmap.pdf (hebrew Version) [Last access: 09/2017]. Brief summary of the 2016 Israel roadmap: http://horn.tau.ac.il/publications/BriefSummary2016.pdf (engl. Version) [Last access: 07/2017].</p>

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
x	

Source: Personal information from D. Horn.

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
Ministry of Science			x		
Ministry of Commerce			x		
Committee of Budgeting and Planning of the council of higher education	x	x	x	x	x
ISERD (Israel Europe R&D Directorate) - coordination body of Israel in the EU programs			x		
TELEM - adhoc committee, under auspices of Israel Academy			x		

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning/ Preparation of Guidelines	CPB roadmap committee
2	Call	
3	Landscape analysis	ISERD (Israel Europe R&D Directorate) - coordination body of Israel in the EU programmes
4	Mapping	
5	Eligibility Check	
6	Science-driven Evaluation	CPB roadmap committee
7	Economic evaluation	
8	Evaluation of societal relevance	
9	Decision	CPB (VATAT)
10	Validation	

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> The infrastructure contains scientific/technological research equipment exceeding 10 million shekels (about \$2.5 million) or more. 	<ul style="list-style-type: none"> Not applicable or no information presently available. (detailed information in 2.3 Annex Part 1)	<ul style="list-style-type: none"> The infrastructure serves more than one institution and more than one research group. The infrastructure is open to all the researchers in this area in Israel (researchers from academic research institutions, hospitals, industrial companies and so on) even if payment is involved. The infrastructure is on the leading technological-research level, relative to the situation in the scientific world.

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM		
Inventory/landscape analysis		
Evaluation procedures		
Strategic decision-making		
Timing of national and European RM		

Life cycle management		x
RI funding instruments		x
Monitoring and evaluation of RI		
Prioritisation of RI		

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates

The VATAT (Council for Higher Education Committee of Planning & Budgeting, CPB) created the “2013 Roadmap for Central Academic Research and Infrastructure in Israel”, in order to develop a more precise strategy for RI (Garcia-Torres, 2015, p. 34.). This was followed by a 2016 roadmap concluded in April, 2016. (D. Horn, personal information).

Source: Data derived from RM, Desk Study, ESFRI Homepage.

9. Main purposes of the national RM on RI

- An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands
- A list of the scientific user community on desired RI
- A tool supporting and monitoring the implementation of RI
- A guide with strategic RI priorities for setting research policy priorities
- An input for funding decisions on RI between institutional, regional and national stakeholders
- A list of strategic priorities, which are foreseen for funding
- A planning instrument to prepare for the negotiations at European (ESFRI) and international levels

Source: Data derived from InRoad Consultation on RI (2017), and D. Horn.

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)	x	x	
European Structural and Investment Funds (ESIF) managed at national level			
Regional budget			
ESIF managed at regional level			
Research funding agencies			
Research Performing Organisations			
European Investment Bank			
Horizon 2020	x	x	x
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding

- Israel science fund through grants
- Ministry of Commerce through grants
- VATAT (CPB)

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources							
<ul style="list-style-type: none"> National budget that covers membership in international RI H2020 that cover RI through research grants 							
Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, repurposing)
Funding source	-	-	-	-	-	-	-
Funding instrument	-	-	-	-	-	-	-
Responsible funders/funding bodies	-	-	-	-	-	-	-
Covered costs	-	-	-	-	-	-	-
Period of time covered (years)	-	-	-	-	-	-	-

*Not answered.

13. Details on national funding mechanisms
<p>In Israel funding decisions on RI are not linked with the country strategic priorities. The different players have their own strategic motifs. However they are not organized within an overall coherent prioritization system.</p> <p>In Israel, the design of the different funding instruments takes into account their potential combination with others (for projects connected to ESFRI or European research flagships).</p> <p>Israel is not exploring or planning any new or additional instruments or mechanisms to fund RI.</p>

Source: Data derived from InRoad Consultation on RI (2017).

14. Changes of funding schemes of RI
Israel does not plan to change the funding scheme of RI.

Source: Data derived from InRoad Consultation on RI (2017).

15. Relevant issue(s) not addressed
The decision-making system in Israel is quite different from the customary ones in the west.

Source: Data derived from InRoad Consultation on RI (2017).

Italy

Research Infrastructure in Italy: Fact sheet


1. Is there a National Roadmap for RI in place?

Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap

<http://www.ponrec.it/ponri/notizie/2017/pnir/> [Last access: 02/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).

Yes	No
	x

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure

	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
Federal Ministries (Research, Health, Environment, Economic development, Cultural heritage, Foreign Affairs, etc.)	x	x			
Research Organisations (RPO)	x	x			
Regional Governments (Structural funds)					
National Agency of Alternative Energy	x	x			
The Conference of Italian University Rectors (CRUI)					

Source: Data derived from InRoad Consultation and Desk Study on RI (2017).

5. Steps and Actions in the national RM Procedure

Step	Action	Responsible actor
1	Planning	RPO, Ministry of Research
2	Call	Ministry of Research, RPO, regional governments
3	Landscape analysis	RPO, Ministry of Research, regional governments

4	Mapping	Ministry of Research, regional governments
5	Eligibility Check	
6	Science-driven Evaluation	
7	Economic evaluation	
8	Evaluation of societal relevance	
9	Decision	
10	Validation	

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> Level of participation for scientific interest of National RPOs. Being within the priority scientific domains of National RPOs. 	<ul style="list-style-type: none"> Scientific quality Technological quality Managerial quality (implementation parameters, including a business plan) Added value at European level High-level connected services <p>(detailed information in 2.3 Annex Part 1)</p>	Not applicable or no information presently available.

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM		
Inventory/landscape analysis		x
Evaluation procedures	x	
Strategic decision-making		
Timing of national and European RM		
Life cycle management	x	
RI funding instruments	x	
Monitoring and evaluation of RI		x
Prioritisation of RI		x

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates
<p>The National Programme for Research Infrastructures 2014-2020 (PNIR), contains the new Italian Roadmap: Programma Nazionale per le Infrastrutture di Ricerca (PNIR), http://www.ponrec.it/media/388972/pnir.pdf [Last access: 02/2017].</p> <p>Roadmap published in 2011: "Italian Roadmap for RIs", drafted in 2010, identified 49 projects, 20 of which corresponded with those identified by ESFRI.</p>

Source: Data derived from RM, Desk Study, ESFRI Homepage

9. Main purposes of the national RM on RI
<ul style="list-style-type: none"> • An input for funding decisions on RI between institutional, regional and national stakeholders • A list to achieve agreement on the RI with institutional, regional and national stakeholders on strategic priorities, which are foreseen for funding • A list of strategic priorities, which are foreseen for funding • A tool to differentiate between institutional and regional RI versus RI of (more than) national relevance • A planning instrument to prepare for the negotiations at European (ESFRI) and international levels

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI	Planning	Construction	Operation
National budget		x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level		x	
Regional budget		x	
ESIF managed at regional level		x	
Research funding agencies			
Research Performing Organisations	x	x	x
European Investment Bank			
Horizon 2020	x	x	x
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding
The Italian Minister MIUR (Ministero dell'Istruzione dell'Università e della Ricerca) is the central Administration which promotes and coordinates the process of RI assessment, selection and funding.

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources							
Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. up-grade, repositioning)
Funding source	1.RPO; 2.University	1.H2020; 2.RPO; 3.University	1.RPO; 2.National budget; 3.Regional budget; 4.H2020	1.RPO; 2.National budget; 3.Regional budget; 4.H2020	1.RPO; 2.National budget; 3.University	1.RPO; 2.National budget	

Funding instrument	- Grants; - Institutional funds	- Grants; - Institutional funds	- Grants; - Institutional funds	- Grants; - Institutional funds	- Institutional Funds; - University	- Institutional Funds	-
Responsible funders/funding bodies	- RPO; - University	- EU; - RPO; - University	- RPO; - National budget; - Regional budget; - H2020	- RPO; - National budget; - Regional budget; - H2020	- RPO; National budget	- RPO; - National budget	-
Covered costs	- personnel	- personnel, investment	- personnel, investment, other running costs	- personnel, investment, other running costs	- personnel, investment, other running costs	-	-
Period of time covered (years)	1-3	3	3	3-5	depends on the RI operational time	depends on the specific RI	-

Source: Data derived from InRoad Consultation on RI (2017).

13. Details on national funding mechanisms

- In Italy, there is a connection between funding decisions on RI with country strategic S&T priorities. In the last roadmap exercise, MIUR has identified a group of priority RI to be included in the National Roadmap, considering also international and specific strategies.
- In the future, MIUR intends to operate through the procedure described in the reference document PNIR (Programma Nazionale per le Infrastrutture di Ricerca).

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information

Total amount (EU amount and National amount)	All Programs (€M)	73,556,6
	Programs with ERDF (€M)	30,266,2
EU amount	All Programs (€M)	42,560,3
	Programs with ERDF (€M)	20,648,8
Thematic objective 1 (Research & Innovation)	Total funds (€M)	3,947,2
	ERDF (€M)	3,512,7
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	263,7
	059. Research infrastructure and innovation (private and scientific parks) (€M)	202,3

Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 02/2017].) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 02/2017].).

15. Changes of funding schemes of RI

Italy does not plan to change the funding schemes of RI.

Source: Data derived from InRoad Consultation on RI (2017).

Lithuania

Research Infrastructure in Lithuania: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
http://www.lmt.lt/data/public/uploads/2016/09/d1_lmt_kelrodis_en_geras_atvartai.pdf [Last access: 10/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
	x

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
Ministry of Education and Science of the Republic of Lithuania	x	x	x		
Research Council of Lithuania		x	x		
Research and study institutions			x		
Research Council of Lithuania (The Commission on Research Infrastructures)				x	x

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning	Ministry of Education and Science of the Republic of Lithuania, Research Council of Lithuania
2	Call	Research Council of Lithuania (The Commission on RI)
3	Landscape analysis	Research Council of Lithuania (The Commission on RI)
4	Mapping	
5	Eligibility Check	Research Council of Lithuania (The Commission on RI)

		RI)
6	Science-driven Evaluation	Research Council of Lithuania (The Commission on RI)
7	Economic evaluation	Research Council of Lithuania (The Commission on RI)
8	Evaluation of societal relevance	
9	Decision	Government of the Republic of Lithuania on a proposal of the Ministry of Education and Science
10	Validation	Research Council of Lithuania

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> The implementation of the projects would require about EUR 20 billion, and their annual operating costs would account for about 10 % of the initial investment. (in equivalence to the ESFRI RM) 	Not applicable or no information presently available.	<ul style="list-style-type: none"> Open access Employ researchers and specialists of highest qualifications Ensure efficient utilisation

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM	x	x
Inventory/landscape analysis	x	x
Evaluation procedures	x	
Strategic decision-making	x	
Timing of national and European RM	x	x
Life cycle management	x	x
RI funding instruments	x	
Monitoring and evaluation of RI		x
Prioritisation of RI		x

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates
<p>The first Lithuanian Roadmap for Research Infrastructures was published in 2011. ROADMAP FOR RESEARCH INFRASTRUCTURES OF LITHUANIA (http://www.lmt.lt/en/about.html [Last access: 07/2017]). The second Roadmap for Research Infrastructures of Lithuania was published in 2015.</p> <p>The Lithuanian Roadmap for Research Infrastructures is a long-term planning instrument encompassing all areas of science, ranging from humanities and social sciences to physical and technology sciences. The Roadmap is a dynamic document, updated with regard to changes related to the need for infrastructures and their development. According to the established procedure, the Research Council of Lithuania reviews and updates the Lithuanian Roadmap for research infrastructures no less frequently than once per five years.</p>

Currently Lithuania is in the process of renewing the legal regulations related with RI. Lithuania is searching for the possibilities to ensure proper funding instruments to ensure comprehensive funding, especially for RI, which are integrated in international RI (operational, administrative costs, membership fees). Moreover, Lithuania is in a process of allocation of funding for RI using ESIF funds. The measure "Joining international research infrastructures (ESFRI) and upgrading and development of open access R&D infrastructure needed for joining international research infrastructure (ESFRI)" is going to be fully implemented in 2018. (Research Council of Lithuania, 2015)

Lithuania informed the ESFRI Forum the first 10 RI from its 2015 National Roadmap will be financed this year. This includes ESSurvey and Clarin. Lithuania also mentioned that a new advisory body for decision-making in RI will be established.

Source: Data derived from RM, Desk Study, ESFRI Homepage.

9. Main purposes of the national RM on RI

- An inventory of existing RI
- A tool supporting and monitoring the implementation of RI
- A guide with strategic RI priorities for setting research policy priorities
- An input for funding decisions on RI between institutional, regional and national stakeholders
- A tool to differentiate between institutional and regional RI versus RI of (more than) national relevance

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level	x	x	x
Regional budget			
ESIF managed at regional level			
Research funding agencies			
Research Performing Organisations			
European Investment Bank			
Horizon 2020	x	x	x
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding

Ministry of Education and Science of Lithuania responsible for ESIF funds directly to concrete RI, budgetary financing to research and higher education institutions.

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources

- European Structural and Investment Funds (ESIF) managed at national level that covers infrastructure development, renewal costs and membership fees in international RI;
- H2020;
- National budget

Source: Data derived from InRoad Consultation on RI (2017).

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, repurposing)
Funding source	-	-	-	-	-	-	-
Funding instrument	-	-	-	-	-	-	-
Responsible funders/funding bodies	-	-	-	-	-	-	-
Covered costs	-	-	-	-	-	-	-
Period of time covered (years)	-	-	-	-	-	-	-

* Not answered.

13. Details on national funding mechanisms

- Funding decisions are linked with the RI roadmap and the Smart Specialization Strategy (RIS3). All the infrastructures included in the updated Roadmap implement one or several priorities of the smart specialization strategy.
- Design of funding instruments takes into account the possibility of combination.
- When implementing the programmes for the development of integrated science, higher education and business centers (valleys) during 2007–2013 ESIF funding period, significant investments were made into development and upgrading of R&D and innovation.

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information

Total amount (EU amount and National amount)	All Programs (€M)	9,947,2
	Programs with ERDF (€M)	9,947,2
EU amount	All Programs (€M)	8,382,6
	Programs with ERDF (€M)	3,501,4
Thematic objective 1 (Research & Innovation)	Total funds (€M)	700,7
	ERDF (€M)	678,9
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	154,7
	059. Research infrastructure and innovation (private and scientific parks) (€M)	42,0

Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 07/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 07/2017]).

15. Changes of funding schemes of RI

- Currently Lithuania is in the process of renewing the legal regulations related to RI.
- Lithuania is searching for the possibilities to ensure proper funding instruments and comprehensive funding, especially for RI, which are integrated in international RI (operational, administrative costs, membership fees).
Moreover, Lithuania is in a process of funds allocation from ESIF.
- Substantive investments will be made to cover membership fees in international RI and for upgrading and development of open access within the R&D infrastructure.
- Changes include the following as well: those national RI that are integrated in international RI (ESFRI), the national government is planning to cover 100% of membership fees, and ensure around 70% coverage of administrative and operational costs.

Source: Data derived from InRoad Consultation on RI (2017).

Montenegro

Research Infrastructure in Montenegro: Fact sheet


1. Is there a National Roadmap for RI in place?

Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap

https://ec.europa.eu/research/infrastructures/pdf/roadmaps/montenegro_national_roadmap_2015.pdf#view=fit&pagemode=none [Last access: 08/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).

Yes	No
x	

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure

	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
Ministry of Science	x	x	x		
Council for scientific research	x	x			
University of Montenegro, University Donja Gorica, University Mediterranean, HERIC		x	x (HERIC ¹⁵)	x	

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure

Step	Action	Responsible actor
1	Planning/ Preparation of Guidelines	Ministry of Science
2	Call	Council for scientific research
3	Landscape analysis	Ministry of Science, University of Montenegro, University Donja Gorica
4	Mapping	Ministry of Science
5	Eligibility Check	Ministry of Science
6	Science-driven Evaluation	University of Montenegro, University Donja Gorica, University

¹⁵ Higher Education and Research for Innovation and Competitiveness: "The HERIC Project development objective is to strengthen the quality and relevance of higher education and research in Montenegro through reforming the higher education finance and quality assurance systems and by strengthening research and development capabilities." <http://www.herice.me/en/general-information> [Last access: 08/2017].

		Mediterranean, HERIC
7	Economic evaluation	other institutions
8	Evaluation of societal relevance	
9	Decision	Ministry of Science
10	Validation	

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> The Ministry of Education and the Ministry of Science are the main HERIC Project implementing bodies. The Project activities are planned to be carried out over a period of five years, from 2012 to 2017, and are financed by a World Bank loan in an amount of EUR 12 million. The main funding mechanism, call for co-financing of national scientific research projects in priority areas (for period 2012 – 2015, the total value of the mechanism was €5M), is open for all scientific research institutions in Montenegro and is project-based. 	Not applicable or no information presently available.	Not applicable or no information presently available.

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities	x	
Planning and design of RM	x	
Inventory/landscape analysis	x	x
Evaluation procedures		
Strategic decision-making		
Timing of national and European RM	x	
Life cycle management		x
RI funding instruments	x	x
Monitoring and evaluation of RI		x
Prioritisation of RI		x

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates

The Roadmap "MONTENEGRIN RESEARCH INFRASTRUCTURES ROADMAP 2015- 2020" was published in 2015. https://ec.europa.eu/research/infrastructures/pdf/roadmaps/montenegro_national_roadmap_2015.pdf [Last access: 08/2017].

Source: Data derived from RM, Desk Study, ESFRI Homepage.

9. Main purposes of the national RM on RI

- An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands
- An inventory of existing RI
- A tool supporting and monitoring the implementation of RI
- A list of strategic priorities, which are foreseen for funding

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level			
Regional budget			
ESIF managed at regional level			
Research funding agencies			
Research Performing Organisations			
European Investment Bank			
Horizon 2020	x	x	x
Others (World Bank)	x	x	x

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding

- Ministry of Science through National research project
- HERIC (Ministry of science and World Bank) through BIO-ICT Centre of Excellence
- HERIC (Ministry of science and World Bank) that funds Collaborative R&D projects

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources

- National budget
- H2020

Source: Data derived from InRoad Consultation on RI (2017).

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. up-grade, repositioning)
Funding source	-	-	-	-	-	-	-
Funding instrument	-	-	-	-	-	-	-
Responsible funders/funding bodies	-	-	-	-	-	-	-
Covered costs	-	-	-	-	-	-	-
Period of time covered (years)	-	-	-	-	-	-	-

* Not answered.

13. Details on national funding mechanisms

- BIO-ICT Centre of Excellence and Collaborative R&D projects (referenced in Roadmap) are funding in accordance with strategic priorities.
- Montenegro designs the different funding instruments thinking of their potential combination with others.
- The Ministry of Education and the Ministry of Science are the main HERIC Project implementing bodies. The Project activities are planned to be carried out over a period of five years, from 2012 to 2017, and are financed by a World Bank loan in an amount of €12 million.

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information

Not applicable or no information presently available.

15. Changes of funding schemes of RI

Not applicable or no information presently available.

Netherlands

Research Infrastructure in the Netherlands: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
https://www.nwo.nl/en/news-and-events/news/2016/33-research-facilities-and-clusters-top-priority-for-dutch-science.html [Last access: 07/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
x	

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
Ministry of Education, Culture and Science	(x)				
Ministry of Economic Affairs					
Netherlands Organisation for Scientific Research (NWO)	x	x	x		
Provinces/regions			x		
Other Institutions			x		
Permanent Committee for Large-Scale Scientific Infrastructure	(x)			x	x

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning/ Preparation of Guidelines	NWO in cooperation with the Ministry of Education, Culture and Science / NWO
2	Call*	NWO
3	Landscape analysis	Permanent Committee Large scale RI / NWO
4	Mapping	Permanent Committee Large scale RI / NWO
5	Eligibility Check	Permanent Committee Large scale RI / NWO
6	Science-driven Evaluation	Permanent Committee for Large-Scale Scientific Infra-

		structure for establishing the roadmap; An independent international selection committee for the call on funding of RI
7	Economic evaluation	Permanent Committee for Large-Scale Scientific Infrastructure for establishing the roadmap; An independent international selection committee for the call on funding of RI
8	Evaluation of societal relevance	Permanent Committee for Large-Scale Scientific Infrastructure for establishing the roadmap; An independent international selection committee for the call on funding of RI
9	Decision	On the Roadmap: Executive Board of NWO after consulting the Ministry of Education, Culture and Science and the Ministry of Economic Affairs On the funding of RI: NWO based on the advice of the independent selection committee
10	Validation	NWO

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure – Criteria to earn a spot on the National Roadmap		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> • Threshold of EUR 10 Mio total capital investment and operating costs for 5 years • policy of open access for research 	<ul style="list-style-type: none"> • Unicity of the facility • Strategic importance (at national/ministry and institutional level) • Level of participation of national researchers • Access policy • Scientific and societal importance • Current status and maturity of the facility <p>(detailed information in 2.3 Annex Part 1)</p>	<p>For distributed facilities:</p> <ul style="list-style-type: none"> • Central access point • One management board • Legal structure

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Criteria of the decision-making process in the RM procedure – Criteria for facilities to obtain a Roadmap subsidy		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> • Inclusion of the facility in the current National Roadmap • Co-funding commitment from all parties involved • likely to lead to a scientific breakthrough • For international organisations with Dutch memberships: funds can only be requested for parts that cannot be funded via the standard funding of the council of the international organisation concerned or via the national contributions. • Funding to applicants within the context of a Public-Private-Partnership or to companies can only be granted if the conditions for the community guidelines on state aid for research, development and innovation have been satisfied. 	<ul style="list-style-type: none"> • Science and excellence • The importance for science and the potential to attract researchers; • Embedding of the investment; • Urgency of the investment for Dutch science • Innovation and strategy • The importance for society and industry and the connection with societal developments; • National Interest. • Technical, business and management issues • Technical feasibility; • ICT infrastructure; • Organisation and governance; • Accessibility; • Financial aspects; • Risk analysis. 	<ul style="list-style-type: none"> • Technical feasibility • Financial feasibility • Feasibility concerning organisation and governance

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

8. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM		
Inventory/landscape analysis	x	x
Evaluation procedures	x	
Strategic decision-making	x	
Timing of national and European RM	x	x
Life cycle management	x	x
RI funding instruments	x	x
Monitoring and evaluation of RI	x	
Prioritisation of RI	x	x

Source: Data derived from InRoad Consultation on RI (2017).

9. Timelines and Life-cycles: Publication and updates

First Roadmap published in 2008. Updated in 2013 and 2016 ('National Roadmap for Large-Scale Scientific Infrastructure') <http://www.nwo.nl/en/documents/nwo/permanent-commission/roadmap-large-scale-scientific-infrastructure> [Last access: 08/2017]. Next formal update of the Roadmap planned for 2020.

Source: Data derived from InRoad Consultation on RI (2017).

10. Main purposes of the national RM on RI

- Better priority setting within a research field
- An input for funding decisions on RI between institutional, regional and national stakeholders
- A list of strategic priorities, which are foreseen for funding

Source: Data derived from InRoad Consultation on RI (2017).

11. Organisation and main indicators for funding of RI

RI funding sources	Planning	Construction	Operation
National budget ¹⁶	x	X	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level			
Regional budget		x	x
ESIF managed at regional level			
Research funding agencies	x	x	x
Research Performing Organisations	x	x	x
European Investment Bank	x	x	x
Horizon 2020	x	x	x
Others			

Source: Data derived from InRoad Consultation on RI (2017).

¹⁶ The national budget is limited to participation in international organisations like CERN or EMBL. The other national budget for RI goes to the funding agency at the national level.

12. Responsible Organism(s) for RI Funding							
<ul style="list-style-type: none"> Netherlands Organization for scientific research through grants, institutional funding of research institutes Ministry of Education, Culture and Science through international contributions to for example RI like, CERN, ESA, ESO, EMBL Ministry of Economic Affairs responsible for loans for applied institutes and funding of more applied institutes and their RI other ministries that are responsible for funding of more applied institutes and their infrastructures 							
Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, repositioning)
Funding source	-RPO	1. RPO	1. RPO; 2. RFO	1. RFO	1. RFO 2. RPO	-	-
Funding instrument	-	-	- NWO-large	- Roadmap; - Call with strategic framework and restrictions; - NWO-large (call is translated now)	- Call with strategic framework and restrictions; - contributions of RPO	Should be part of the mentioned call	Should be part of the mentioned call
Responsible funders/funding bodies	-	-	-	-RFO	-RFO	-	-
Covered costs	-	-	-	- equipment, running cost max 50% for 5y if the lifetime is more than 10y	- equipment, running cost max 50% for 5y if the lifetime is more than 10y	-	-
Period of time covered (years)	-	-	-	up to 10	up to 10	-	-

Source: Data derived from InRoad Consultation on RI (2017).

13. Details on national funding mechanisms
<ul style="list-style-type: none"> Funding decisions on RI in the Netherlands are linked with the definition of strategic priorities. The Netherlands have two funding schemes for RI NWO-large and the Roadmap funding. In both schemes we check whether the strategic framework and the agreement between consortia of facilities are not broken. For the Roadmap funding is restricted to facilities on the roadmap only. Design of funding instruments in the Netherlands is not yet made for their potential combination with others. However, the Netherlands investigates the possibility to have joint investments In the Netherlands, we have done an effort to identify long term RI options. Now we discuss whether we should establish some funding to stimulate the further development of those initiatives.

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information		
Total amount (EU amount and National amount)	All Programs (€M)	3,731,6
	Programs with ERDF (€M)	3,731,6
EU amount	All Programs (€M)	1,881,4
	Programs with ERDF (€M)	507,3
Thematic objective 1 (Research & Innovation)	Total funds (€M)	361,0
	ERDF (€M)	332,5
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	N/A
	059. Research infrastructure and innovation (private and scientific parks) (€M)	N/A ¹⁷

Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 07/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (Dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 07/2017]).

15. Changes of funding schemes of RI
The Netherlands does not plan any changes for the funding schemes of RI in the near future, unless there are major changes in the financial situation.

Source: Data derived from InRoad Consultation on RI (2017).

16. Relevant issue(s) not addressed
In our procedures for RI funding we always use an interview or preferably a site visit.

Source: Data derived from InRoad Consultation on RI (2017).

¹⁷ Data from official sources seem not to be correct according to the person who validated the factsheet, thus data were omitted.

Norway

Research Infrastructure in Norway: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
https://www.forskningsradet.no/prognnett-infrastruktur/Norwegian_Roadmap_for_Research_Infrastructure/1253976312605 [Last access: 09/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
	x

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
The Research Council of Norway (RCN)	x	x	x	x	
R&D institutions		x	x		
RCN's governing bodies		x			
The Ministry of Education and Research (MER)			x		
Ministry of Trade, Industry and Fisheries			x		
Ministry for Health and Care Services			x		

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning/ Preparation of Guidelines	The Research Council of Norway (RCN)
2	Call	RCN
3	Landscape analysis	
4	Mapping	R&D institutions

5	Eligibility Check	
6	Science-driven Evaluation	RCN
7	Economic evaluation	
8	Evaluation of societal relevance	
9	Decision	RCN's governing bodies
10	Validation	

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> Costs starting at 2 million NOK and up to a maximum of 200 million NOK in project funding. 	<ul style="list-style-type: none"> Not applicable or no information presently available. 	<ul style="list-style-type: none"> National status and performance of national tasks of RI. The grant proposal has been assessed as outstanding, both scientifically and strategically. The project involves a large-scale, comprehensive RI.

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM		
Inventory/landscape analysis		
Evaluation procedures		
Strategic decision-making		
Timing of national and European RM	x	x
Life cycle management	x	x
RI funding instruments		
Monitoring and evaluation of RI		x
Prioritisation of RI		

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates
<p>A first RM version was published in 2010. The first and second revision was published in 2012 and 2014, respectively. The "Norwegian Roadmap for Research Infrastructure 2016" is thereby the third revision of the roadmap: https://www.forskningsradet.no/prognett-infrastruktur/Norwegian_Roadmap_for_Research_Infrastructure/1253976312605 [Last access: 09/2017].</p>

Source: Data derived from RM, Desk Study, ESFRI Homepage.

9. Main purposes of the national RM on RI
<ul style="list-style-type: none"> An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands A tool supporting and monitoring the implementation of RI A guide with strategic RI priorities for setting research policy priorities An input for funding decisions on RI between institutional, regional and national stakeholders

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI			
	Planning	Construction	Operation
National budget	x		
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level			
Regional budget			
ESIF managed at regional level			
Research funding agencies			
Research Performing Organisations			
European Investment Bank			
Horizon 2020			
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding
<ul style="list-style-type: none"> The Ministry of Education and Research through annual funding for RI is a separate budget line in the National Budget. R&D institutions through Funding of basic RI through their own funding. Other Ministries through Ad-hoc decisions on funding of RI of special interest to their policy areas.

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources							
Not applicable or no information presently available.							
Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, re-purposing)
Funding source	-	-	-	-	-	-	-
Funding instrument	-	-	-	-	-	-	-
Responsible funders/funding bodies	-	-	-	-	-	-	-
Covered costs	-	-	-	-	-	-	-
Period of time covered (years)	-	-	-	-	-	-	-

* Not answered.

13. Details on national funding mechanisms
<p>Funding decisions on Norway RI are linked with the definition of the country's strategic priorities. The design of the funding instruments does not take into account their potential combination with other funding instruments. There is no plan to change that in the future.</p> <p>There is no plan for any new or additional instruments or mechanisms for funding RI in Norway.</p>

Source: Data derived from InRoad Consultation on RI (2017).

14. Changes of funding schemes of RI

Norway does not plan any changes for the funding schemes of RI.

Source: Data derived from InRoad Consultation on RI (2017).

Poland

Research Infrastructures in Poland: Fact sheet


1. Is there a National Roadmap for RI in place?

Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap

<http://www.nauka.gov.pl/komunikaty/aktualizacja-polskiej-mapy-drogowej-infrastruktury-badawczej-wyniki.html> [Last access: 07/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).

Yes	No
	x

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure

	Responsibility for Roadmapping	Decision-making	Funding	Scientific evaluation	Economic evaluation
Ministry of Science and Higher Education (MNiSW)	x	x	x	x	
Other Institutions National Information Processing Institute			x		x
National Centre for Research and Development/ Information Processing Centre			x		
Marshal Offices			x		

Source: Data derived from InRoad Consultation and Desk Study on RI (2017).

5. Steps and Actions in the national RM Procedure

Step	Action	Responsible actor
1	Planning	Ministry of Science and Higher Education
2	Call	Ministry of Science and Higher Education
3	Landscape analysis	Ministry of Science and Higher Education
4	Mapping	Ministry of Science and Higher Education
5	Eligibility Check	Ministry of Science and Higher Education
6	Science-driven Evaluation	Panel of experts (external, national and international reviewers)
7	Economic evaluation	experts evaluating proposals for the Ministry of Science and Higher Education and National Infor-

		mation Processing Institute
8	Evaluation of societal relevance	Ministry of Science and Higher Education
9	Decision	Ministry of Science and Higher Education
10	Validation	not in place

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> Financing research infrastructures based on specific legal modalities, elaborated in 2014 with the amendment of the Act on the Principles of Financing Science On the regional level only projects approved by the Ministry of Infrastructure and Development and the Ministry of Science and Higher Education (to avoid duplication of investment) and included in the Territorial Contract may be supported. During appraisal of the verification projects, both Annex 5b to the Territorial Contracts for the Lower Silesian Voivodship will be subject to both. "Information on projects eligible for ERDF support under the Investment Priority 1a in the ROP" and accepted by the above-mentioned Ministries. The eligibility check includes the Regional Smart Specializations and the national Roadmap Compulsory annexes: the financial plan in accordance with the Research Agenda 	<ul style="list-style-type: none"> Overall rationale behind the proposed RI. Proposed ownership and operational structure Technical concept <p>Overall research objectives and the research programme.</p> <ul style="list-style-type: none"> Uniqueness of the proposed RI and its potential contribution to the advancement of scientific research Research potential of the consortium Previous and current involvement in national or international scientific activities Concept for execution of the research programme Overall cost estimates of the construction Previous experiences, current involvement and plans with regard to collaboration with other sectors on regional and national level Future possibilities for education and training of students and scientists Interconnections of the proposed RI with the landscape of research infrastructures in Europe Previous experience in serving the scientific community, the industry or the society Coherence of the proposed RI with goals and priorities of the Operational Programme Smart Growth <p>(detailed information in 2.3 Annex Part 1)</p>	<p>Feasibility study is a compulsory part of the application for financing. It includes analysis of demand for particular RI and plan for financing from external sources.</p> <p>the companies - Appropriateness of costs associated with the strategic research infrastructures:</p> <ul style="list-style-type: none"> - Appropriateness of costs in relation to the tasks foreseen for implementation in the construction phase and use of strategic research infrastructure, - Adequacy of costs to the assumed effects, including scientific and economic, related to the construction and use of strategic infrastructure research; - Applicant's ability to self-cover living expenses of Strategic Research Infrastructure and Indirect Costs: - Ability to co-finance the construction and maintenance of strategic research infrastructure from resources other than research resources, - The possibility of integrating the strategic research infrastructure into international projects: - Ability to integrate strategic research infrastructures into international structures, in particular in initiatives considered strategic by European Strategy Forum for Research Infrastructures.

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of Roadmap Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM		
Inventory/landscape analysis	x	x
Evaluation procedures	x	
Strategic decision-making	x	
Timing of national and European RM		
Life cycle management	x	
RI funding instruments		
Monitoring and evaluation of RI		x
Prioritisation of RI		

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates
<p>The Polish Roadmap for Research Infrastructures (PRRI) was announced by the Ministry of Science and Higher Education in 2009 together with another 2 calls. MNISW finished an update of the Polish Roadmap for Research Infrastructures (PMDIB), consisting of 53 projects, which consolidate the scientific potential in specific fields of research and rationalise the management of RI (2014).</p> <p>It was then published in 2014. The procedure for updating The Polish Roadmap for Research Infrastructures is set for 2018. As of July 2017, the Roadmap is only available in Polish. 30 of the indicated projects are national, 23 international, 13 among the projects present at the PMDIB is in the implementation phase.</p> <p>Funds for the construction or future operation of these projects can be obtained in accordance with normal procedures, within the national budget and EU funding. The fact of finding a particular object or device on a map is important for your chances of getting financing.</p> <p>Another map update of the science ministry wants to announce in February 2018.</p> <p>Construction of modern research infrastructures of a large scale, bringing together national and international research potential is one of the most important tasks of Polish science in recent years. As a result, the government spent almost PLN 29 billion on research and higher education investments. Modern laboratories, research centres, university campuses have been established.</p>

Source: Data derived from RM, Desk Study, ESFRI Homepage

9. Main purposes of the national Roadmap on RI
<ul style="list-style-type: none"> • An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands • An input for funding decisions on RI between institutional, regional and national stakeholders • A tool to differentiate between institutional and regional RI versus RI of (more than) national relevance

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI			
	Planning	Construction	Operation
National budget	x		x (projects compatible with H2020)
European Fund for Strategic Investments (EFSI)		x	
European Structural and Investment		x	

Funds (ESIF) managed at national level			
Regional budget		x	
ESIF managed at regional level		x	
Research funding agencies			
Research Performing Organisations			
European Investment Bank			
Horizon 2020			x
Others			

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding

- Ministry of Science and Higher Education responsible for Grants to support participation of Polish scientific community in international RI projects (mainly ESFRI);
- Ministry of Science and Higher Education which is responsible for annual allocation earmarked to cover Poland's financial contributions to international institutions or organizations under international agreements;
- Ministry of Science and Higher Education with Grants to cover costs of purchasing or assembling small research instrumentation;
- National Centre for Research and Development/Information Processing Centre responsible for one time investment funds (EU Structural Funds 2014-2020) dedicated to support construction phase of RI from the Roadmap.

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources

- National budget that mostly to support RI of an international profile
- European Structural and Investment Funds (ESIF) managed at national level that mostly fund construction costs of RI of a national profile
- ESIF managed at regional level that fund construction costs of RI's of a national/regional profile

Re-search Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, repurposing)
Funding source	-	-	-	1. National budget; 2. ESIF - national level; 3. ESIF - regional level	1. National budget	1. Regional budget; 2. National budget	1. Regional budget; 2. National budget
Funding instrument	-	-	-	- Principles of Financing Science; - Smart Growth OP 2014-20; - ROP	- Principles of Financing Science;	- grants	- grants

Responsible funders/funding bodies	-	-	-	-Ministry of Science and Higher Education; - National Centre for Research and Development / Information Processing Centre; - Marshall Offices'	-Ministry of Science and Higher Education	- RFOs; - RPOs; - State; - National ministries	- RFOs; - RPOs; - State; - National ministries
Covered costs	-	-	-	-	personnel, running costs, investment	personnel, running costs, investment	personnel, running costs, investment
Period of time covered (years)	-	-	-	- up to 5 years; - max. until 2023;	-	-	-

Source: Data derived from InRoad Consultation on RI (2017).

13. Details on national funding mechanisms

- Poland funding decisions on RI are linked with the country strategic priorities.
- The inclusion of the research project in the Roadmap does not involve any financial commitment from the Ministry or other public authorities. According to the Act on the Principles of Financing Science, it gives however, certain advantage (additional points) to applications submitted to the Ministry. There is also a clear link between being included in the Roadmap and having a possibility to apply for the EU Structural Funds 2014-2020 on national level. The firm rule is that only projects that are present on the Roadmap are eligible for funding in structural policy scheme.
- Poland is planning a new instrument or mechanisms to fund RI. The instrument will be dedicated to support research communities that are interested in using RI located abroad.

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information

Total amount (EU amount and National amount)	All Programs (€M)	104,899,0
	Programs with ERDF (€M)	47,136,3
EU amount	All Programs (€M)	86,095,2
	Programs with ERDF (€M)	40,213,9
Thematic objective 1 (Research & Innovation)	Total funds (€M)	8,436,1
	ERDF (€M)	8,351,4
Investment category - ERDF	058.Research infrastructure and innovation (public) (€M)	800,4
	059. Research infrastructure and innovation (private and scientific parks) (€M)	92,0

Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 07/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 07/2017]).

Portugal

Research Infrastructure in Portugal: Fact sheet



1. Is there a National Roadmap for RI in place?

Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap

https://ec.europa.eu/research/infrastructures/pdf/roadmaps/portugal_national_roadmap_t2014.pdf#view=fit&pagemode=none [Last access: 07/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).

Yes	No
	x

Source: Data derived from InRoad Consultation and Desk Study on RI (2017).

4. Steps and Actions in the national RM Procedure

Step	Action	Responsible actor
1	Planning	Foundation for Science and Technology (FCT)
2	Call	Foundation for Science and Technology (FCT)
3	Landscape analysis	not performed
4	Mapping	not performed
5	Eligibility Check	Foundation for Science and Technology (FCT)
6	Science-driven Evaluation	External evaluators chosen by the Foundation for Science and Technology (FCT)
7	Economic evaluation (part of "Strategic evaluation")	5 Regional Administrations (CCDRs), 2 Autonomous Regions (Azores, Madeira) and FCT
8	Evaluation of societal relevance (part of "Strategic evaluation")	5 Regional Administrations (CCDRs), 2 Autonomous Regions (Azores, Madeira) and FCT
9	Decision	Foundation for Science and Technology (FCT)
10	Validation	Ministry of of Science, Technology and Higher Education

Source: Data derived from InRoad Consultation on RI (2017).

5. Criteria of the decision-making process

Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> Develop a strategic action plan for the RI until 2020 Perform a SWOT analysis Identify future sources of funding and expected impact	<ul style="list-style-type: none"> Scientific and technological excellence of the RI; Governance capacity and implementation feasibility; Budget and sustainability; RI's contribution to the regional and/or national development strategy; RI's contribution to the strengthening of national and international competitiveness; 	<ul style="list-style-type: none"> Scientific and technological components of the application, Governance capacity Implementation feasibility Proposed budget and sustainability.

	<ul style="list-style-type: none"> Potential for social and economic development and for the implementation of public policies on science and technology <p>(detailed information in 2.3 Annex Part 1)</p>	
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Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

6. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities	x	
Planning and design of RM	x	x
Inventory/landscape analysis	x	x
Evaluation procedures	x	
Strategic decision-making	x	
Timing of national and European RM		x
Life cycle management	x	x
RI funding instruments	x	x
Monitoring and evaluation of RI		x
Prioritisation of RI		x

Source: Data derived from InRoad Consultation on RI (2017).

7. Timelines and Life-cycles: Publication and updates
<p>First Roadmap published in 2014, the first update is envisaged for 2018. “Portuguese Roadmap of Research Infrastructures 2014-2020” can be accessed under: http://ec.europa.eu/research/infrastructures/pdf/roadmaps/portugal_national_roadmap_t2014.pdf#view=fit&pagemode=none [Last access: 07/2017].</p>

Source: Data derived from RM, Desk Study, ESFRI Homepage.

8. Main purposes of the national RM on RI
<ul style="list-style-type: none"> An inventory of existing RI A tool supporting and monitoring the implementation of RI An input for funding decisions on RI between institutional, regional and national stakeholders (including the calls for funding of 2016 and 2017, which were restricted to the RI in the Roadmap) A list to achieve agreement on the RI with institutional, regional and national stakeholders A list of strategic priorities, which are foreseen for funding

Source: Data derived from InRoad Consultation on RI (2017).

9. Organisation and main indicators for funding of RI			
	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level		x	

Regional budget			
ESIF managed at regional level		x	
Research funding agencies		x	x
Research Performing Organisations	x	x	x
European Investment Bank			
Horizon 2020	x		x
Others			

Source: Data derived from InRoad Consultation on RI (2017).

10. Responsible Organism(s) for RI Funding

- Fundação para a Ciência e a Tecnologia (FCT), which is responsible for the part of funding coming from State Budget
- COMPETE 2020 - Operational Programme for Competitiveness and Internationalization, which is responsible for funding coming from Structural Funds (RI with partners in more than two "less developed" regions)
- Regional Operational Programmes (which are responsible for funding coming from Structural Funds)

11. RI Funding Sources

- National budget
- European Structural and Investment Funds (ESIF) managed at national and regional level
- Research Funding Agencies (RFOs) – FCT is responsible for the part of national budget that covers RI funding
- H2020 (each RI is independently applicant to H2020 calls)

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. up-grade, re-purposing)
Funding source	-	-	-	1. National budget; 2. ESIF	1. National budget; 2. ESIF	-	-
Funding instrument	-	-	-	- National budget; - Operational Programmes	- National budget; - Operational Programmes	-	-
Responsible funders/funding bodies	-	-	-	- FCT; - COMPETE; - ROP Managing Authorities	- FCT; - COMPETE; - ROP Managing Authorities	-	-
Covered costs (e.g. personnel, other running costs, investment)	-	-	-	- Investment (Equipment, construction) and human resources	- Investment (Equipment, construction) and human resources	-	-
Period of time covered (years)	-	-	-	- 3	- 3	-	-

Source: Data derived from InRoad Consultation on RI (2017).

12. Details on national funding mechanisms

- Funding call (2016) was restricted to the RI incorporated in the National Roadmap of RI in 2014.
- Requirements for funding: alignment with national and/or regional RIS3 priorities (ex-ante conditionality for research and innovation).
- There is not a design of funding instruments to be used in combination with other funding instruments.
- Applications from the RI National Roadmap for the 2016 funding call had to identify other funding sources on their own. Not a factor of eligibility for funding on this call.

Source: Data derived from InRoad Consultation on RI (2017).

13. National Operational Program Information

Total amount (EU amount and National amount)	All Programs (€M)	32,686,1
	Programs with ERDF (€M)	18,524,4
EU amount	All Programs (€M)	25,782,2
	Programs with ERDF (€M)	10,776,9
Thematic objective 1 (Research & Innovation)	Total funds (€M)	2,404,9
	ERDF (€M)	2,328,8
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	176,4
	059. Research infrastructure and innovation (private and scientific parks) (€M)	55,2

Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 07/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 07/2017]).

Romania

Research Infrastructure in Romania: Fact sheet


1. Is there a National Roadmap for RI in place?

Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap

<http://www.research.gov.ro/uploads/cric/roadmap-national-1-august-2017.pdf> [Last access: 07/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).

Yes	No
x	

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure

	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
Ministry of Research and Innovation	x	x	x		
Romanian Committee for Research Infrastructures	x	x		x	x
Operational Programme Competitiveness 2014-2020			x	x	x
Other Institutions					

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<p>The projects that will be included in the roadmap are characterized by:</p> <ul style="list-style-type: none"> ▪ Very high costs (at least, Euro 600.000). ▪ Long period of development that requires expertise and a stable sustainable institutional framework. <p>Additionally, these projects should present the following characteristics:</p> <ul style="list-style-type: none"> • Providing socioeconomic benefits at national level. • Being harmonized with the common interests of the national scientific community. • Having a strategic impact in top scientific fields. • Being interoperable and competitive at international level. • Being used at full capacity on a multi-disciplinary basis and of free access for all interested researchers. • Valorising the expertise existing in the field, in a co-operative manner. • Having long term impact on the quality of people's life. • Stimulating the interest of young people and attract them in the research career. • Having a determinant role in training new generations of researchers. <p>Stimulating the transfer of knowledge and technology.</p>	<ul style="list-style-type: none"> • Relevance • Potential of use • Proportionality of the investment in relation with: • Coordination of the achievement, use and future development of the infrastructure • Quality of the implementation environment • Access to infrastructure • Interoperability <p>(detailed information in 2.3 Annex Part 1)</p>	<p>Not applicable or no information presently available.</p>

Source: Data derived from InRoad Consultation on RI (2017).

6. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning / Preparation of Guidelines	Ministry of Research and Innovation (MCI)
2	Call	MCI, Romanian Committee for Research Infrastructures (CRIC), Operational Programme Competitiveness 2014-2020
3	Landscape analysis	MCI, CRIC, Operational Programme Competitiveness 2014-2020
4	Mapping	MCI, CRIC, Operational Programme Competitiveness 2014-2020
5	Eligibility Check	MCI, Operational Programme Competitiveness 2014-2020
6	Science-driven Evaluation	MCI, CRIC, Operational Programme Competitiveness 2014-2020
7	Economic evaluation	MCI, CRIC, Operational Programme Competitiveness 2014-2020
8	Evaluation of societal relevance	MCI, CRIC, Operational Programme Competitiveness 2014-2020
9	Decision	MCI, Operational Programme Competitiveness 2014-2020
10	Validation	MCI, Operational Programme Competitiveness 2014-2020

Source: Data derived from InRoad Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM	x	
Inventory/landscape analysis	x	x
Evaluation procedures	x	
Strategic decision-making	x	
Timing of national and European RM	x	
Life cycle management	x	
RI funding instruments	x	x
Monitoring and evaluation of RI	x	x
Prioritisation of RI	x	x

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates	
Roadmap published in 2017. (National Strategy for Research, development and innovation (2014-2020))	
http://www.research.gov.ro/uploads/cric/roadmap-national-1-august-2017.pdf	[Last access: 07/2017].

Source: Data derived from RM, Desk Study, ESFRI Homepage.

3. Main purposes of the national RM on RI

- An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands
- A (bottom-up) list of the scientific user community on desired RI
- A guide with strategic RI priorities for setting research policy priorities
- An input for funding decisions on RI between institutional, regional and national stakeholders
- A list of strategic priorities, which are foreseen for funding

Source: Data derived from InRoad Consultation on RI (2017).

4. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level	x	x	x
Regional budget			
ESIF managed at regional level			
Research funding agencies			
Research Performing Organisations			
European Investment Bank			
Horizon 2020	x	x	x
Others			

Source: Data derived from InRoad Consultation on RI (2017).

5. Responsible Organism(s) for RI Funding

- Ministry of Research and Innovation through grants, Operational Programme Competitiveness 2014-2020

Source: Data derived from InRoad Consultation on RI (2017).

6. RI Funding Sources¹⁸

- National Plan for Research, Development and Innovation (PN III)
- European Structural and Investment Funds (ESIF) managed at national level

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, re-purposing)
Funding source	PN III, ESIF	PN III, ESIF	PN III, ESIF	PN III, ESIF	PN III, ESIF	PN III, ESIF	PN III, ESIF
Funding instrument	Grants	Grants	Grants	Grants	Grants	Grants	Grants
Responsible funders/funding bodies	MCI	MCI	MCI	MCI	MCI	MCI	MCI

¹⁸ H2020 that is project based funding (e.g. MSCA).

Covered costs	Man power & investment	Man power & investment	Man power & investment	Man power & investment	Man power & investment	Man power & investment	Man power & investment
Period of time covered (years)	According to the grant agreement	According to the grant agreement	According to the grant agreement	According to the grant agreement	According to the grant agreement	According to the grant agreement	According to the grant agreement

Source: Data derived from InRoad Consultation on RI (2017).

7. Details on national funding mechanisms

- In Romania, funding decisions on RI are linked with the country strategic priorities.
- Additional also based on the National Research Strategy (2014-2020)
- The design of different funding instruments in Romania takes into consideration their potential combination with other instruments, in particular the participation to pan-European RI (ESFRI projects).

Source: Data derived from InRoad Consultation on RI (2017).

8. National Operational Program Information

Total amount (EU amount and National amount)	All Programs (€M)	36,447,5
	Programs with ERDF (€M)	9,714,1
EU amount	All Programs (€M)	30,837,3
	Programs with ERDF (€M)	10,726,1
Thematic objective 1 (Research & Innovation)	Total funds (€M)	1,061,6
	ERDF (€M)	973,4
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	*
	059. Research infrastructure and innovation (private and scientific parks) (€M)	*

* Data under evaluated; some documents not found. Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 07/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 07/2017]).

9. Changes of funding schemes of RI

There are changes planned that consist on the following: less budget for new RI, more budget for operation and staffing the existing RI.

Source: Data derived from InRoad Consultation on RI (2017).

Slovenia

Research Infrastructure in Slovenia: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. LINK to the roadmap
http://www.mizs.gov.si/fileadmin/mizs.gov.si/pageuploads/Znanost/doc/Strategije/NRRI_2016_ENG.pdf [Last access: 09/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
x	

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
Ministry of Education, Science and Sport		x	x	x	
The Government Office for Development and European Cohesion Policy					
Slovenian Research Agency			x		
Stakeholders institutions (main research institutes, universities etc.)					
Other Institutions					

Source: Data derived from InRoad Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning/ Preparation of Guidelines	
2	Call	Ministry of Education, Science and Sport
3	Landscape analysis	Ministry of Education, Science and Sport
4	Mapping	
5	Eligibility Check	
6	Science-driven Evaluation	Ministry of Education, Science and Sport
7	Economic evaluation	other institutions
8	Evaluation of societal relevance	
9	Decision	
10	Validation	Ministry of Education, Science and Sport

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> Not applicable or no information presently available. 	<p>The scientific relevance.</p> <ul style="list-style-type: none"> The achievement of the critical mass or involvement of key actors at the national level. The possibility of upgrading the existing research infrastructure. Its impact on regional cooperation, comparability at European and global level. Placement in the ERA. <p>(detailed information in 2.3 Annex Part 1)</p>	<ul style="list-style-type: none"> Not applicable or no information presently available.

Source: Data derived from InRoad Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities	x	
Planning and design of RM	x	
Inventory/landscape analysis		
Evaluation procedures		
Strategic decision-making		
Timing of national and European RM		x
Life cycle management		x
RI funding instruments		x
Monitoring and evaluation of RI		x
Prioritisation of RI		

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates
<p>A Slovenian Roadmap was published in 2010-2011 and updated in December 2016. Research Infrastructure Roadmap 2011 - 2020 - Revision 2016</p> <p>http://www.arhiv.mvzt.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/znanost/RISS/SIR.pdf [Last access: 09/2017].</p>

Source: Data derived from RM, Desk Study, ESFRI Homepage.

9. Main purposes of the national RM on RI
<ul style="list-style-type: none"> A tool supporting and monitoring the implementation of RI An input for funding decisions on RI between institutional, regional and national stakeholders A list of strategic priorities, which are foreseen for funding

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI			
	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level	x	x	x
Regional budget			
ESIF managed at regional level			
Research funding agencies	x	x	x
Research Performing Organisations			
European Investment Bank			
Horizon 2020			
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding
<ul style="list-style-type: none"> • Slovenian Research Agency through ring-fenced budget • Ministry of Education, Science and Sport through ring-fenced budget • Ministry of Education, Science and Sport through cohesion funds

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources
<ul style="list-style-type: none"> • National budget • European Structural and Investment Funds (ESIF) managed at national level • Research Funding Agencies

Source: Data derived from InRoad Consultation on RI (2017).

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, repurposing)
Funding source	-	-	-	-	-	-	-
Funding instrument	-	-	-	-	-	-	-
Responsible funders/funding bodies	-	-	-	-	-	-	-
Covered costs	-	-	-	-	-	-	-
Period of time covered (years)	-	-	-	-	-	-	-

* Not answered.

13. Details on national funding mechanisms

- Slovenia funding decisions on RI are linked with the country's strategic priorities.
- Only RI which are listed in National Roadmap are eligible to be funded. National Roadmap is prepared in accordance to RIS3.
- In Slovenia, the design of the different funding instruments is not thought in accordance to their potential combination with other instruments.
- Slovenia is currently planning a new additional instrument to funding RI.
- They are planning to start financing RI using cohesion funds.

Source: Data derived from InRoad Consultation on RI (2017).

Total amount (EU amount and National amount)	All Programs (€M)	4,895,5
	Programs with ERDF (€M)	3,756,2
EU amount	All Programs (€M)	3,874,1
	Programs with ERDF (€M)	1,390,4
Thematic objective 1 (Research & Innovation)	Total funds (€M)	485,9
	ERDF (€M)	461,7
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	N/A
	059. Research infrastructure and innovation (private and scientific parks) (€M)	N/A

*Data under evaluated; some documents not found.

Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 09/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 09/2017]).

Spain

Research Infrastructure in Spain: Fact sheet (international RI)



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
http://www.idi.mineco.gob.es/stfls/MICINN/Internacional/FICHEROS/Organismos_e_infraestructura/s/Construyendo_la_ciencia_del_siglo_XXI.pdf [Last access: 01/2018].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
	x

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
Mineco - Ministry of Economy, Industry and Competitiveness (MINECO)	x	x	x	x	x
Other Ministerial Departments		x	x		
Autonomous Regions of Spain		x	x		
RPO & Universities			x	x	

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning	MINECO
2	Call	Permanent OPEN CALL
3	Landscape analysis	MINECO & General Admin. Departments+regional Authorities
4	Mapping	MINECO
5	Eligibility Check	MINECO
6	Science-driven Evaluation	Committee composes by experts in the corresponding

		scientific domain appointed by MINECO supported by ANEP and the Spanish State Research Agency and the units responsible of the management of RI at national and European level within MINECO.
7	Economic evaluation	MINECO
8	Evaluation of societal relevance	MINECO and the Spanish State Research Agency
9	Decision	MINECO
10	Validation	MINECO

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> Objectives should be aligned to the objectives of the Spanish Strategy for Science and European RI strategies, ESFRI, CERN, ESO, etc. Nature: Is excellent and Unique. Investment: There are proof of availability of funds, or possibility for cofounding from the Promoters, in general RPO, Regional Governments, or Universities. Open to users based on competitive access. 	<ul style="list-style-type: none"> Scientific interest. Quality of R&D results expected. Opening to competitive and transparent access. User community seize interested. Potential industrial return Possibilities for Spain to have a recognized position in the RI organization as host or main node. Cooperation with other research organizations, RI and industrial sector Internationalization possibilities. Long term Sustainability. Socio-economic impact 	<ul style="list-style-type: none"> Coverage of Operation and maintenance costs through Funding mechanisms at National, Regional and institutional level. Including in some cases the use of ERDF funds Institutional commitment for the construction of the infrastructure on top of the existing facilities, which are obliged to share the access with the new RI to be constructed. It is specially remarkable in the case of the distributed infrastructures

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities	x	x
Planning and design of RM	x	x
Inventory/landscape analysis	x	x
Evaluation procedures	x	
Strategic decision-making	x	
Timing of national and European RM	x	x

Life cycle management	x	x
RI funding instruments	x	x
Monitoring and evaluation of RI	x	x
Prioritisation of RI		x

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates

The international roadmap was first published in 2010 and it is pending of a new revision, which is in progress. Estimated publication date end of 2018 in conjunction with the new 2018 ESFRI Roadmap

Source: Data derived from InRoad Consultation on RI (2017).

9. Main purposes of the national RM on RI

- In line with the European RI strategies, specifically the ESFRI Roadmap, identify and facilitate the Spanish involvement in top RI with the final intention to offer researchers and industry tools for the development of excellent science.
- A tool supporting and monitoring the implementation of RI
- A tool to coordinate and create synergies between national RI ICTs, RPO and Universities facilities to work together for the participation of Spain in the construction of the big European and International RIs.
- To foster innovation, technology transfer and participation of the private sector in the construction of the RIs
- To ensure the scientific and technological competitiveness of the Spanish RIs in the international context
- A guide with strategic RI priorities for setting research policy priorities
- An input for funding decisions on RI between institutional, regional and national stakeholders.
- A list to achieve agreement on the RI with institutional, regional and national stakeholders
- A list of strategic priorities, which are foreseen for funding, mainly to fulfil the ex-ante condition required for the use of ERDF funds dedicated to RI.

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)		x	
European Structural and Investment Funds (ESIF) managed at national level	x	x	
Regional budget	x	x	x
ESIF managed at regional level	x	x	
Research funding agencies	x	x	x
Research Performing Organisations	x	x	x
European Investment Bank		x	
Horizon 2020	x	x	
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding
<ul style="list-style-type: none"> • MINECO The National State Administration (AGE) • Other Ministerial Departments with competencies in the field. • The Regional Governments • Interested RPOs with are owners of their owns RIs (IAC, ISCIII, CIEMAT, CSICc, , among others). • CDTI that covers construction and operation mainly through in-kind contribution via Private companies

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources
<ul style="list-style-type: none"> • National and regional budget • European Structural and Investment Funds (ESIF) managed at national level and assigned by MINECO • ESIF managed at regional level. • Research Performance Organization. In some cases, assuming the limitation of the National and Regional Budgets for the allocation of funds for all the RI are the RPOs using the budgets of the institutions

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, re-purposing)
Funding source	1. RFOs; 2. Funding Agencies	Not only one scheme of funding (it depends on the origin of the project) - For a ESFRI Project: EC and WPRI	Not only one scheme of funding (it depends on the origin of the project) - For a ESFRI Project: EC and WPRI	Not only one scheme of funding (it depends on the origin of the project) - MINECO; - Other Ministries; - Regional Governments - Universities and RPO	Not only one scheme of funding (it depends on the origin of the project) - MINECO; - Other Ministries; - Regional Governments - Universities and RPO	Not only one scheme of funding (it depends on the origin of the project) - MINECO; - Other Ministries; - Regional Governments - Universities and RPO	Not only one scheme of funding (it depends on the origin of the project) - MINECO; - Other Ministries; - Regional Governments - Universities and RPO
Funding instrument	- Institutional Budgets; - National/	-	-	-	-	-	-

	Regional Plan						
Responsible funders/funding bodies	- MINECO - AEI (State Research Funding Agency); -Regional funding Agencies	-	-	-	-	-	-
Covered costs	Personnel Materials Facilities Subcontracts	-	-	-	-	-	-
Period of time covered (years)	variable	-	-	-	-	-	-

Source: Data derived from InRoad Consultation on RI (2017).

13. Details on national funding mechanisms

- In Spain, funding decisions on RI are linked with the State strategic priorities.
- There are several ways to fund RIs in Spain. The instrument in place varies according the type of activity (capacity building, research projects, collaborative actions, etc.), the actors involved, etc.
- Spain does not design funding instruments thinking of their potential combination.

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information

Total amount (EU amount and National amount)	All Programs (€M)	
	Programs with ERDF (€M)	
EU amount	All Programs (€M)	
	Programs with ERDF (€M)	
Thematic objective 1 (Research & Innovation)	Total funds (€M)	
	ERDF (€M)	
Investment category - ERDF	058.Research infrastructure and innovation (public) (€M)	
	059. Research infrastructure and innovation (private and scientific parks) (€M)	

Not applicable or no information presently available.

15. Relevant issue(s) not addressed

In the funding of RIs the In-Kind contribution is of extraordinary importance. It is a major topic today we are using but will deserve furthermore understanding and generalization.

Source: Data derived from InRoad Consultation on RI (2017).

Research Infrastructure in Spain: Fact sheet (ICT)



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
https://ec.europa.eu/research/infrastructures/pdf/roadmaps/spain_national_roadmap.pdf#view=fit&pagemode=none [Last access: 08/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
x	

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
CPCTI - Science, Technology, and Innovation Policy Council ¹⁹	x	x			
MAPAMA - Ministry of Agriculture and Fisheries, Food and Environment, MINETUR - Ministry of Industry, Energy and Tourism, MDEF - Ministry of Defense, MEDU - Ministry of Education, Culture and Sports, MINETAD - Ministry of Energy and Digital Agenda, MF-Ministry of Public Works and Transport or Institutions dependent on them that host RIs (Research National Public Institutions, etc.)			x		

¹⁹ Article 8 Science, Technology and Innovation Act 14/2011.

MINECO - Ministry of Economy, Industry and Competitiveness	x	x	x		x
CAIS - Advisory Committee for Unique Infrastructures				x	
Autonomous Communities of Spain		x	x		
Institutions dependent on the Autonomous Regions of Spain (Universities)			x		

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning	MINECO
2	Call	Executive Committee of the CPCTI
3	Landscape analysis	MINECO, regional Authorities
4	Mapping	MINECO
5	Eligibility Check	MINECO, Autonomous Communities
6	Science-driven Evaluation	CAIS with the support of MINECO and the Spanish State Research Agency
7	Economic evaluation	MINECO
8	Evaluation of societal relevance	CAIS with the support of MINECO and the Spanish State Research Agency
9	Decision	CPCTI
10	Validation	MINECO

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> Objectives should be in alignment with the objectives of the Spanish Strategy for Science Public ownership (100%), meaning that the RIs must belong to or are be managed by public entities, whether they are under the authority of the Spanish Central Administration and/or the Autonomous Communities Investment: They entail an investment 	<ul style="list-style-type: none"> Socio-economic impact Uniqueness of technological facilities (at least at national level) Management and sustainable development strategy Open to competitive and transparent access Cooperation with other research organisations, RI and industrial sector Quality of R&D results achieved by using the RI Potential for the development of new technologies to promote tech- 	<ul style="list-style-type: none"> RDI regional systems specificities, the distribution of the competences in the State Administration itself, and the autonomy of universities Operation and maintenance costs will be covered by the ICTS hosting institution) Funds will be available through competitive funding mechanisms for update and improvement investments, an mainly through the use of ERDF funds <p>Competitive open access for the scientific, technological, and industrial communities as well as government administrations</p>

<p>cost, higher than 10 M€, in their construction, updating, and improvement</p> <ul style="list-style-type: none"> • Management: The ICTS (Unique Scientific Technical Infrastructure) should possess appropriate management schemes in accordance with their specific characteristics. • Open to users based on competitive access. <p>The Spanish ICTS Map (2013-2016) and the current evaluation for the (2017-2020) period only accepts the inclusion of operative RIs</p>	<p>nology transfer</p> <ul style="list-style-type: none"> • Production and Performance. - The production and performance of the ICTS should be in proportion to the cost and size of the facility. • Economically sustainable (nominal operation and maintenance) <p>(detailed information in 2.3 Annex Part 1)</p>	
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Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities	x	
Planning and design of RM	x	x
Inventory/landscape analysis	x	x
Evaluation procedures	x	
Strategic decision-making	x	
Timing of national and European RM	x	x
Life cycle management	x	x
RI funding instruments	x	x
Monitoring and evaluation of RI		x
Prioritisation of RI		x

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates
<p>The roadmap "Map of unique scientific and technical infrastructures (ICTS)" was first published in 2007 and was then updated in 2013 (2013-2016). The Ministry of Economy and Competitiveness has promoted, in conjunction with the Autonomous Communities, an updated ICTS Map approved on 7 October 2014 by the Council of Scientific, Technological, and Innovation Policy. This Map will be submitted to a complete update and review at the beginning of the period of validity for each State Plan. It is accessible under:</p> <p>http://www.idi.mineco.gob.es/stfls/MICINN/Innovacion/FICHEROS/ICTS_ing.pdf [Last access: 07/2017].</p> <p>The new Map of ICTS for 2017-2020 is currently under evaluation of the RI candidates.</p>

Source: Data derived from InRoad Consultation on RI (2017).

9. Main purposes of the national RM on RI
<ul style="list-style-type: none"> • An inventory of existing RI which are unique at national level, to facilitate the access of users from the public and private sector, optimizing their use by means of public competitive and transparent access protocols. • A tool supporting and monitoring the implementation of RI • A tool to avoid redundancies and improve the coordination of different RIs working in the same field of application through the idea of distributed RIs and/or network of RIs. • To foster innovation, technology transfer and participation of the private sector in RIs • To ensure the scientific and technological competitiveness of the Spanish RIs in the international context • A guide with strategic RI priorities for setting research policy priorities • An input for funding decisions on RI between institutional, regional and national stakeholders. • A list to achieve agreement on the RI with institutional, regional and national stakeholders • A list of strategic priorities, which are foreseen for funding, mainly to improve the use of ERDF funds dedicated to RIs • A planning instrument to prepare for the negotiations at European (ESFRI) and international levels

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level	x	x	
Regional budget	x	x	x
ESIF managed at regional level	x	x	x
Research funding agencies	x	x	x
Research Performing Organisations	x	x	x
European Investment Bank			
Horizon 2020			x
Others			x

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding
<ul style="list-style-type: none"> • The National State Administration (AGE) is responsible for funding of construction, running costs, new equipment and other type of investments of those RIs included in the ICTS Map that are managed by entities dependent on them through different administration bodies (Ministries, Public Research Organizations, State Consortia, etc.) • The Regional Autonomous Communities are responsible for funding of construction, running costs and maintenance of RIs that belong to regional institutions dependent on them (universities among others). • Public Institutions with are owners of the RIs (IAC, ISCIII, CIEMAT, CSIC, among others) which covers RI construction and operation costs.

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources							
<ul style="list-style-type: none"> National and regional budget European Structural and Investment Funds (ESIF) managed at national level and assigned by MINECO ESIF managed at regional level. Research Performance Organization. In some cases, assuming the limitation of the National and Regional Budgets for the allocation of funds for all the RI are the RPOs using the budgets of the institutions 							
Research Infrastructure Life cycle	Concept Phase	Design Phase	Preparation Phase	Construction/Implementation Phase	Operation Phase	Termination Phase	Others (e.g. up-grade, re-purposing)
Funding source	1. RFOs; 2. Funding Agencies	Not only one scheme of funding (it depends on the origin of the project)	Not only one scheme of funding (it depends on the origin of the project)	Not only one scheme of funding (it depends on the origin of the project) - MINECO; - Other Ministries; - Regional Governments - ERDF	Not only one scheme of funding (it depends on the origin of the project) - MINECO; - Other Ministries; - Regional Governments	Not only one scheme of funding (it depends on the origin of the project) - MINECO; - Other Ministries; - Regional Governments	Not only one scheme of funding (it depends on the origin of the project) - MINECO; - Other Ministries; - Regional Governments
Funding instrument	- Institutional Budgets; - National/Regional Plan	-	-	-	-	-	-
Responsible funders/funding bodies	- AEI (National Research and Innovation Funding Agency); - Regional Funding Agencies	-	-	-	-	-	-
Covered costs	- personnel	-	-	-	-	-	-
Period of time covered (years)	variable	-	-	-	-	-	-

Source: Data derived from InRoad Consultation on RI (2017).

13. Details on national funding mechanisms

- In Spain, funding decisions on RI are linked with the country strategic priorities.
- There are several ways to fund RIs in Spain. The instrument in place varies according to the type of activity to be funded (construction, participation in projects, operational costs, maintenance, etc.)
- MINECO assigns ERDFs funds for improvement and update of RIs contained in the Spanish ICTS Map through collaboration agreements with the owner entities of the ICTS.
- Participation in competitive calls from the Research National Agency
- Own budget from the institutions that host the RIs

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information

Total amount (EU amount and National amount)	All Programs (€M)	
	Programs with ERDF (€M)	
EU amount	All Programs (€M)	
	Programs with ERDF (€M)	
Thematic objective 1 (Research & Innovation)	Total funds (€M)	
	ERDF (€M)	
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	
	059. Research infrastructure and innovation (private and scientific parks) (€M)	

Not applicable or no information presently available.

15. Relevant issue(s) not addressed

According to the Spanish Strategy for Science, Technology and Innovation (2013-2020), access to advanced scientific and technological infrastructures is one of the most important assets for maintaining leadership in research, increasing the specialised training capacity in RDI activities and capturing talent. The progress seen in Spain has been significant and this is reflected in the current «*National Map of Scientific and Technological Infrastructures*», which represents a key measure for the territorial development of the Spanish Science, Technology and Innovation System, by defining its profiles of scientific and technical specialisation and facilitating its integration in the European Research Area.

The opening of large scientific infrastructures is a significant effort in the sphere of international collaboration. This is also reflected by the Spain's participation in the European Strategy Forum on Research Infrastructures (ESFRI), in which Spain contribute to defining the best policies and instruments for developing and supporting those of pan-European interest which most contribute to the construction of the European Research Area.

Source: Data derived from InRoad Consultation on RI (2017).

Sweden

Research Infrastructure in Sweden: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		

Source: Data derived from InRoad Consultation on RI (2017).

2. LINK to the roadmap
https://vr.se/inenglish/researchinfrastructure/guidetoresearchinfrastructures.4.2b56827a13380c5abfd80001506.html [Last access: 08/2017]

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
x	

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation
Research Infrastructure Council	x	x	x	x	x
Universities and RPO/RFO		x		x	
Scientific Research Councils				x	
Research Infrastructure Council's scientific advisory committees				x	x
Ministry of Enterprise*					
Ministry of Environment and Energy*					
Ministry of Health and Social Affairs*					
Ministry of Education and Research*			x		
Ministry of Foreign Affairs*					

Source: Data derived from InRoad Consultation and Desk Study on RI (2017). *Including several different funding agencies/ institutes.

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning	Research Infrastructure Council
2	Call	Research Infrastructure Council
3	Landscape analysis	Research Infrastructure Council / Scientific Councils.
4	Mapping	Research Infrastructure Council
5	Eligibility Check	Research Infrastructure Council
6	Science-driven Evaluation	Research Infrastructure Council's scientific advisory committees + Scientific Councils
7	Economic evaluation	Research Infrastructure Council
8	Evaluation of societal relevance	Universities and RPO/RFO and Research Infrastructure Council
9	Decision	Research Infrastructure Council. Sometimes in cooperation with Swedish government
10	Validation	Research Infrastructure Council

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> Support from the Research Council will normally cover a maximum of half the cost of the infrastructure Upper limit for Swedish Research Council funding for national infrastructure is eight years 	<ul style="list-style-type: none"> Scientific relevance National interest Strategic considerations <p>(detailed information in 2.3 Annex Part 1)</p>	<ul style="list-style-type: none"> High-class infrastructure that is used by the best researchers in each area National interest and the financial stability of the infrastructure

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities	x	x
Planning and design of RM		x
Inventory/landscape analysis	x	
Evaluation procedures	x	x
Strategic decision-making	x	
Timing of national and European RM		x
Life cycle management		x
RI funding instruments	x	
Monitoring and evaluation of RI	x	x
Prioritisation of RI	x	x

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates

After the publication of the 2014 roadmap - **Swedish Research Council's Guide to Infrastructures**: <https://publikationer.vr.se/produkt/the-swedish-research-councils-guide-to-research-infrastructures-2014/> [Last access: 08/2017] – Sweden started to implement a new model for financing RI. The implementation also included a new roadmap strategy.

In 2015 a broad inventory of RI needs was carried out. The inventory resulted in the identification of new RI within specific areas that were ready for a call in 2017. The inventory also identified RI needs that were scientifically motivated but not yet developed enough for a call. The results were published in 2016 as an appendix to the 2014 roadmap.

The inventory is currently repeated, starting in 2017 and finalized in 2018. At the same time the Swedish roadmap will be updated. This procedure means that:

- The inventory of RI needs will result in a biannual updated list of specific infrastructures that are scientifically motivated. The result will be published every second year as an appendix to the roadmap
- The roadmap itself will be updated every fourth year. The roadmap will be strategic, pointing out areas, but not specific RI, where new needs of RI is supposed to develop.

The procedure is supposed to, at least partly, decoupling the discussion of overarching scientific development and the general need for RI that this development drives from the identification of specific infrastructures and the financing process. Hence, the aim is to let the scientific needs to take the lead in the process.

The Swedish Research Council's Guide to Infrastructures (and its appendix) is part of the knowledge base compiled by the Swedish Research Council on which the Government can base its decisions regarding the upcoming Government Bill on Research Policy and its priorities within scientific councils and committees. It is also a useful reference tool for the research sector.

The National Roadmap will be updated in 2018.

Source: Data derived from InRoad Consultation on RI (2017).

9. Main purposes of the national RM on RI

- An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level	x		
Regional budget	x		
ESIF managed at regional level			
Research funding agencies	x	x	x
Research Performing Organisations	x	x	x
European Investment Bank			
Horizon 2020	x	x	x
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding
<ul style="list-style-type: none"> The Swedish Research Council, Infrastructure Council through Grants 2-8 year. Universities, Research organisations through 50% minimum co-funding

12. RI Funding Sources
<ul style="list-style-type: none"> National budget in most cases European Structural and Investment Funds (ESIF) managed at national level, used in very little extent Regional budget, most often of minor importance Research Funding Agencies Research Performance Organisation

Source: Data derived from InRoad Consultation on RI (2017).

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, re-purposing)
Funding source	-	-	-	-	-	-	-
Funding instrument	-	-	-	-	-	-	-
Responsible funders/funding bodies	-	-	-	-	-	-	-
Covered costs	-	-	-	-	-	-	-
Period of time covered (years)	-	-	-	Up to 8 years	-	-	-

* Not answered.

13. Details on national funding mechanisms
<ul style="list-style-type: none"> In Sweden, funding decisions on RI are linked with the country's strategic priorities. The road map will (2015 and onwards) be linked to a bi-annual inventory of RI needs and the inventory is basis for the infrastructure councils calls. In Sweden the design of funding instruments is not made for their potential combination with others. Sweden is not exploring new or additional instruments or mechanisms to fund RI.

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information		
Total amount (EU amount and National amount)	All Programs (€M)	7,980,0
	Programs with ERDF (€M)	1,899,9
EU amount	All Programs (€M)	3,647,2
	Programs with ERDF (€M)	945,0
Thematic objective 1 (Research & Innovation)	Total funds (€M)	356,7
	ERDF (€M)	261,1

Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	50,2*
	059. Research infrastructure and innovation (private and scientific parks) (€M)	6,1*

* Data under evaluated; some documents not found. Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 08/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 08/2017].).

15. Changes of funding schemes of RI
Sweden has recently changed the funding scheme of RI. The system is always under continuous development. New changes will be discussed during the upcoming fall. They will anyway not be major, only concerning adjustments of the current model.

Source: Data derived from InRoad Consultation on RI (2017).

Switzerland

Research Infrastructure in Switzerland: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
X		

Source: Data derived from InRoad Consultation on RI (2017).

2. Link to the roadmap
https://www.sbf.admin.ch/dam/sbf/en/dokumente/schweizer_roadmapfuerforschungsinfrastruktur_enimhinblickaufdiebf.pdf.download.pdf/swiss_roadmap_forresearchinfrastructuresinviewoftheeridispach20.pdf [Last access: 01/2018].

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
	X ²⁰

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure						
	Responsibility for RM	Decision-making	Funding	Scientific evaluation	Economic evaluation	Research policy and societal evaluation
State Secretariat for Education, Research and Innovation (ministry)	X		X ²¹			X
ETH Board and swissuniversities (representatives of the higher education institutions, i.e. federal institutes of technology and universities)		X				X
Higher education institutions	X		X			

²⁰ The definition is very close to the ESFRI definition.

²¹ In general RI are not financed by the State Secretariat for Education, Research and Innovation (SERI). However, the law allows the SERI to participate financially under particular conditions.

Swiss National Science Foundation (main Swiss funding agency)				x		
Swiss Academies						

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Collection of all RI proposals	ETH Board and swissuniversities
2	Pre-selection of RI proposals based on internal strategy	ETH Board and swissuniversities
3	Scientific evaluation of RI proposals selected in point 2 above	Swiss National Science Foundation
4	Based on evaluation results the responsible players evaluate the proposals again focusing on management, governance and finance plan.	ETH Board and swissuniversities
5	Funding-decision	ETH Board and swissuniversities
6	Implementation and funding	Host institution (mostly ETH and universities)

Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> Being a new RI or a major update Being in the preparatory phase Minimal cost of CHF 5 Mio Selection by the responsible organ (part of their strategy). 	<ul style="list-style-type: none"> National relevance Quality of the infrastructure, of the research, and of the researchers involved Scientific quality Need Accessibility (detailed information in 2.3 Annex Part 1)	<ul style="list-style-type: none"> Planning (life cycle) Governance and management structure Financial aspects

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM		
Inventory/landscape analysis	x	x
Evaluation procedures	x	x
Strategic decision-making	x	
Timing of national and European		

RM		
Life cycle management		
RI funding instruments	x	
Monitoring and evaluation of RI		
Prioritisation of RI		

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates

The national research infrastructures roadmap for Switzerland is conceived as a planning tool to coordinate political and funding decisions about RI. A first edition of the roadmap was produced in 2011 as an input to the 2013-2016 strategic plan ("Education Research Innovation (ERI) dispatch"). The 2015 RI roadmap was published in summer 2015 and constitutes the basis for the integration of RI in the strategic plan 2017-2020 (SERI 2015). (Lepori, Ureta and Alberton: 2016, p. 44)

9. Main purposes of the national RM on RI

- A (bottom-up) list of the scientific user community on desired RI
- An input for funding decisions on RI between institutional, regional and national stakeholders
- A list of strategic priorities, which are foreseen for funding
- Coordination instrument to respond to the needs related to RI at national level

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget		x ⁺	x ²²
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level			
Regional budget	x	x	x
ESIF managed at regional level			
Research funding agencies			
Research Performing Organisations			
European Investment Bank			
Horizon 2020			
Others			

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding

- Swiss government (only for institution of the ETH domain, i.e. federal institutions) through Cash, investment
- State Secretariat for Education, Research and Innovation through direct contribution (max 50% of total costs for RI of national importance)

Source: Data derived from InRoad Consultation on RI (2017).

²² See note (*) from Table 3 regarding national funding for RI.

12. RI Funding Sources							
<ul style="list-style-type: none"> National budget through direct subsidiary contribution for infrastructures of national importance (max 50%); Member States contributions to intergovernmental RI; Regional budget through Cantonal institutions; Research funding agencies that is used in some specific programs; European Investment Bank for Intergovernmental RI (CERN, ESO, ESRF, etc.) through loans dedicated "cash facilities"; H2020 that depends on the relevant Horizon 2020 Work Programme; European Fund for Strategic Investments, European Structural and Investment Funds (ESIF) managed at national and regional level, research performing organizations is not used. 							

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/ Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, re-purposing)
Funding source	1. Regional budget	1. Regional budget	1. Regional budget	1. Regional budget; 2. National budget. (RI of national importance)	1. Regional budget; 2. National budget. (RI of national importance)	1. Regional budget	
Funding instrument				- National budget: Article 15 of the Federal Act on the Promotion of Research and Innovation	- National budget: Article 15 of the Federal Act on the Promotion of Research and Innovation		
Responsible funders/ funding bodies	- Institutions (universities)	- Institutions (universities)	- Institutions (universities)	Institutions (universities); - State secretariat (national budget)	Institutions (universities); - State secretariat (national budget)	- Institutions (universities)	
Covered costs							
Period of time covered (years)	variable	variable	variable	variable	variable	variable	-

Not applicable or no information presently available.

13. Details on national funding mechanisms							
<ul style="list-style-type: none"> Switzerland funding decisions on RI are linked with the country's strategic priorities RI must be of "national importance" and must have run through the evaluation process of the national roadmap (e.g. RI that were proposed for the implementation by the responsible body) The design of the different funding instruments in Switzerland does not take into consideration their potential combination with other instruments Switzerland is currently not exploring or planning any new or additional instruments or mechanisms to RI at the country level 							

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information		
Total amount (EU amount and National amount)	All Programs (€M)	N/A
	Programs with ERDF (€M)	N/A
EU amount	All Programs (€M)	N/A
	Programs with ERDF (€M)	N/A
Thematic objective 1 (Research & Innovation)	Total funds (€M)	N/A
	ERDF (€M)	N/A
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	N/A
	059. Research infrastructure and innovation (private and scientific parks) (€M)	N/A

Not applicable or no information presently available.

15. Changes of funding schemes of RI
Switzerland does not plan any changes for the funding scheme of RI.

Source: Data derived from InRoad Consultation on RI (2017).

United Kingdom

Research Infrastructure in the United Kingdom: Fact sheet



1. Is there a National Roadmap for RI in place?		
Yes	No	In planning
x		x (update in progress, to be published in spring 2019)

Source: Data derived from InRoad Consultation on RI (2017).

2. LINK to the roadmap
https://ec.europa.eu/research/infrastructures/pdf/roadmaps/uk_national_roadmap.pdf#view=fit&page=1 [Last access: 08/2017].

Source: Data derived from InRoad Consultation on RI (2017).

3. RI definition deviates from ESFRI RI definition (If yes, please check RI definition in the Annex).	
Yes	No
x	

Source: Data derived from InRoad Consultation on RI (2017).

4. Players and their responsibilities in the national RM procedure					
	Responsibility for RM	Decision-making	funding	Scientific evaluation	Economic evaluation
Department for Business, Energy and Industrial Strategy	x	x	x		x (support)
UKRI (including Research Councils UK, Innovate UK, Research England from April 2018)	x	x	x	x	x
HM Treasury		x	x		

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

5. Steps and Actions in the national RM Procedure		
Step	Action	Responsible actor
1	Planning/ Preparation of Guidelines	UKRI (including Research Councils UK, Innovate UK, Research England from April 2018) – roadmap update in progress, all steps below included but not necessarily in this order and as part of the same exercise.
2	Call	
3	Landscape analysis	
4	Mapping	
5	Eligibility Check	
6	Science-driven Evaluation	
7	Economic evaluation	
8	Evaluation of societal relevance	
9	Decision	As in section 4.

10	Validation	
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Source: Data derived from InRoad Consultation on RI (2017).

6. Criteria of the decision-making process in the RM procedure		
Eligibility criteria	Evaluation criteria	Feasibility criteria
<ul style="list-style-type: none"> New criteria being developed for 2019 Roadmap. 	<ul style="list-style-type: none"> Strategic review Strategic plan and programme evaluations Inform future investments <p>New criteria being developed for 2019 Roadmap. (detailed information in 2.3 Annex Part 1)</p>	<ul style="list-style-type: none"> Performance and output Strategic value and synergies Alignment with programme and corporate strategies Coherence and synergies with other programmes including international subscriptions Importance to key stakeholders Excellence and scientific importance Timeliness and international relevance <p>New criteria being developed for 2019 Roadmap.</p>

Source: Data derived from InRoad Consultation and additional documents provided through the Consultation on RI (2017).

7. Towards harmonisation and synchronisation of RM Procedures		
The respondents are interested in...	...an exchange of experience for the following topics.	...increased coordination for the following topics.
Involved players and responsibilities		
Planning and design of RM	x	x
Inventory/landscape analysis	x	x
Evaluation procedures	x	
Strategic decision-making	x	
Timing of national and European RM	x	x
Life cycle management	x	x
RI funding instruments	x	x
Monitoring and evaluation of RI	x	x
Prioritisation of RI	x	x

Source: Data derived from InRoad Consultation on RI (2017).

8. Timelines and Life-cycles: Publication and updates
<p>A Roadmap was published in 2010, updated in 2012. See 'Investing for growth: Capital Infrastructure for the 21st Century' LARGE FACILITIES ROADMAP 2010.</p> <p>Update in 2012: Investing for growth: Capital Infrastructure for the 21st Century http://www.rcuk.ac.uk/documents/publications/rcukframeworkforcapitalinvestment2012-pdf/ [Last access: 08/2017].</p> <p>The Roadmap is an overview of research facilities that are under construction or planned by Research Councils UK (RCUK) and of other emerging facilities - in the UK or overseas - that are cur-</p>

rently considered to be the highest priorities for UK research.

Creating the Future: a 2020 vision for science and research (2014):

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/321522/bis-14-757-consultation-on-proposals-for-long-term-capital-investment-in-science-and-research-v2.pdf

[Last access: 08/2017]. A Consultation on Proposals for Long-Term Capital Investment in Science & Research.

The next national Roadmap is currently under preparation, to be published in spring 2019, and is wider in scope looking at RIs funded from sources other than RCUK.

Source: Data derived from RM, Desk Study, ESFRI Homepage.

9. Main purposes of the national RM on RI

- An identification of scientific needs and existing gaps responding to the changing R&D and socio-economic demands
- A planning instrument to support preparation for future investment within the UK and the negotiations at European (ESFRI) and international levels

Source: Data derived from InRoad Consultation on RI (2017).

10. Organisation and main indicators for funding of RI

	Planning	Construction	Operation
National budget	x	x	x
European Fund for Strategic Investments (EFSI)			
European Structural and Investment Funds (ESIF) managed at national level			
Regional budget			
ESIF managed at regional level			
Research funding agencies	x	x	x
Research Performing Organisations			
European Investment Bank			
Horizon 2020	x	x	x
Others (UK RI funded by structural funds)	x	x	x

Source: Data derived from InRoad Consultation on RI (2017).

11. Responsible Organism(s) for RI Funding

- HM Treasury
- Department for Business, Energy and Industrial Strategy
- UK Research and Innovation (UKRI) will start operating in April 2018. UKRI will include the 7 Research Councils (AHRC, BBSRC, EPSRC, ESRC, MRC, NERC, STFC), Innovate UK and the research and knowledge exchange functions of HEFCE (England only). This will create a single strategic research and innovation funding body.

Source: Data derived from InRoad Consultation on RI (2017).

12. RI Funding Sources

- National budgets
- Research Funding Agencies
- H2020

Source: Data derived from InRoad Consultation on RI (2017).

Research Infrastructure Life-cycle	Concept Phase	Design Phase	Preparation Phase	Construction/Implementation Phase	Operation Phase	Termination Phase	Others (e.g. upgrade, re-purposing)
Funding source	-	-	-	-	-	-	-
Funding instrument	-	-	-	-	-	-	-
Responsible funders/funding bodies	-	-	-	-	-	-	-
Covered costs	-	-	-	-	-	-	-
Period of time covered (years)	-	-	-	-	-	-	-

* Not answered.

13. Details on national funding mechanisms

- Funding decisions on UK RI are linked with the country's strategic priorities.
- There is the potential combination of funding instruments, in some cases, in particular in large scale RI.
- Yes, the UK is currently exploring or planning any new or additional instruments or mechanisms for funding RI. There is a constant process of updating as part of the strategic review, programme evaluation, and monitoring of RIs.

Source: Data derived from InRoad Consultation on RI (2017).

14. National Operational Program Information

Total amount (EU amount and National amount)	All Programs (€M)	27,277,9
	Programs with ERDF (€M)	10,305,4
EU amount	All Programs (€M)	16,407,1
	Programs with ERDF (€M)	5,825,4
Thematic objective 1 (Research & Innovation)	Total funds (€M)	1,592,9
	ERDF (€M)	1,419,0
Investment category - ERDF	058. Research infrastructure and innovation (public) (€M)	5,4
	059. Research infrastructure and innovation (private and scientific parks) (€M)	18,5

Funding information of research infrastructures covering the period 2014-2020 gather inputs from the consultation survey, as well as from the Open Data Portal for European Structural and Investment Funds from the European Commission (<https://cohesiondata.ec.europa.eu/> [Last access: 08/2017]) and the Operational Programmes, for the categories of investment 058. and 059. (dedicated to research infrastructures) (http://ec.europa.eu/regional_policy/en/atlas/programmes/ [Last access: 07/2017]).

Annexes

Annex Austria Part 1: Evaluation and monitoring procedure

Pertinent information has not been found. The roadmap is only available in German.

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Not applicable or no information presently available.

2.2. Eligibility conditions

Not applicable or no information presently available.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

Not applicable or no information presently available.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

Not applicable or no information presently available.

2.5. Proposals evaluated and selected (available statistics)

Not applicable or no information presently available.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

Not applicable or no information presently available.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

Not applicable or no information presently available.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Not applicable or no information presently available.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

Not applicable or no information presently available.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex Austria Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	x
Categorisation of RI	
Access to RI	
Organisation within national procedure	
<p>Research Infrastructures include facilities, resources and related services used by researchers for research in their respective fields. This definition covers large-scale devices and Instruments for research, scientific knowledge for research such as collections, archives or structured information, infrastructures information and communication technology such as GRID networks, computers, software and communication systems as well as other unique facilities, which are essential for research. The RI can be single-sited or distributed. (BMWFW, 2017)</p>	

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 1.

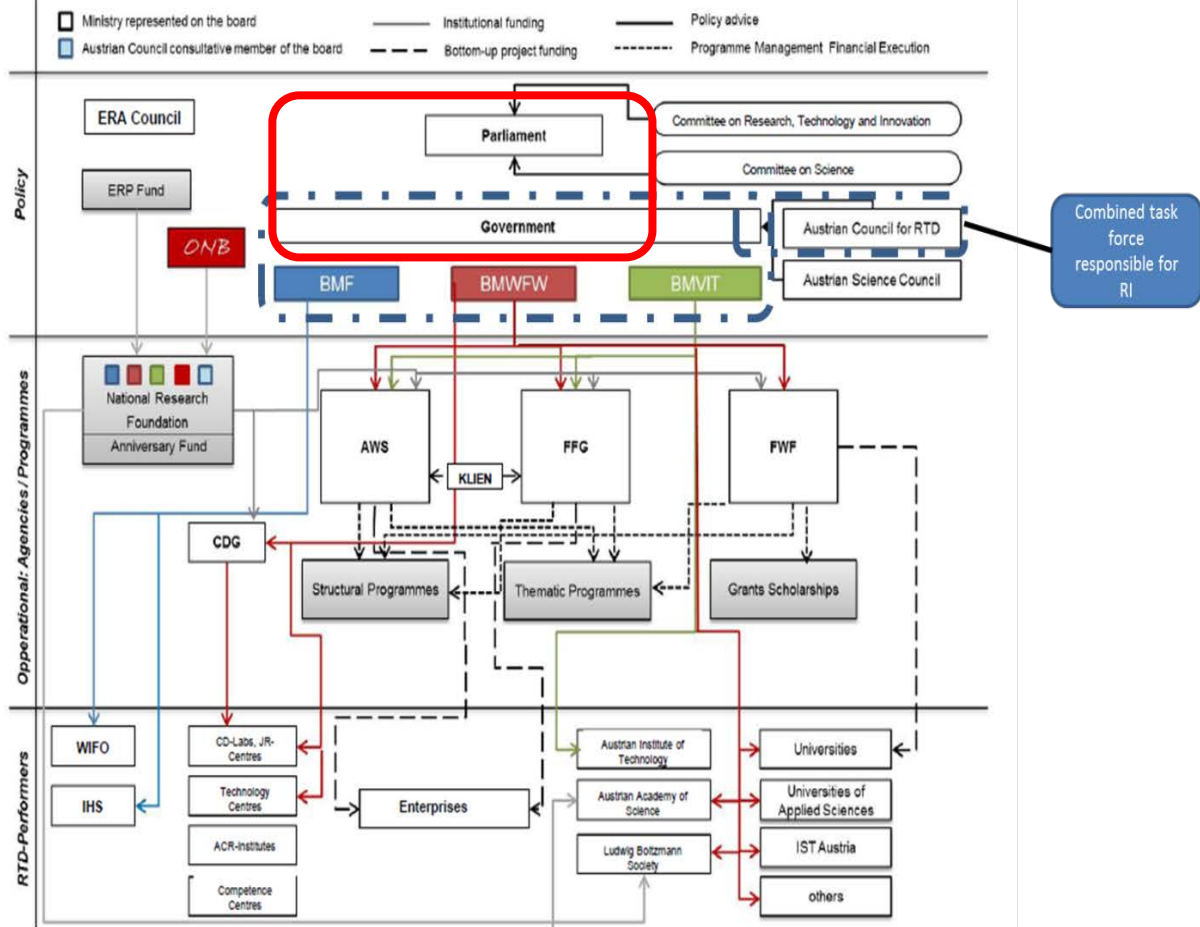


Figure 1: Structure of the Austrian Research System.

Legend: ACR-Institutes (Austrian Cooperative Research Institute), AWS (Austria Wirtschaftsservice), BMF (Ministry of Finance), BMVIT (Ministry of Transport, Innovation and Technology), BMWFW (Ministry of Science, Research and Economy), CDG (Christian Doppler Research Society), CD Labs (Christian Doppler Laboratories), FFG (Austrian Research Promotion Agency), FWF (Austrian Science Fund), IHS (Institute for Advanced Studies), IST Austria (Institute of Science and Technology Austria), JR-Centres (Josef Ressel Centres), KLIEN (Climate and Energy Fund), ÖNB (Austrian Federal Reserve), WIFO (Austrian Institute of Economic Research)

Figure 1: Organisational chart of the R&I system of Austria (Schuch and Gampfer, 2016 , p. 20). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

Austria wants to provide excellent research conditions and share these competencies at European level. High-tech RI are indispensable for the further development of Austria as a research, technology and innovation location. However, RI doesn't only include technical equipment for research, but is also a hub for communication and essential for the training of young scientists and technicians. (AG FTI, 2014, p. 5)

Embedding of RI in the national R&I system

A combined task force (FTI) consisting of the Federal Chancellery, BMF, BMVIT, BMWFW and the Austrian Council for Research and Technology Development (RFTE) is responsible for RI (EUROPEAN COMMISSION, 2016, p. 4).

3. RI in the National R&I System

R&I policy and public financing in Austria is comparably centralised at the national level. The Federal Ministry for Science, Research and the Economy (BMWFW) is responsible for the university sector and scientific research. The Federal Ministry of Transport, Innovation and Technology (BMVIT) is in charge for applied research and technology development. The Federal Ministry of Finance (BMF) has an important role in the allocation of funds and providing a framework. The Austrian Council for Research and Technology Development (RFTE) is a member of the government's governing body and is financed by the BMVIT. The Council's task is to provide systematic, independent and in-depth advice to the Austrian Federal Government on all aspects of research, technology and innovation (RTI) policy, as well as the development of long-term RTI-strategies and their implementation. Furthermore it is responsible for the preparation of proposals for the national funding programmes and for improving the cooperation between science and industry. (Schuch and Gampfer, 2016, pp. 15-18)

4. Major national strategies for international cooperation in R&I and strategic integration of RI

The Austrian Federal Government launched its Strategy for Research, Technology and Innovation for the next decade on 8 March 2011. According to its thematic naming "Realising Potential, Increasing Dynamics, Creating the Future: Becoming an Innovation Leader", the strategy addresses measures to strengthen national research structures with a focus on excellence, to foster the innovative capacity of companies, allow for thematic priority setting, raise the efficiency of governance, and link research, technology and innovation to the education system. The strategy should also help to mobilise research, technology and innovation for the grand challenges of society and the economy. (InRoad Consultation, 2017)

References

- Arbeitsgruppe der Task Force FTI der österreichischen Bundesregierung (2014) Österreichischer Forschungsinfrastruktur-Aktionsplan 2014-2020. <<https://www.bundeskanzleramt.at/DocView.axd?CobId=54964>> [Last access: 09/2017].
- European Commission (2016) ERA PROGRESS REPORT 2016. COUNTRY SNAPSHOT. <<https://era.gv.at/object/document/3004/attach/era-at.pdf>> [Last access: 09/2017].
- Federal Ministry of Science, Research and Economy (BMWFW) (2017) <https://forschungsinfrastruktur.bmwfw.gv.at/en/faqs-downloads/faqs/description-of-the-research-infrastructure> [Last access: 09/2017].
- Schuch, K. and R. Gampfer (2016) RIO COUNTRY REPORT 2015: Austria. https://rio.jrc.ec.europa.eu/sites/default/files/riowatch_country_report/AT_CR2015.pdf [Last access: 09/2017].

Further links

- Search engine for research infrastructures in Austria. <https://forschungsinfrastruktur.bmwfw.gv.at/en> [Last access: 09/2017].
- Strategy for research, technology and innovation of the Austrian Federal Government. https://era.gv.at/directory/158/attach/RTI_Strategy.pdf [Last access: 09/2017].

Annex Belgium Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment
1.1. Methodology and procedures conducted (if applicable)
Not applicable or no information presently available.
2. Procedure for selection of the research infrastructures to be included in the roadmap
2.1. Objectives of the evaluation
Not applicable or no information presently available.
2.2. Eligibility conditions
Not applicable or no information presently available.
2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap
Not applicable or no information presently available.
2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap
Not applicable or no information presently available.
2.5. Proposals evaluated and selected (available statistics)
Not applicable or no information presently available.
3. Update / Monitoring and ex-post Evaluation of RI Roadmap
3.1. Objective of the monitoring of the RI national roadmap as a whole
Not applicable or no information presently available.
3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)
Not applicable or no information presently available.
3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap
Not applicable or no information presently available.
3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap
Not applicable or no information presently available.
3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented
Not applicable or no information presently available.

Annex Belgium Part 2: National Embedment

1. RI definition	
Categories	National Roadmap
Funding	
Categorization of RI	
Access to RI	
Organisation within national procedure	

2. RI players in the national R&I system
<p>Belgium is a federal country composed of autonomous entities: the Federal State, three Regions (Flemish, Wallonia, Brussels) and three Communities (Flemish, French, German-speaking). Each entity elects its own Government and Parliament and establishes all regulations and institutions necessary to ensure effective Government within its realm of responsibilities (the Flemish Region and Community merged to form a single entity).</p> <p>Science policy is a competence distributed among all Belgian entities according to the themes or to the actors it involves.</p> <p>In a few words, the Federal authority is competent for the scientific research necessary for it to perform its own general competences (space, climate, Antarctic, nuclear research, etc.), including research linked to international or supra-national agreements. It is also responsible for the Federal scientific institutes. It can launch programmes and actions requiring homogenous execution at national or international level.</p> <p>Communities have the main responsibility for fundamental research in universities and applied research in higher education establishments, including international activities of these institutions.</p> <p>Regions have the main responsibility for economically oriented research, technological development and innovation promotion.</p> <p>Co-ordination between the Belgian entities is organised in a permanent way. The Inter-Ministerial Conference on Science Policy, composed of the members of Governments responsible for science policy matters, is the co-ordination instrument used for concerted action at national level. Subcommittees of the Inter-Ministerial Conference on Science Policy were established at the ministry level to follow-up all relevant files requiring a co-ordinated national position.</p> <p>More information about the Belgian institutions and their competences can be found in the "Belgian report on science, technology and innovation". (Belspo, 2010)</p>

3. Major national strategies for international cooperation in R&I and strategic integration of RI
Not applicable or no information presently available.

References

- Belspo (2010) Belgian Report on Science, Technology and Innovation 2010 <http://www.belspo.be/belspo/organisation/publ/pub_ostc/BRISTI/Bristi_tome1_2010_en.pdf> [Last access: 01/2018].

Annex Bulgaria Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

The first National Roadmap for Research Infrastructure (NRRI) of the Republic of Bulgaria was adopted in 2010 by Council of Ministers' Decision No.692 and it defined the national needs in the field of research infrastructure (RI). The Roadmap, which is linked to the ESFRI priorities, derived from the priorities of the European Strategy for RI of the EU member states.

With Council of Ministers' Decision No.569 on 31 July 2014 the NRRI was updated by reviewing and evaluating existing and new RI, as well as identifying those that are in line with the European priorities and outlining priorities for modernization and/or construction of new scientific facilities.

For the new roadmap in 2017, a Diagnostic Review of RI and Equipment in Bulgaria was planned and concluded in April 2017. Four broad research areas fell in the scope of the report, namely: (i) Physics, Material Sciences and Engineering; (ii) Medical and Agro-Bio Sciences; (iii) Social and Humanitarian Science; (iv) E-infrastructure for multidisciplinary research. These areas cover well the entire spectrum of research areas in which the Bulgarian science has traditional strengths and, at the same time, new R&D research could serve as a strong basis for the development of knowledge-based competitive economy.

The available research labs and equipment in these fields in the respective universities and research institutes were studied, as well as the human capacity and the financial resource. SWOT analysis was added to the full picture of the assessment, and in addition to that a regional analysis for specialization in the four mentioned research areas was presented.

The most important findings coming from the Diagnostic Review were:

- There were 12 existing infrastructures with European significance (7%), 84 with national (52%) and 65 with regional significance (40%)
- Insufficient modern infrastructures, which must meet the current requirements for RI
- Inadequate management of existing research facilities, inefficient workload and maintenance
- Irregular territorial and thematic distribution of the RI
- Inadequately qualified staff to support research equipment
- Financial instability and inadequate engagement of the private sector
- Some potential, but also regional gaps, to support Bulgaria's smart specialisation strategy

The Diagnostic Review concluded that there is uneven regional distribution of research equipment and scientific potential. The strategy is aimed at supporting the most developed infrastructures with potential in the thematic areas of IS3 at national and regional levels. The above mentioned regional analysis and the conclusions will be taken into consideration when preparing future calls for funding under ESIF.

The Diagnostic Review supports the planning of the next stages of RI development in Bulgaria. Scientific research in the country requires building and effective use of modern and sustainably maintained research infrastructure. In addition, researchers should be given access to key unique RI abroad, which is not possible or is unsuitable to build in the country. The following principles are laid down:

- Avoid duplication of unique and expensive research equipment;
- Ensure high workload of the research infrastructure and access of interested users;
- Maintain the available infrastructure in a good working condition;
- Provide balanced allocation of RI by institutions and regions;

Ensure Pan-European RI integration.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Not applicable or no information presently available.

2.2. Eligibility conditions

Not applicable or no information presently available.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

The assessment criteria of the individual RI will include, overall, the following components:

- Demands and benefits of their scientific research
- Development, maintenance and usage of research apparatuses and equipment
- Scientific quality of the research and key beneficiaries of the research results (assessed through publications, patents, citations, number of consumers)
- Institutional capacity (composition of the scientists, who perform the scientific research; availability of habilitated staff; number of PhDs, age profile, etc.)
- Management of Programs for scientific research, financed on a competitive basis from national and international sources (number of current program and projects)
- Activity in attracting funding from different sources
- Social-economic benefits and relevance of the research results (availability of created product, technology, methodology, etc.)

Established partnerships – national, regional and European

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

Standing Committee for NRRI: Structure, competences, and decision making mechanism

The general implementation of the national roadmap and the development of the individual RI will be subject to regular national and international Monitoring & Evaluation (M&E). It will include a general review of the implementation of the NRRI policies at a national level, as well as corrective measures and possibilities for introduction of new instruments and schemes. The efficiency of the individual RI participation in the European roadmap and the implementation of their research and technological programs and activities will be monitored and evaluated.

For the overall monitoring of the implementation of the NRRI a new Standing Committee (SC) will be constituted as a consultative body to the Minister of Education and Science. The Standing Committee consists of:

- Deputy Minister (MES)
- Science Directorate at MES
- Representatives of nationally represented business Organisations
- Representatives of BAS
- Representatives of the Council of Rectors
- Representative of NSF
- Representative of Bulgaria in ESFRI
- Representatives of the Ministry of Economy
- Representative of General Directorate "Structural Funds and International Educational Programmes"
- Representative of National Innovation Fund
- Representative of General Directorate "European Funds for Competitiveness" at ME – managing authority of OP IC
- Independent experts

The main competences of the Standing Committee are:

- The implementation of NRRI (monitors, makes recommendations, prioritizes during conditions of financial resources shortage, and controls)
- Establishing a mechanism for financial resources allocation
- Assisting the Ministers in making decisions
- Reporting to the Minister the results of the annual assessment of the methodology
- Proposing certain decisions to the Minister, based on the report submitted by the NSF for the financial implementation of NRRI
- The preparation of an annual report on the NRRI
- Requiring (reviews) independent experts' opinions
- Reviewing and making decision related to the interim evaluation of NRRI, assigned by MES
- External evaluators from EB of NSF
- Reviews and acceptances of the report, prepared by the Science Directorate and the NSF on the

self-assessments

The assessment of the RI in the national roadmap will be conducted in compliance with the methodology for review and assessment of the social and economic effects for the development of RI in the national roadmap (see below) at three stages:

- 1) Self-assessment, based on expert cards, developed by international evaluators;
- 2) Annual assessment about social and economic impacts of the RI by individual experts, hired by the Ministry of Education and Science, and
- 3) Scientific and financial peer review by independent and international evaluators, hired by the National Science Fund.

These peer reviews will be approved by the Executive Council of the National Science Fund and will be presented together with the Plan for financing to the Standing Committee of NRRI.

The same order, including a methodology for assessment as per ESFRI criteria (see below), will be imposed when new RI are included or existing RI are excluded from the National Roadmap. New national RI could be proposed for the national roadmap, based on regular international assessment or/and upgrade of the existing scientific complexes with national and European significance. The inclusion of new and/or upgraded consortiums will start with the development of a detailed project for construction and modernization of specific RI, when a new call is announced for new RI. Each new project will undergo an international expert assessment. Based on these assessments, one will be able to upgrade the existing research complexes with European and national significance, as well as to add new national RI.

The RI, which have been established under Strategic Goal 1 of the Operational Program for Science and Education for Smart Growth (Centres of Excellence and Centres of Competence), will be directly included in NRRI, as these projects would be approved by a high level of international evaluation procedure and prioritised for further national support. The same procedure will be applied for those Bulgarian research groups, participating in RI projects of Program Horizon 2020. The budget for implementation of the NRRI will be part of the budget for science of the Ministry of Education and Science, and it will be spent through the Annual Operational Program of the NSF. The Standing Committee will propose annually the financial distribution for the individual RI in NRRI.

Methodology for review and assessment of the socio-economic effect from development and maintenance of RI in the national roadmap

1. Evaluation of the effect of:

- The scientific programme for the organisation itself
- The scientific programme for the team
- The plan and the exploitation of scientific results for the economy
- The potential of scientific results on the market
- The benefits for the related to these scientific results economic fields
- Evaluation on the type of infrastructure regarding the group of the resources
 - i. "concentrated" – concentrated at one place in one resource
 - ii. "distributed" (organized as a network of resources)
 - iii. "virtual" (the service is provided electronically)

2. Measuring (qualitatively and quantitatively) the effect of:

2.1. Verifying and proving the relevance and practical accessibility of the selected target at the specific internal and external conditions:

- Analysis of the internal environment (legal status of the organisation; available human and financial resources; strategic and plan documents; achieved results);
- Evaluation of the organisation's goals regarding the external macro-economic factors information and (PEST and SWOT analysis);
- Mission; strategic and specific goals of the sought improvement/expansion of the R&D infrastructure to achieve the set goal;
- Scientific programme of the organisation/team to achieve the set goal;
- Involved human resources to achieve the set goal (including a programme for encouraging the involvement of young scientists and researchers in R&D; attracted Bulgarian and foreign leading experts, involved in R&D);
- Motivation of the organisation's team to achieve the set goal.

2.2. Detailed description of the provisioned R&D for achieving the set goal/and (data base system):

- Plan-table of R&D events;
- Plan-table of the R&D process;
- Optimisation model, optimisation task and optimization of R&D infrastructure;
- Plan-table for accounts of the types of R&D products under the scientific programme by years for planning account;
- Tables for revenues, expenditures and gross profit by months and years of the planning horizon;
- Money flows by months and years of the planning horizon

2.3. Degree of coverage of the area/specialization of the services provided to us with the priority sectors, activities and profile of the potential beneficiaries, set out in:

- Innovation Strategy for Smart Specialization
- Operational Programme "Innovations and Competitiveness" (OPIC)
- Others ...

3. *Justification of the necessary financial resource (construction, maintenance, creation of a network/s, participation in international R&D) according to the potential of scientific results, sought by:*

3.1. the market (by economic sectors) and the society (human resources, incl. education; security; public processes and attitudes; health care; ecology)

3.2. assessment of the value of the invested public funds – return (short-medium-long term)

4. *The influence of this infrastructure on different sectors to create new scientific knowledge in the field of:*

- Promotion of the technology transfer and development of the natural, technical, social sciences, humanities, and innovations;
- Solving important problems in the field of economy, education (ecology, human resources, security, defense and health (health care, education, public processes, economy, environment, agriculture, defense and security, ecology, cultural and historical heritage, etc.)

5. *Proving the anticipated socio-economic effect of the planned investments for this purpose:*

• *Report – assessment of the socio-economic efficiency of the investment (anticipated results for protection of the public interest), including, for example, the expected:*

- Number of project groups/ number of projects;
- Number of patent applications;
- Number of patents;
- An average number of anticipated users of R&D infrastructure;
- Number of „spin-off“ (newly emerged) companies;
- Number of transferred technologies;
- Participation in international research and added value to the state from this participation
- Etc.

6. *Clearly defined criteria and indicators for evaluation of the implementation of the business plan for development of R&D infrastructure*

6.1. Conditions and ways to use the RI:

- Degree of defining / defined equipment and offered services
- Degree of defining the access policy by the basic research projects or programs.
- Availability of written and public rules/conditions for using the RI
- Availability of public authority/body/council and mechanism, used by it for evaluation and selection of projects, organisations and separate researchers for using the capabilities of RI
- Availability of research and description/definition of the scientific communities (customers) and their needs
- To what extent/Degree RI covers the needs of the scientific communities (customers) and their needs
- To what extent/ Degree RI is overlapping with the existing research organisations, entities, programs and projects

6.2. Uniqueness and compatibility of RI

- Degree of compatibility of RI and European research infrastructures

- Degree of duplication with other RI (as equipment, services, policies), included in the roadmap
7. *Marketing strategy for the promotion of the scientific results from the expansion of R&D infrastructure*
8. *Indicators for preliminary assessment of "pan-European significance" of the RI*
- 8.1. Key indicators for evaluation of the partners' involvement
- Number and share of national and international partner organisations (members), committed to shareholding in construction or during operations, related with RI
 - Maturing/Internationalizing of RI and/or of its individual members
 - Number of units of Distributed RI, the partner facilities
 - Analysis of RI management
 - Structure of commitments to the (a) construction and (b) exploitation of RI (in cash and/or in kind)
 - Estimated value of the national centers, contributing to RI for (a) construction and (b) exploitation (cash and/or in kind)
- 8.2. Consumers strategy
- Percentage participation of potential consumers of RI (percent of scientists from the country in a certain field, geographical distribution of RI units); distribution of RI in different scientific fields, interdisciplinarity of the research in a certain RI, anticipated search (interest of users), initiatives for consumers, data base about the consumers in the field of research through periodic consultation with research and industrial communities
 - Level of service delivery (anticipated number and consumers and annual hours of access)
 - Efficiency of data management and of RI access (incl. centralized and distributed RI) (share of the estimated investment in infrastructure, that gives opportunity for adaptation of data to the international standards in that field)
- 1.3 Creating research network
- Number of consumers (consortiums) ready/planned to load/engage/involve their own sources in the use of RI
 - Anticipated share of non-European consumers (an indicator for the internationalization of the project)
 - Expressed/Declared/Reported interest to use RI by different scientific communities (multidisciplinary)
 - Excellence in a certain research field (Science Excellence)
 - Attractiveness of the RI for researchers outside of the country
- 1.4 Knowledge Transfer
- Doctoral programs working with universities (anticipated number defended PhD theses, made in RI or citing results, obtained in RI).
 - Accessibility of RI for consumers from the industry with the purpose to implement projects, resulting profit from the use of RI, which profit is shared between the company and the RI

Methodology for evaluation of the entry of RI in the national roadmap as per ESFRI criteria (year 2014)

An international peer review panel with reputed and skilled scientists was organized in order to evaluate RI to be integrated in the roadmap. More concretely, the panel was formed by the following scientists:

1. Prof. Jan Hrusak, Member of Czech Academy of Sciences and of the Executive Board of the ESFRI (material science);
2. Prof. Jacques Demotes, General Director of the European Network for Clinical Research (medicine and biology)
3. Prof. Giorgio Rossi, Director of an experiment on peak researches on photo emission, National laboratory TASC-INFN, Vice-Chair of ESFRI (natural sciences and physics).
4. Prof. Jacques Dubucs, Chair of the ESFRI Strategy Working Group on Cultural and Social Innovation (social sciences).

Then, the main criteria being evaluated by the panel were:

- A) *Scientific and technological excellence of the RI (50% weight of the assessment):*
- The significance of the RI for the specific research fields (Relevance of the scientific objectives of the RI to facilitate and promote top-level science in Bulgaria; Capacity of providing potential for world class research and scientific breakthrough; Expected benefits for the national scientific and technological system for conducting cutting edge research at an international level, namely to increase the participation in international collaborative research projects, such as, those of the Horizon 2020)
 - Adequate identification of the RI's strengths, weaknesses, opportunities and threats (SWOT analysis)
 - Degree of internationalization, including the integration in international RI initiatives, namely those of the ESFRI roadmap
 - Degree of inter-disciplinarity, including the effect of the RI on strengthening interdisciplinary research in Bulgaria
 - Quality of the proposed training of researchers
- B) *Governance capacity and implementation feasibility (25%)*
- Degree of adequacy of the management structure and governance of the RI to the proposed scientific aims
 - Adequate management and action plan implementation (Leadership; Distribution of responsibilities; Experience and capacity; Identification of RI's strengths, weaknesses, opportunities and threats-SWOT analysis)
 - Competence and complementarities of the nodes and added value of the national RI at the regional, national and international levels, including contribution to increase access to knowledge resources and scientific capacity in the field of operation of the RI
 - Adequate equipment and relevance of improvements to the existing and/or acquisition of new equipment, considering the scientific aims of the RI
 - Quality of the access policy and data management plan (Transparent policy for access to the infrastructure, including international access activities, conditions for provision of access, addressing remote access needs in relation to availability of e-infrastructures and data management issues; Access policy for industry (addressing IP rights - if applicable - fees and confidentiality issues)
 - Operational readiness: maturity of the RI and appropriate relations between partners of the infrastructure and, if relevant, of the integration in an international RI
- C) *Budget and Sustainability (25 %)*

Includes technical feasibility, human resource costs and cost-effectiveness of the proposed infrastructure (based on adequacy of requested funding and envisaged sources of funds, multi-annual budget plan with funding sources information and long-term sustainability plan of the investment).

2.5. Proposals evaluated and selected (available statistics)

Not applicable or no information presently available.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

Not applicable or no information presently available.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

NSF will organize an independent external evaluation of the research activity of the national infrastructure complexes every two years, including the conduct of opinion polls and cost-benefit analysis for the regional and national economy.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Not applicable or no information presently available.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

Not applicable or no information presently available.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

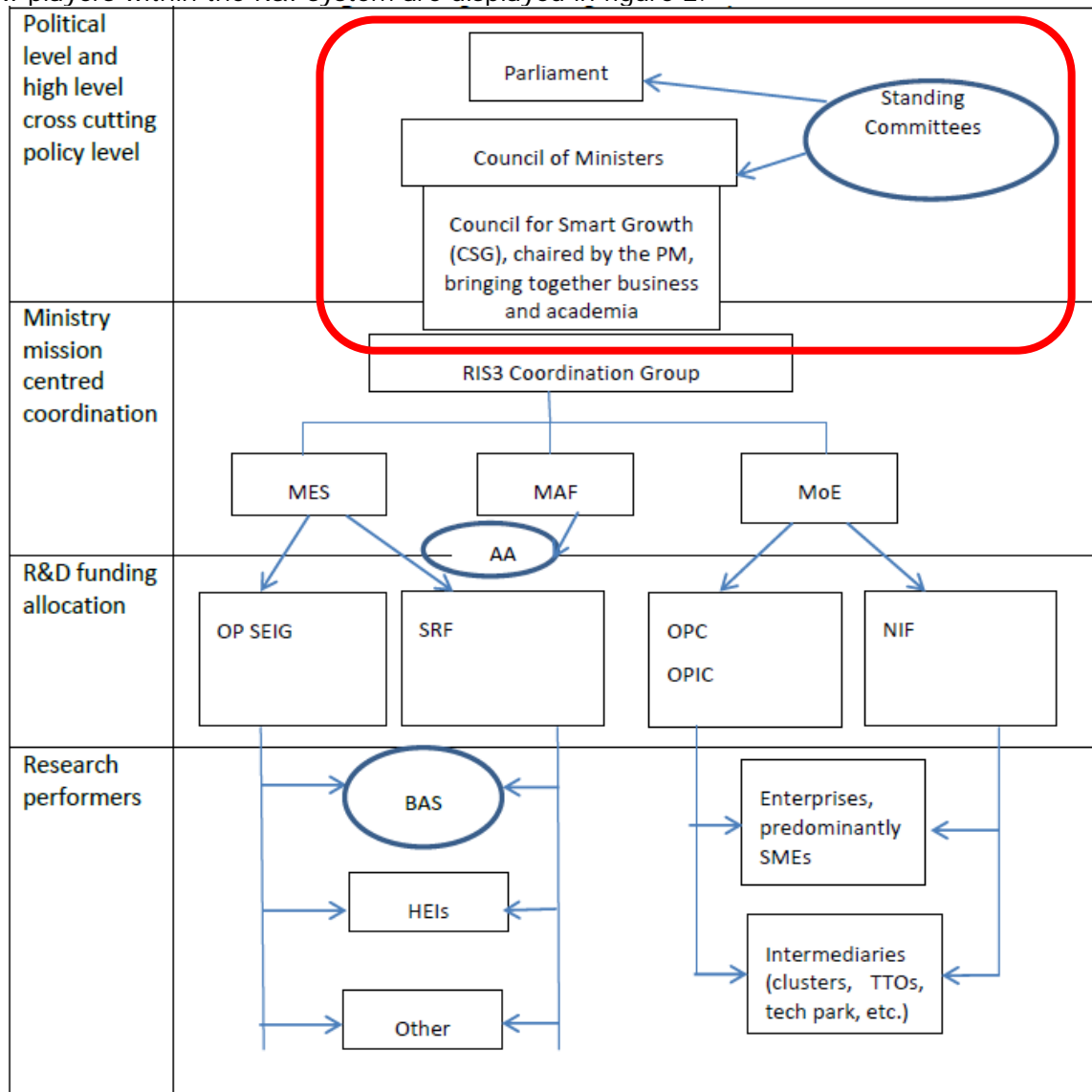
Not applicable or no information presently available.

Annex Bulgaria Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	
Access to RI	
Organisation within national procedure	
<p>Research Infrastructure are facilities, resources, and related services, used by the scientific community to conduct high-level scientific research in the relevant areas, and cover large-scale research facilities, integrated small research facilities, and high-speed communication networks with high capacity, distributed high-performance computing systems such as Grid, computing systems networks, etc.; knowledge-based resources such as collections, databases, archives, and other types of structured scientific information.</p> <p>Centres of Competence that provide services to the wider research community, as well as every other object with a unique nature of great significance for achieving excellence in research. (MES, 2017, p. 3)</p>	

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 2.



Source: Authors' Own Data

Figure 2: Organisational chart of the R&I system of Bulgaria (Todorova and Slavcheva, 2016, p. 27). Red colour indicates the bodies with the main decision power regarding RI.

Abbreviations

AA: Agricultural Academy, **BAS:** Bulgarian Academy of Sciences, **HEIs:** Higher Education Institution, **MAF:** Ministry of Agriculture and Food, **MoE:** Ministry of Economy, **MES:** Ministry of Education and Science, **NIF:** National Innovation Fund, **OPC:** Operational Programme "Competitiveness", **OPIC:** Operational Programme "Innovation and Competitiveness", **SRF:** Scientific Research Fund, **TTOs:** Technology Transfer Offices.

National relevance of RI

For Bulgaria it is important that their researchers have access to state-of-the-art scientific facilities to conduct competitive research at international level. The access to modern infrastructure is an important factor in attracting and retaining the researchers. Moreover RI serve as centres for knowledge, innovation and technology transfer from research organisations to industry. Improving RI should lead to a significant increase of the capacity of Bulgarian scientists for conducting high quality scientific research and will directly impact the development of high tech industry in Bulgaria. National Roadmaps for development of RI are the key instruments for implementing the national

research strategies and they also reflect upon the priorities of European Union. (MES, 2017, p. 5)

Embedding of RI in the national R&I system

The Minister for Education, Youth and Science (MES) formed a coordination council for the implementation and monitoring of the National Roadmap for Research Infrastructures (MES, 2010, p. 1).

3. RI in the National R&I System

The highest policy-making body in Bulgaria is the National Parliament which exercises its power mainly through the state budget and its distribution. The Bulgarian Council of Ministers approves the most important strategic documents. **The Ministry of Economy defines national innovation policy and provides national funding.** The Ministry of Education, Youth and Science designs and carries out national science and scientific research policy and oversees the functioning of the main public research funding instrument and is mainly responsible for developing and implementing the Bulgarian National Roadmap for Research Infrastructures. Other ministries support policy-making with respect to their specific field of competences. **Bulgaria has two national budget funds for funding R&I: The National Innovation Fund (NIF) and the Scientific Research Fund (SRF)** which have comparably limited resources, but are managed independently and have autonomous objectives and targets, without any mechanism in place for coordination. The largest research performing institutions in Bulgaria are the Bulgarian Academy of Sciences (BAS), the Agricultural Academy (AA), i.e. public research institutions and some of the Bulgarian universities. (Todorova and Slavcheva, 2016, pp. 26-29)

4. Major national strategies for international cooperation in R&I and strategic integration of RI

The "Innovation Strategy for Smart Specialization" (RIS³) provides the basis for the current Bulgarian research policy. It has been developed in accordance with the objectives of the current European framework strategy "Europe 2020". Europe 2020 is the ten-year European Union growth and employment strategy from 2010. RIS³ is complemented by the two strategies "National Reform Program of the Republic of Bulgaria 2011-2015 for the implementation of the Europe 2020 Strategy" and "National Development Program Bulgaria 2020". Other important strategies in place are the "Bulgarian Smart Specialisation Strategy" and the "Higher Education Strategy and Scientific Research Strategy 2017-2030". (Todorova and Slavcheva, 2017, p. 16)

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Further links

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Annex Czech Republic Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

The assessment is carried out on the basis of unified evaluation methodology providing the best possible foundation for the strategy decision making processes and contributing to increasing efficiency and investment planning on large research infrastructures on the national level of the Czech Republic and level of ERA.

The **evaluation methodology** and the process itself has significant importance particularly for:

- Preparation of mid-term and long-term strategy outlook for defying RIs' policy;
- Transition of RIs' projects from preparation to construction/implementation phase;
- Preparation of state budget expenditures on R&D – chapter on RIs' financing;
- Raising the European Structural and Investment Funds for RIs' investments funding.

The ex-ante evaluation methodology thus forms the general framework for obtaining **expert basis for policy decision making on the RIs' funding** in their transition from concepts/projects (\approx preparation phase) to their construction/implementation phase. In this regard, the ex-ante evaluation methodology aims to facilitate providing the funding for RI of the Czech Republic that meet the criteria of exceptional quality and socio-economic impact.

2.2. Eligibility conditions

All RI striving to receive public support or to be included into the Roadmap of the Czech Republic of Large Infrastructures for Research, Experimental Development and Innovation must comply with:

- The definition of a Research Infrastructures: "are unique facilities or virtual platforms providing the research community with resources and services required for cutting-edge research and development. Such RI may be "single-sited", "distributed" or "virtual", integrated in transnational networks and may have various legal forms. RI are established also to be used by other research organisations and other users under pre-defined and transparent terms. According to their nature RI may be grouped as follows: (1) "national RI" located in the Czech Republic, usually having an international impact (e.g. an international RI or its part or an organisation managing or otherwise providing the RI's operations); (2) "national node" of a distributed pan-European RI (firstly the Czech ESFRI RI node) or a part or an access point to international RI networks; (3) "Czech involvement (Czech part of a RI) in an international RI located in another state".
- Other RI attributes that are integrated into the evaluation process and considered in the evaluation criteria. These attributes include especially the following:
 - *Stable and efficient management* – RI must always have a sufficient, clear and transparent management structure. In the case that the RI forms a part of a research organisation, the RI's position within the hosting institution must be clearly defined and meet the requirements stated above. With the aim of guaranteeing an appropriate level of the RI's quality scientific board/ international advisory committee shall be established to deal with these tasks. It shall develop a self-assessment of the RI and provide the RI with expert recommendations.
 - *Sustainable development strategy* – The RI has a clearly developed strategy including relevant balance sheets and studies:
 - Technology development strategy, including short-term annual budgeting horizon as well as a long-term outlook – in general based on the lifespan of key instrumentation (e.g. 2-3 years for ICT, 5 years for standard R&D equipment) and conceptual outlook for technologies for 10 years.
 - Human Resources development strategy, including clear and transparent employment strategy, defined career procedures (rules) targeted at the professional development of employees, and participation in scientific education.

- Feasibility strategy, including description of possible threats to the feasibility of RI (e.g. demanding upgrades of technologies, ethical and/or legal issues, which may seriously affect the RI's operation, etc.) and solutions how to face them efficiently.
- Cooperation strategy with the public (i.e. universities, public research institutes, other RI) and private R&D sector (i.e. private research organisations, industry, businesses) both on the Czech national and international level (ERA and worldwide).
- Analysis of the appropriateness of the RI for facing the societal and socio-economic challenges reflected by the respective R&D sector.
- *User access strategy* – Notwithstanding whether the RI operates in the national or international environment, it must have a clearly articulated and transparent strategy for providing access to the RI to various groups of users. A substantial part of RI's users shall come from the areas beyond the hosting institution. A RI shall have defined:
 - Open access strategy, including a clear definition of the RI's open access arrangements and methods for capacity allocation on the basis of scientific excellence of proposals.
 - Access strategy for other users, which use the RI's capacities for collaborative and/or contractual R&D beyond the open access mode;
 - Procedures dealing with protection of intellectual property rights, including strategy on dealing with the use of R&D results and open access to data issues.
- *Internal strategic research* – A RI – unlike other kinds of research entities, which devote most of their activities to their own internal research – focuses a substantial portion of its internal research on:
 - Research aiming at improvement of services to users.
 - Research serving to capacity development of the infrastructure itself.
 - Support to user research, including its direct involvement.

Collaborative and contractual research, within a limited scope.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

The evaluation of the different RI applications will be done based on the following criteria:

- *Socio-economic impact:*
 - RI are operated in direct response to socio-economic challenges.
 - Its role in the R&I ecosystem.
 - Impact and added value on ERA and other international macro-regional formations.
- *Uniqueness of technological facilities:*
 - The technological devices operated by a RI are of a high-tech and knowledge intensity and unique within the R&I ecosystem of the Czech Republic.
- *Management and sustainable development strategy:*
 - Governance structure clearly defining the responsibilities of the executive and supervisory bodies.
 - Management strategy.
 - Intellectual property rights strategy.
 - Human resources development strategy.
 - Long-term sustainable development strategy.
 - Public relations and marketing strategy.
- *Open access policy:*
 - Open access and transparency policy to its facilities for a broad range of potential users from the R&D community in accordance with international good practices.
 - The RI services are provided subject to applications evaluated by experts following the principles of relevance and excellence of the proposals.
- *R&D strategy:*
 - The RI is devoted, unlike the other kinds of research entities, to operate its facilities for the use by individual participants of the R&I ecosystem
 - A substantial part of its R&D activities focuses on R&D in order to improve its services and expertise for the users, further development of technologies and expertise of the research infrastructure, and to a limited extent on the collaborative and contractual R&D.
- *Cooperation with other research organisations, RI and industrial sector:*
 - Formal framework determining rules of cooperation developed with research organisations,

RI and industry in the Czech Republic and abroad in the respective scientific field or multidisciplinary R&D area.

- *Quality of R&D results achieved by using the RI:*
 - High-quality and adequate results from the point of view of “value for money”.
- *Potential for the development of new technologies:*

The research infrastructures are operated in high-tech and knowledge-intensive areas and used for the development of new advanced technologies.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

The evaluation was carried out by an International Evaluation Committee according to the research infrastructures evaluation methodology that had been inspired by ESFRI evaluation procedures and prepared within the framework of the Individual National Project named Effective System of Evaluation and Funding of Research, Development and Innovation (METODIKA²³²⁴) financed by the ERDF.

The International Evaluation Committee is formed by:

- A Chairman
- Six Scientific Boards consisted of 3-5 members (one of them from CR to allow reflecting the knowledge of Czech research and innovation ecosystem and Czech research infrastructures landscape in the evaluation process) specialized on the R&D areas of:
 - 1) Physical Sciences
 - 2) Energy
 - 3) Environmental Sciences
 - 4) Biomedicine
 - 5) Social Sciences and Humanities
 - 6) ICT/e-infrastructures

The International Evaluation Committee members were appointed from a pool of experts with long-term experience with research infrastructures in their roles as users or research infrastructures policy-makers.

The evaluation is carried out in two stages and it is based on the principles of informed international peer-review combining the methods of panel and peer-review evaluation:

- *1st stage of assessment:* It is assured that proposals comply with the specific requirements of a RI (see eligibility conditions). It is exclusively carried out by the six Scientific Boards
- *2nd stage of assessment:* Detailed evaluation of the quality level of the RI characteristics. It includes:
 - International peer-review (2 or 3 reports per RI proposal) in order to obtain additional independent expert opinions beyond the assessment conducted by the respective 6 Scientific Boards of the International Evaluation Committee.
 - Interviews with the representatives of RI management aimed at enabling Scientific Board members to address questions on the operation of the RI and the delivery of services to external users.
- The outcomes and recommendations made by the International Evaluation Committee serve to the MEYS and Government of the Czech Republic as an independent expert basis for the informed policy decision making concerning:
 - Funding the Large Research Infrastructures of the Czech Republic in the course of the multi-annual financial framework 2016–2022, combining the state budget expenditures of the Czech Republic on R&D with EU cohesion policy instruments (ESIF)
 - Declaring the political and financial commitment of the Czech Republic to the pan-European research infrastructures with Czech involvement and participation that is submitted for the future ESFRI Roadmap updates
 - Joining the emerging ERICs to be established within the ERA in the incoming years

²³ METODIKA Project: <http://metodika.reformy-msmt.cz/en/> [Last access: 07/2017].

²⁴ Only the 2014 Evaluation Methodology was prepared within the project. The 2017 Evaluation's methodology was based on the previous one, solely prepared by the MEYS.

The evaluators comment on individual areas in a verbal evaluation, which may include also recommendations addressed to the RI. For selected issues, there are appended evaluation points according to the stated scale. In the conclusion of each evaluation the evaluator / the committee evaluate the proposal according to an evaluation scale ranging from 1 to 5 points. The evaluation may use half-points, as well. This does not apply to the interval 0 – 1, where unsatisfactory proposals must be differentiated from the array of satisfactory proposals showing different quality levels.

The evaluation exercise primarily refers to the scientific quality of RIs' concepts/projects. Funding of the RIs' concepts/projects is proposed by the MEYS and consequently decided by the Government of the Czech Republic. In this perspective, the outcomes of the ex-ante RIs' concepts/projects evaluation serve as the expert basis for:

- 1) Political decision of the Government of the Czech Republic on public funding of new RIs' concepts/projects in the years 2018-2022, both by using the state budget expenditures on R&D and European Structural and Investment Funds.
- 2) Update of the "Roadmap of the Czech Republic of Large Infrastructures for Research, Experimental Development and Innovation for the years 2016-2022" to be made in 2018.

2.5. Proposals evaluated and selected (available statistics)

In the Czech Republic Roadmap for the years 2016–2022, the overall outcome of the research infrastructures assessment was the identification of 58 positively evaluated research infrastructures (including 42 research infrastructures of high-priority) recommended by the International Evaluation Committee for public funding and divided into 4 performance-related groups (A1, A2, A3 and A4) indicating the priority for public funding in direct proportion to the quality-differentiated output of the evaluation.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

The Resolutions of the Government of the Czech Republic on public funding of large research infrastructures in the years 2016+ stipulated that the continuation of public funding of large research infrastructures in the years 2020-2022 is subject to outcomes of **interim evaluation to be performed in 2017**. This assessment is carried out on the basis of unified evaluation methodology providing the best possible foundation for the strategy decision making process and contributing to increasing the efficiency and investment planning towards large research infrastructures on the national level of the Czech Republic and the level of ERA.

The **evaluation methodology** and the process itself has significant importance particularly for:

- Preparation of mid-term and long-term strategy outlook for defying RIs' policy;
- Transition of RIs' projects from preparation to implementation/construction phase;
- Assessment of quality, efficiency and benefits deriving from existing RI;
- Evaluation of needs for substantial technology upgrades to existing RI;
- Decision on prospective phasing-out and terminating operation of existing RI;
- Preparation of state budget expenditures on R&D – chapter on RI financing;
- Raising the European Structural and Investment Funds for RI' investments funding.

The evaluation methodology thus forms the general framework for obtaining an **expert basis for policy decision making on RI funding** in their individual phases of implementation as the highly systematic, high-quality and recurrent evaluation exercise enables timely estimates of needs and strategy investments in RI, upgrades thereof and adjustments of their operating costs according to the changing usage of their potential. The evaluation methodology aims to unify and strategically structure the RI landscape and facilitate providing the funding for RI of the Czech Republic that meet the criteria of exceptional quality and socio-economic impact.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

RI are approved by the Government for specific time period (it used to be 5 or 6 years but last approval was for 4 years). The current national RI Roadmap is covering time period 2016-2022, but new update is planned for 2018.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Not applicable or no information presently available.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

The purpose of the entire evaluation procedure was to assess not only the already long-time operated facilities but also those newly built by using the ERDF within the OP RDI in the course of the period 2007–2015.

As a result, the 2014 assessment can be viewed and considered a comprehensive ex-ante evaluation of the research infrastructures of the Czech Republic before the beginning of the new multiannual financial framework 2016–2022. In the future, the 2014 ex-ante evaluation will be transformed into continuous interim assessment (monitoring) of Large Research Infrastructures, which will be financially supported by the MEYS, in charge of the concept of RI' public funding and of supervising the entire RI' evaluation process. Then, interim evaluations will focus particularly on the progress of the RI implementation according to the evaluated RI proposal.

The methodology used for the interim evaluation (monitoring) of Large Research Infrastructures is similar to the ex-ante evaluation framework introducing the panel assessment with the involvement of foreign experts. The evaluation is conducted in multi-year periods.

The general intent of the MEYS is to create a stable pool of experts involved in the research infrastructures evaluation over a longer period so that the Scientific Boards are aware of the previous development of Large Research Infrastructures and thus able to observe how their previous recommendations were reflected in the operation of the facilities.

The interim assessment (monitoring) of Large Research Infrastructures was conducted in 2017. Another comprehensive evaluation of the research infrastructures of the Czech Republic is anticipated for 2021 before the launch of the follow-up funding period 2023–2029.

Regarding the documentation submitted for the assessment, each individual RI shall submit to the MEYS the filled **"Evaluation form"** and **"RI's advisory board assessment form"** in the defined timeframe. Expert assessment of documentation reflecting the implementation state of RI follow and is carried out by the respective Scientific Panel of International Evaluation Committee that has the main responsibility for fulfilling the assessment tasks. The overall documentation that the Scientific Panels of International Evaluation Committee is provided, consists of:

- **"Evaluation form"** prepared by management of a RI and describing the RI implementation state according to the specific evaluation criteria stipulated by the MEYS within the interim evaluation methodology and "Evaluation form" itself;
- **"RI's advisory board assessment form"** – Every RI shall have established a scientific board/international advisory committee formed by external experts providing the RI with recommendations on short-term and long-term strategy development based on actual detailed knowledge of the RI. It is assumed that the scientific board/international advisory committee meets at least once a year. The outputs of such an exercise represent an additional expert insight in the RI's state-of-play and they should just be of consultative relevance.
- **Three external peer-reviews** elaborated per each "Evaluation form" (by reviewers contracted by the MEYS). The principal purpose of external peer-review is to obtain additional expert opinions beyond the assessment performed by the Scientific Panels of International Evaluation Committee. Outcomes of the external peer-review serve as an input for the evaluation but should just be of consultative relevance.

Moreover, with the aim of informing the International Evaluation Committee on the results of the latest RI's assessment, which took place in 2014, the Scientific Panels are provided with the "Consensus reports" including the "Evaluation forms, which represent the overall outcomes recorded by the International Evaluation Committee assessing the RI of the Czech Republic in 2014. This documentation is of consultative relevance only, but may help the reviewers to assess the progress made by each RI since the last evaluation performed on a very similar basis in 2014.

In order to enable the Scientific Panels of International Evaluation Committee to ask additional questions on the RI's management (that might not be clearly described in the documentation for

evaluation) personal **interview** with representatives of the RI is arranged by the MEYS as a part of the evaluation process. An interview of the Scientific Panel with representatives of a RI (3 at the most) lasts up to **60 minutes**. The topics to be addressed by the Scientific Panel of the International Evaluation Committee during the interview are communicated to the representatives of the RI in advance, 7 calendar days before the interview at the latest.

Summary decision of each Scientific Panel of the International Evaluation Committee is the result of the assessment process, which combines the results of 3 individual, but mutually inter-connected assessment procedures, but still leaving the main responsibility for the overall evaluation results on the Scientific Panel of International Evaluation Committee:

1. **Evaluation of documentation** on the RI's implementation state-of-play provided by the RI within the "Evaluation form" and "RI's advisory board assessment form" – to be conducted by the respective Scientific Panel of International Evaluation Committee;
2. **External peer-review** of documentation on the RI's implementation state-of-play provided by the RI within the "Evaluation form" – to be conducted by 3 reviewers, who are contracted by the MEYS;
3. **Personal interview** with the RI's representatives – to be held by respective Scientific Panel of the International Evaluation Committee.

The summary decision of each Scientific Panel of the International Evaluation Committee shall be based on a synthesis of the outputs of above-mentioned assessment processes as well as on deliberations of the International Evaluation Committee Scientific Panels. Final conclusions are filled in the "**Consensus report**" stating the final overall evaluation results.

Should be the Scientific Board of International Evaluation Committee willing to visit a RI, which evaluation was accompanied by serious doubts and/or queries, the MEYS (in cooperation with the respective RI) arrange the "on-site-visit" of the RI. The "on-site-visit" of a RI may form a part of a RI's assessment procedure only if it is explicitly requested by the Scientific Board of International Evaluation Committee.

The "Evaluation form", which includes a set of defined questions, requires the management of a RI to describe the implementation state of RI from the point of view of the following aspects:

- Description of the RI
- Importance of the RI;
- Cooperation of the RI;
- Use and outputs of the RI including its importance for development of new technologies;
- Benchmarking of the RI;
- Feasibility of the RI;
- Costs and budget of the RI;
- Portfolio of indicators of the RI;
- Other relevant information on the RI.

Members of the International Evaluation Committee comment on individual evaluation criteria by means of **verbal evaluation** that may include **recommendations** addressed to the RI for its future development. For selected issues, there might be appended **evaluation points**. In conclusion, Scientific Panel of the International Evaluation Committee fills all the verbal evaluations (including the recommendations) and evaluation points in the "**Consensus report**" and mark the RI according to the overall evaluation scale indicating the science-based priority for public funding in direct proportion to the quality-differentiated output of the evaluation.

An expected final output of the interim RI' evaluation consists in a set of recommended RI assessed by the International Evaluation Committee as facilities showing a high-quality in the Czech national, European and worldwide perspective in accordance with specific qualitative criteria stipulated by the interim evaluation methodology. These RI are submitted for the approval of the Government of the Czech Republic for public funding in the years 2020-2022.

Based on the outputs of the evaluation, the International Evaluation Committee divides all evaluated RI in **6 performance-related groups** indicating the science-based priority for public funding. This division is made in accordance with a predefined overall evaluation scale. Then, at the end of each evaluation the evaluators rate the proposal according to a scale ranging from 1 to 5 points with the following meaning:

- 0 The respective entity does not meet the general characteristics and criteria of a RI anymore.

- 1 The RI does not attain the level required for provision of relevant services at the national or international level and it lacks sufficient potential to become an important element in the future development of research and innovation environment of the Czech Republic.
- 2 The RI's quality and potential enables it to contribute to provision of services in the given sphere. However, the RI has only minor user community, limited importance and thus also limited relevance for the future development of research and innovation environment of the Czech Republic.
- 3 The RI's quality and potential enable good quality services to be provided in the given sphere. The RI shows significant usage possibilities and is relevant for the future development of research and innovation environment of the Czech Republic. Nevertheless, the RI is not a crucial one for strengthening the competitiveness of the Czech Republic.
- 4 The RI shows very high quality and high potential, but doesn't reach the top-class standards of international excellence with respect to the uniqueness, originality, importance and impact on the user community. However, the RI is still highly relevant for the future development of research and innovation environment of the Czech Republic, substantially contributing to strengthen the competitiveness of the Czech Republic.
- 5 The RI is of excellent quality compared to the leading actors worldwide with respect to its uniqueness, originality, importance and impact on the user community. The RI is highly relevant for the future development of research and innovation environment of the Czech Republic as well as inevitable for strengthening the competitiveness of the Czech Republic.

The evaluation exercise primarily refers to the scientific quality of RI, defined particularly as a combination of the quality of scientific outputs produced in cooperation with RI and the quality of the strategic approaches of RI.

The funding of RI is proposed by the MEYS and consequently decided by the Government of the Czech Republic. In this perspective, outcomes of the RIs' interim evaluation serve as the expert basis for:

- Political decision of the Government of the Czech Republic on the public funding "bonus" for the RI assessed as of excellent and/or very high quality in the years 2018-2019.
- Political decision of the Government of the Czech Republic on the RI public funding in the years 2020-2022, both by using the state budget expenditures on R&D and ESIF.
- Update of the "Roadmap of the Czech Republic of Large Infrastructures for Research, Experimental Development and Innovation for the years 2016-2022" to be made in 2018.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

After the RI implementation ends or after the financing period approved by the Government elapses the RI shall be assessed in an ex-post evaluation.

Annex Czech Republic Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	x
Access to RI	
Organisation within national procedure	
<p>In the national R&D Support Act, RI has been defined as “a research infrastructure, including its acquisition and related investment costs and the costs of ensuring its activities, which is essential for comprehensive research and development with heavy financial and technological demands, which is approved by the Government of the Czech Republic and established for use of other research organisations.” This definition refers to the definition of “research infrastructure” introduced in Article 2 Point 91 of the Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty.</p> <p>On the other hand, the Ministry of Education, Youth and Sports (MEYS) was entitled to be the national authority for funding the Large Research Infrastructures within a brand new legal and funding framework. The recent Roadmap defines Large Infrastructure as “a unique research facility, including its acquisition and related investment costs and the costs of ensuring its activities that are essential for comprehensive research and development with heavy financial and technological demands and which is approved by the Government of the Czech Republic and established by one research organisation for the use of other research organisations”. Thus, it shall be noted that RI in Czech Republic are “projects” of research organizations, and as such subject of a special type of “project type funding.</p> <p>Within the Czech R&I system several coherent groups of RI have been distinguished within the RI landscape with the following aims: A RI located in the Czech Republic having a significant international impact; representing the Czech national “node” of a pan-European “distributed” research infrastructure; operated in the form of an “access point” of the Czech R&D user community to a research infrastructure located abroad.</p>	

2. RI players in the national R&I system

National relevance of RI

The success of a RI policy is seen in ensuring the quality, reliability and accessibility of technical devices, expertise and data. Generally, it is essential to ensure a user friendly access to all these constituents and easy processing methods. At its best, R&D generated by using RI benefit research communities, industries, businesses, public administration and the general public. RDI policy making is fairly centralized. Regional authorities, the self-governing regions do not have any legally binding responsibilities, yet are also not prevented from developing their own policies. (Srholec and Szkuta, 2016, p. 43)

In recent years, the Czech Republic has also responded to the significantly increasing importance of RI. Taking into account that RI are one of the principal components of the Czech national research and innovation ecosystem, a number of steps aiming at providing the Czech RI with a stable legal and financial environment were made.

Embedding of RI in the national R&I system

Concerning funding, RI in the Czech Republic is financed from several sources. In line with the legal act 130/2000 Coll., all the RI funding is supposed to be project funding, though in several cases program funding and/or contributions to institutional budgets may arise. A RI dedicated state budget line exists at MEYS, which covers part of the operational costs (c. 50 Million €/year) subject of evaluation and RM presence, investments were covered as parts of the OP VaVpl projects (c. 1 Billion € for 7 years), by other OPs, and partially by direct subsidies based on governmental decisions. The MEYS is also managing the new OP Research, Development and Education (OP VVV - with EU contribution 2.8 Billion € EUR for 7 years) and two national programs for sustainability (NPU I and NPU II) with an annual allocation of c. 120 Million €, covering the operational budgets of the OP VaVpl projects (till 2022). Institutional contributions to RI are parts of the institutional budgets of universities and of the Academy of sciences, and not publically available. An older estimate indicated these to amount to 30 % of the RI running costs. Contributions to RI are also a part of international cooperation budget of MEYS.

3. RI in the National R&I System

RDI **policy making is centralised** in the Czech Republic. Regional authorities, the self-governing regions do not have any legally binding responsibilities, yet are also not prevented from developing their own policies. The Czech Republic is focusing on the following main areas of activity:

- 1) Physical Sciences;
- 2) Energy;
- 3) Environmental Sciences;
- 4) Biomedicine;
- 5) Social Sciences and Humanities;
- 6) ICT/e-infrastructures.

As to the funding: RI in the Czech Republic are financed from several sources. In line with the legal act 130/2000 Coll., all the RI funding is supposed to be project funding, though in several cases program funding and/or contributions to institutional budgets may arise. A RI dedicated state budget line exists at MEYS, which covers the main part of the operational costs. MEYS is also fund provider through the two National sustainability programs (NPU I and NPU II), which are used to support the starting phase of RI constructed under the Operational programme "*Research and Development for Innovation 2017-2014*" and it acts as the managing authority for the recent Operational programme "*Research, Development, and Education*" which has a strong RI support component.

4. Major national strategies for international cooperation in R&I and strategic integration of RI

The National RDI Policy of the Czech Republic 2009–2015 is the central policy document, which has been developed to facilitate the implementation of the Reform of the RDI system in the Czech Republic. More recently, the Update of the National Research, Development and Innovation Policy 2009-2015 with an outlook to 2020 assessed the progress achieved so far in implementing the RDI reform. (Srholec and Szkuta, 2016, p. 18)

The first RM (Gov. resolution from 15th March 2010 No. 207) was approved in March 2010 together with an implementation document accounting for RI funding through a dedicated budget line at MEYS. This RM consisted of Existing and Emerging RI in 6 scientific domains (6 + 3 RI in SSH, 3 + 1 RI in ENVI, 17 + 6 RI in Physics and Space, 4 + 3 RI in Energy, 2 + 6 RI in Biomedicine, 1 + 2 RI in e-Infra) including Czech participations in ESFRI project through national nodes and the memberships in international organizations (HiPER, CERN, ESA, EMBL, JINR Dubna).

The construction of the Emerging RI was in part financed by the Operational program Research and Development for Innovation (OP VaVpl 2007-2013 – EU contribution 2.2 billion € for 7 years). This RM was updated in May 2011 acknowledging Structural funds as an investment source. Back in 2012 the Government approved an interim implementation report, which was based on international peer-review evaluation. A second update of the RM dates back to 2015 and another peer-review evaluation by an international panel. This evaluation was used for the new RM 2016-2022.

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External Links

- Application forms and templates for research infrastructure projects (in Czech language) <<http://www.msmt.cz/strukturalni-fondy-1/vzory-dokumentu-op-vvv>> [Last access: 06/2017.].
- Rules for applicants of research infrastructure projects (in Czech language) <<http://www.msmt.cz/strukturalni-fondy-1/obecna-cast-pravidel-pro-zadatele-a-prijemce>> [Last access: 07/2017.].

Annex Denmark Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Not applicable or no information presently available.

2.2. Eligibility conditions

In the invitation to submit proposals, each proposal was requested to comply with the following specific criteria:

- To be of national strategic interest and significance. The proposals are required to support, at national level, the research institutions' strategies for the research infrastructure domain and to have great scientific significance for the relevant Danish research communities.
- To be permanent or long-term and be sufficiently mature for the research infrastructures to be realisable scientifically, technologically and financially within a period of a few years (up to five years).
- To be open. Ideally, they should be based on non-exclusive consortia or the like and should seek to involve all relevant and interested parties and ensure that all interested researchers, regardless of their institutional affiliation, have the opportunity to gain access to the research infrastructures.
- Must be realisable with substantial co-funding from the research institutions – with at a point of departure 50 per cent co-financing to be pledged – and the research institutions involved are expected to assume responsibility for operation of the infrastructures once established and for any decommissioning.

Where relevant to be linked to international research infrastructures, such as those on the existing or planned ESFRI Roadmap.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

In the description of the proposals, which forms the basis for their evaluation, the proposers were asked to set out:

- Scientific prospects
- Societal prospects
- Industrial prospects

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

The proposals received were presented to the National Committee for Research Infrastructure (NUFI), which is composed of representatives of the Danish universities and the Danish Council for Independent Research (now called "Independent Research Fund Denmark") with the Danish National Research Foundation as an observer. NUFU advised the Danish Agency for Science, Technology and Innovation on the contents of the catalogue, recommending 27 proposals for the Roadmap's catalogue.

Subsequently, the Ministry carried out an independent evaluation and prioritisation including supplementary materials regarding the proposals' industrial and innovation potentials. This resulted in the Minister of Higher Education and Science deciding on a catalogue of 22 proposals selected from among the 27. Both NUFU and the Ministry based their evaluation on the foregoing criteria, which were published together with the invitation to submit proposals. Across the proposals, the Ministry also wanted the final catalogue to embrace all research areas, and for the proposals to be endorsed by an average of four research institutions with wide institutional and geographical outreach.

2.5. Proposals evaluated and selected (available statistics)

At submissions deadline on 30 April 2015, the Agency had received 42 proposals for the Roadmap. A catalogue of 22 proposals selected in the second evaluation round from the 27 initially recommended during the first evaluation round.

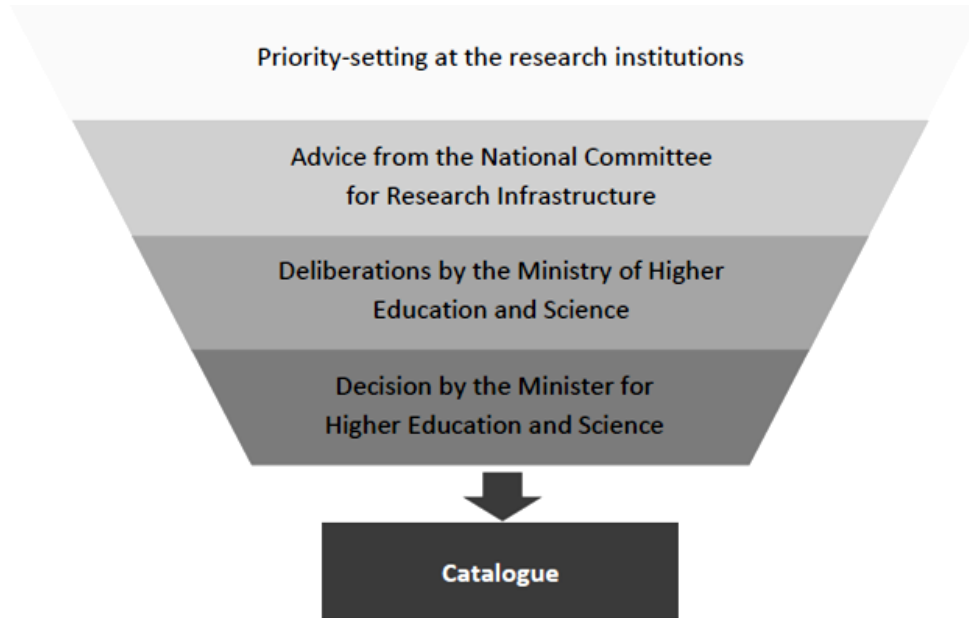


Figure 3: Catalogue proposals and decision making process

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

An ex-post evaluation/analysis is now planned for 2018 of the investments from the National Fund for Research Infrastructures to proposals from the 2015 and previous roadmap. There is currently no plans of an evaluation of the roadmap as a whole but DAFSHE receives updates every year from each of the remaining and not-yet-funded roadmap proposals. Also, from each of the funded proposals, DAFSHE receives an annual status of project progress and finances. Additionally, an analysis of the benefits of the Danish (mostly convention-based) memberships of international RI is being carried out presently.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

Please see the answer in 3.1

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Please see the answer in 3.1

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RIs included in the RI national roadmap

Please see the answer in 3.1

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Please see the answer in 3.1

Annex Denmark Part 2: National Embedment

1. RI definition

Please see the answer to point 3

Categories	National Roadmap
Funding	
Categorisation of RI	
Access to RI	
Organisation within national procedure	

Research infrastructure is the collective term for a wide variety of equipment, measuring instruments, test facilities, databases, laboratory facilities, test plants, supercomputers and other tools and resources employed in research processes and in generating new knowledge. RI may be in the form of a single-sited physical facility (a single resource at a single location, whether static or mobile); a distributed network (comprising collections, laboratories or measuring stations); or a virtual facility (offering online access). RI is utilised within all of the main scientific disciplines, but takes different forms from one discipline to the next. One common denominator, however, of all types and forms of contemporary and advanced RI is that they constitute an essential 'tool box' for developing and supporting Danish research, education and innovation at an internationally competitive level. This gives them a key role in boosting Danish knowledge and growth.

The Danish roadmap includes proposals for new or major upgrades of larger scale national RI (typically with total investment needs for construction and/or implementation of approx. 3-14 million €) and memberships and/or nodes to European RI, e.g. those in the ESFRI roadmaps. The RI are single-sited, distributed and/or virtual and within all scientific areas. Memberships of convention-based international RI (e.g. CERN, ESO) and some other national RI collaborations are not part of the roadmap process.

2. RI players in the national R&I system

National relevance of RI

A priority for Denmark is the access of its researchers to state-of-the-art facilities in order to sustain their ranking among the global elite in the future. Equally, access to up-to-date RI is a competitive parameter in the retention and recruitment of top students and researchers, while RI also serve as hubs for knowledge, innovation and technology transfer between research and industry. (Danish Agency for Science, Technology and Innovation 2015, p. 7)

Embedding of RI in the national R&I system

Responsibilities for RI are shared between the Danish Ministry of Higher Education and Science, including the Danish Agency for Science, Technology and Innovation (which receives advice from the National Committee on Research Infrastructures (NUFI)), and the Danish research performing institutions.

3. RI in the National R&I System

Main responsibilities for R&I are located at the national level. The Ministry of Higher Education and Science is mainly in charge for R&I in Denmark. Additionally, the **Ministry of Business and Growth has certain tasks related to business development** as well as several sectoral ministries, namely the Ministry of Energy, Utilities and Climate, the Ministry of Environment and Food and the Ministry of Foreign Affairs, have larger R&I programs. **The ministries have specific agencies which implement the respective policies.** Regions do not play a decisive role in the R&D governance process. (Grimpe and Mitchell, 2016, p. 13)

The "Danish Council for Research and Innovation Policy" is the central advisory body for the Ministry of Education and Science. It is made up of renowned Danish researchers and advises the ministry and parliament on issues related to research, technology and innovation in Danish society. The "Danish Agency for Science, Technology and Innovation" (DASTI), which was assigned to the Ministry of Education and Science, was the national Danish research and innovation promotion agency.

DASTI was also responsible for the quality assurance and evaluation of Danish research. Owing to a reorganisation of the Ministry of Higher Education and Science, DASTI no longer exists and was replaced by the Danish Agency for Science and Higher Education (DAFSHE) to which the division for research infrastructures has moved as well. The Danish National Research Foundation, the Danish Council for Independent Research and the Innovation Fund Denmark are the three main funding agencies for R&I (Grimpe and Mitchell, 2016, pp. 13-14)

The Minister of Higher Education and Science allocates funds from National Fund for Research Infrastructures (part of the Ministry's section of the National Budget) to proposals from the roadmap. They are given as a one-time grant and to be used over an initial period of up to 5 years. **The decision is based on advice from the Danish Agency for Science and Higher Education** (which in turn is advised by the NUF1). There are also annual allocations in the National Budget for Denmark's memberships in international convention-based RI and other special national RI collaborations. **The national research institutions (e.g. universities) receive at least half of the funding for the construction/implementation of RI. The funding is requested by the involved research institutions.** (Grimpe and Mitchell, 2016, pp. 13-15)

4. Major national strategies for international cooperation in R&I and strategic integration of RI

In 2012 Denmark launched its first comprehensive innovation strategy "Denmark- a nation of solutions" In which all relevant stakeholders of the Danish R&I system were involved. The strategy focuses on three areas:

1. Innovation is to be driven by societal challenges to a larger extent than today,
2. more knowledge is to be translated to value,
3. education is to increase the innovation capacity.

The innovation strategy contains 27 policy initiatives regarding research, innovation and education. It focuses on a better knowledge exchange between companies and knowledge institutions, across borders and between the public and private sector. (Ministry of Higher Education and Science, 2012)

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Further links

- Research Infrastructure - Report Schedule <http://ufm.dk/forskning-og-innovation/tilskud-til-forskning-og-innovation/administration-af-bevilling/skemaer/rapportskemaer/copy_of_euopstart-skema-til-slutrapport>. In Danish. [Last access: 08/2017].
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Annex Estonia Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Not applicable or no information presently available.

2.2. Eligibility conditions

Not applicable or no information presently available.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

The following aspects of a roadmap application were assessed:

- Importance, comprehensiveness and competitiveness for R&D in the national and international context
- Relevance of the vision and development goals
- Importance to the industry and enterprises

Relevance of the roadmap's components, investments and operation costs

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

The first Estonian research infrastructure Roadmap was created in 2010. Although the Roadmap is a long-term planning instrument for the research infrastructure, with a longer than ten-year perspective, it was required that the Roadmap be updated every three years and the interim reports on projects that are already in the roadmap be evaluated. To carry out this task, the Estonian Research Council created a Research Infrastructure Expert Group whose members include people from the public, private and academic sector with the executive board directive No. 1–1.4/13/43 from 11 April 2013. The tasks of the Expert Group included a) participation in the updating of the Estonian research infrastructure roadmap, b) evaluation of current roadmap objects and the projects submitted to the roadmap, and c) making propositions to the Estonian Research Council on updating the roadmap. Based on the aforementioned directive and the document from 17 April 2013 approved by the research infrastructure Expert Group "Updating the Estonian Research Infrastructure Roadmap 2013", the Expert Group started work in April 2013.

The first Roadmap (2010) Working Group had developed a detailed method for evaluating applications and the new Expert Group took this as the basis for their work. Aiming for integration with the European research environment, especially that of Finland and the other Nordic countries, the Expert Group used Finland's roadmap evaluation questionnaire and form. The Expert Group's task was to evaluate the objects on the 2010 Roadmap and their activities so far as well as new submitted projects. Thus, unlike in the first round, the projects belonged to three groups—Roadmap projects that had received funding, those that had not received funding (not operating as of yet or partly funded), and new roadmap applications for which the conditions for applying were complemented. In order to minimise the bureaucracy for the research community, it was decided the roadmap would be updated in two parallel parts. Based on the information in the 2010 applications and the reports received by the Estonian Research Council, the existing roadmap objects were sent a pre-filled interim report form by the Council. This only included questions about the vision for the next five years along with investment requirements, a request to confirm the pre-filled data and add the information not included in the pre-filled form. Funded objects were also asked how they are keeping to the action plan and schedule. Proposals for new infrastructures were asked on a separate improved application form in English. Applying began with an information day which introduced the task of updating the roadmap, procedures and application forms and provided answers to numerous questions. The deadline for submitting the interim reports and new proposals was 9 September

2013 and by that time all 20 Roadmap objects had submitted the interim reports and there were 12 new infrastructure proposals.

For evaluating the new proposals, the Expert Group used foreign experts with a strong research background who also held knowledge on building and/or managing research infrastructures on a national level. The following aspects of a roadmap application were assessed: importance, comprehensiveness and competitiveness for R&D in the national and international context, the relevance of the vision and development goals, importance to the industry and enterprises, and the relevance of the roadmap's components, investments and operation costs. Each proposal was evaluated by 1–5 foreign experts, while several experts evaluated 3–4 proposals to gain a better point of comparison. Experts were recruited by the Estonian Research Council with the help of the Academy of Finland and the Swedish Research Council, and following the Council's recommendations on experts from Latvian and Lithuanian Ministries of Education. There were experts from Norway and Denmark as well. In addition to their opinions, the experts scored each evaluation criterion but these scores were not summarised and no ranking was compiled.

The Expert Group evaluated interim reports as well as new proposals. All Expert Group members were asked to present written evaluations on all the parameters about all the projects in advance and these were submitted for reviewing to all members before the Expert Group meetings. The interim reports of objects that had already received funding were also evaluated in view of their conformity to the promises and action plans that served as the basis for the funding application, and the decision of whether or not the project was to remain in the roadmap was made accordingly.

Evaluation meetings were held in three parts. The first meeting was for analysing the interim reports of the current roadmap objects and making pre-decisions on which objects would continue, which require additional information and which will not continue to be in the roadmap. The second evaluation meeting was for analysing new proposals. It was determined which proposals require additional information and their authors were asked additional questions and the presentation of propositions which had to be provided either in written form or at the presentation. Four representatives of current roadmap objects and five representatives of new proposals were asked to make a presentation (in the third meeting of the Expert Group). The third meeting formed the decisions whether current objects would continue or not continue in the roadmap and whether new proposals would be accepted as well as provided recommendations and comments. All decisions and formulations of all the meetings are consensual.

Naturally, the wide range of the Roadmap allows for applications with a different influence and reach, which have different integration levels in their field. Joining similar applications might not always be a good solution; important partners might be left out. In order to achieve the best result which guarantees the integrity of the field and national interests, an additional broad-based analysis is required. Therefore, the Expert Group made two more suggestions. The social sciences field, which has an important part in the society's development, should be developed in a more coordinated manner and better integrated with the country's needs, and to achieve this, it was considered necessary to form an Expert Group that includes representatives of Statistics Estonia, Government Office, researchers of the field of social science, other ministries and related institutions, to devise a plan for the coordinated development of the social sciences research infrastructures. The second recommendation concerns participation in major international research centres/infrastructures where applications have currently been sent on the "first come, first served" principle. The Expert Group recommended treating this package as an object of the Roadmap with a list of different fields produced by the Estonian Academy of Sciences.

The Roadmap is a list of large research infrastructures, intended to link the development ideas and activities of different research groups and institutions to improve international competitiveness. It is not a funding decision or the only method for developing the research infrastructure.

2.5. Proposals evaluated and selected (available statistics)

The Working Group of Estonian experts set up by the Ministry of Education and Research of Estonia was responsible for compiling the first Roadmap in 2010. From the 50 proposals initially submitted (13 proposals of the total were involved with participation in international infrastructures or networks), the group selected 20 infrastructure objects to be included in the first Roadmap.

In case of Roadmap update the deadline for submitting the interim reports of roadmap objects and new proposals for the Roadmap (2014) was 9 September 2013 and by that time all 20 objects of

the first Roadmap had submitted the interim reports and in addition 12 new infrastructure proposals were submitted. In the updated Roadmap (2014) there are 15 objects from the first Roadmap and 3 new projects.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

Not applicable or no information presently available.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

According to the mission stated in the Roadmap, it will be updated regularly (at an interval of 3 years) to take into account the changing circumstances and opportunities.

Although the roadmap is a long-term planning instrument for the research infrastructure, with a longer than ten-year perspective, it was required that the roadmap be updated every 3 years and the interim reports on projects that are already in the roadmap be evaluated.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

At the end of 2012, the Ministry of Education and Research ordered Estonian Research Council (ETAg) to launch a process of updating the Roadmap. In spring 2013, ETAg formed a permanent RI Expert Group with the mission to advise ETAg on long-term research infrastructures policy at national and international level. The mission includes also the update of Roadmap. The National RI Expert Group consists of 13 members from academy, industry/entrepreneurship and governmental sector.

In May 2013, ETAg launched the Roadmap update through two activities:

1. Mid-term review of existing RI's through mid-term reports;
2. Call of Proposals for new RI's.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

By the deadline in September 2013, all 20 RI listed in the existing Roadmap submitted their mid-term reports. In addition to that, 12 new RI proposals were submitted. The RI Expert Group will have to assess the new proposals as well as the state-of-art of existing RI's and make a decision about their continuation/exclusion from the updated Roadmap.

The external experts were used only for assessing the new proposals. Each proposal was reviewed individually by two external experts (minimum –at least one external expert per proposal). Individual review reports submitted by the experts were used by the RI Expert Group as input and complementary material in analysing the new proposals for inclusion in the Roadmap. The external experts submitted their individual review reports electronically; they were not expected to travel to Estonia.

The individual review report is divided into four sections:

In *Section 1*, experts were asked to assess four items:

1. RI's significance for research and science, its state-of-art in international context
2. Relevance of the RI's vision and development goals.
3. RI's significance for industry and entrepreneurship.

Rating scale

5 = excellent, extremely good in international comparison – no significant elements to be improved

4 = very good, contains some elements that could be improved

3 = good, contains elements that can be improved

2 = unsatisfactory, in need of substantial modification or improvement

1 = weak, severe flaws that are intrinsic to the proposed project or the application

The experts were also asked to comment shortly their assessments.

In *Section 2*, experts were asked to assess three items:

4. Relevance of the components of the RI.
5. Relevance of the estimated investment needs.
6. Relevance of the annual operating costs.

Rating scale

For item 4: Sufficient / partially sufficient / insufficient

For items 5 and 6: Overestimated / sufficient / underestimated

The experts were also asked to comment shortly their assessments. Rates, given by experts, were not summed up. They indicated experts' general opinion about certain item.

In *Section 3*, experts were asked to classify the proposal as follows:

1. Proposed RI is mature to be included into National Roadmap.
2. Proposed RI is promising but needs improvements to be included into National Roadmap.
3. Proposed RI is immature and not suitable for National Roadmap.

The recommendations were asked in the next section.

In *Section 4*, the experts were asked to provide overall assessment of a proposal and to point out its main strengths and weaknesses, as well as make comments and recommendations. No overall rating was required in this section.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

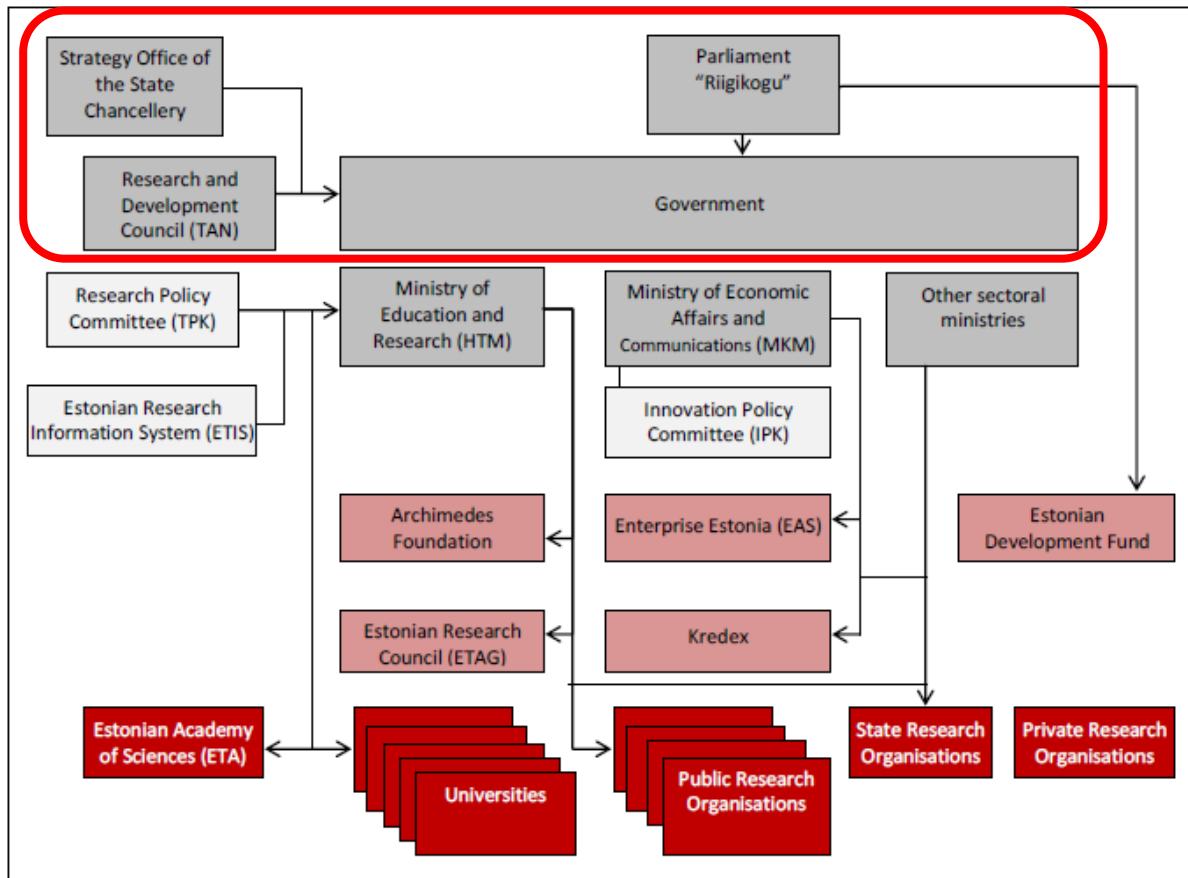
Not applicable or no information presently available.

Annex Estonia Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	x
Access to RI	x
Organisation within national procedure	x
<p>RI is the means (laboratories, equipment, devices, collections, etc.), knowledge, methods, material, and the related activities and used for the creation of new knowledge and the transfer, mediation and storage of knowledge. The Estonian research and development strategy intends the development of the RI, including the development of the digital infrastructure.</p> <p>Facilities, resources and services that are used by the research communities to conduct research and foster innovation in their fields. They include major scientific equipment (or sets of instruments), knowledge-based resources such as collections, archives or scientific data and e-infrastructures such as data and computing systems and communication networks. Such infrastructures may be 'single-sited', 'virtual' or 'distributed'. (European Commission, 2010b; ESFRI, 2011)</p>	

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 4.



Source: ERAC Peer-Review of the Estonian Research and Innovation System, 2012; updated by the author. Note: Estonian acronyms are given in brackets.

Figure 4: Organisational chart of the R&I system of Estonia (Ruttas-Küttim and Stamenov 2016 p. 17). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

A systematic development of an adequate infrastructure in Estonia appears to be a crucial precondition in order to secure further continuation of research, development and innovation activities necessary for transition to a knowledge based society. A special strategy elaboration measure for the corresponding activities is provided within the European Union in the form of the RM, which is a long-term planning instrument (with 10 to 20 year perspective) that includes a list of nationally significant objects, either new or in need of renovation, pertaining to the RI. The roadmap is a list of RI, intended to link the development ideas and activities of different research groups and institutions to improve international competitiveness. (Estonian Ministry of Education and Research, 2010, p. 10)

Embedding of RI in the national R&I system

The main entity responsible for RI is the Ministry of Education and Research. Support for RI is provided by different funding instruments. The Estonian Research Council responsible for the Estonian Research Infrastructures Roadmap, support for research infrastructures of national importance, coordination of Estonian participation in international research infrastructures, and support for core facilities at the Estonian R&D institutions.

3. RI in the National R&I System

The Estonian R&I system is centralised. The Ministry of Education and Research (HTM) is responsible for all areas of education and research in Estonia. Fundamental and scientific research is the responsibility of the HTM, while the Ministry of Economic Affairs and Communications and the Ministry of Entrepreneurship are responsible for technological development and innovation. The HTM is assisted by twelve agencies, but it is not itself responsible for the development of R&D guidelines, by financing and evaluating the results of the work. These agencies include: Language Inspectorate, the National Examination and Qualification Center, the Estonian Educational and Research Network, the Estonian Youth Work Center (EYWC), the Tiger Leap Foundation, the Estonian Science Foundation, the Archimedes Foundation, the Estonian Information Technology Foundation, the INNOVE Foundation For Lifelong Learning, Estonian Sports Information Center, AHHA Foundation Science Center, Estonian Qualification Authority. **At institutional level, the Estonian Research Council is in charge for supporting the Estonian RI.**

The HTM implements the national research policy and organises research and development activities, prepares proposals concerning the research policy, submits them to the Government and organises the financing of research and development at research and development institutions. The MKM organises technological development and innovation policy, prepares proposals concerning technological development and innovation policy and submit them to the Government. It is also responsible for organising the funding of applied research, development and innovation. (Ruttas-Küttim and Stamenov 2016, p. 15)

4. Major national strategies for international cooperation in R&I and strategic integration of RI

R&I strategic objectives and principles of management and financing are set in two main strategies: "Knowledge Based Estonia 2014-2020" and the "Entrepreneurship growth strategy for 2014-2020". While updating the RI Roadmap in 2013, Estonia had quite comprehensive consultations with Finland, as Finland also updated their Research Infrastructure Roadmap. Foreign experts were also involved in the process of evaluation of new infrastructure proposals for the Roadmap.

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Annex Finland Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

The above mentioned criteria forms a basis of the evaluations:

1. Scientific quality and potential
2. Open access and utilisation
3. Relevance to the strategies of host institutions
4. National and international relevance
5. Feasibility and Sustainability

2.2. Eligibility conditions

There are a set of general criteria for research infrastructures. A research infrastructure must:

- Provide potential for world-class research and scientific breakthroughs
- Be of broad national interest and enhance the international impact
- Have a long-term plan for scientific goals, maintenance, financing and utilisation
- Be used by several research groups/users for high-quality research
- Be open and easily accessible to researchers, industry and other actors
- Have a plan for access to and preservation of collected data and/or materials
- Be extensive enough so that individual groups cannot manage them on their own

Introduce new cutting-edge technology (if relevant).

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

The research infrastructure projects evaluated maybe at different stages in terms of their life cycle. Some are in the planning phase while others might already be completely operational. For those research infrastructures that are in the planning phase, the evaluation is mainly based on anticipated future impacts rather than actual results. For existing research infrastructures the actual results will be evaluated.

The criteria used should be fair and equal, reflecting the international state of the art within the field in question. Major upgrades of existing research infrastructures or their reorientation require an evaluation of all criteria, the general and specific ones.

The evaluation of the research infrastructure projects is carried out in a process comprising five different dimensions. Each research infrastructure project is evaluated individually in each separate dimension as well as in comparison to the other projects in all other areas of science. The dimensions are:

1. **Scientific quality and potential:**

- The RI is of scientific significance and timely and provides added value at the national and/or international level
- The RI is continuously used by excellent researchers and research groups
- Existing RI shall provide an account of their activities, showing utilisation rate and impact, for example, in the form of scientific outputs, new applications, patents, products, or generated business activities or other societal benefits
- The RI participates in the training of researchers or is utilised for these purposes

2. **Open access and utilisation, Finnish and international users:**

- There should be transnational open access to the research infrastructure. Access may require approval of a research plan and reasonable user fees as a compensation for the maintenance, user support and other services
- The research infrastructure should have data policy that supports the Open Science con-

cept in which research methods, data and outcomes are all thoroughly documented and publicly accessible in an open manner. Therefore, the research infrastructure must have a data management plan that consists of information on data acquisition, computation, storage, and ownership of the data

- The research infrastructure must have clear and well-functioning leadership and administrative structures, adequate personnel for the maintenance, services and user support of the research infrastructure
- The research infrastructure should monitor its utilisation rate
- The research infrastructure should demonstrate its contribution to the training, e.g. provision of courses, professional guidance and science education

3. Relevance to the strategies of host institutions

- Building and operating a research infrastructure requires a long-term commitment from the research infrastructure itself and the host as well as other contributing institutions. Therefore, the strategies and priorities of the host institution(s) will also be included in the evaluation.

4. National and international relevance

This dimension of evaluation relates to the added value the research infrastructure provides for the national and/ global research community, and how it contributes to the visibility, global attractiveness and future development of Finnish research environment.

1. Strategic significance of the research infrastructure for Finland
 2. Added value of research infrastructure:
 - for society, at large
 - for innovation activities, business and economy
- through global cooperation (e.g mutual mobility) of Finnish research community

5. Feasibility

The feasibility and sustainability of the project is assessed on the basis of the technical, institutional (e.g. form of ownership, terms of use or membership) and personnel requirements during the whole life cycle of the research infrastructure.

The expenses consist of planning, investment, operational and decommissioning costs during the whole life cycle of the research infrastructure.

Planning costs

Investment costs

- Construction/Building (incl. manpower)
- Acquisition of real estate
- Special technical equipment
- Supply/construction of devices and equipment

Operating costs

- Personnel costs (e.g. operation, maintenance, user support)
- Material costs (incl. membership fees or other payment of contributions to organisations)
- Costs of running the premises (rent, electricity)
- Other noteworthy investments (replacement purchases) required to keep the research infrastructure and equipment on an adequate level, reflecting the state-of-the-art

Decommissioning costs

- Costs of closing down the business and conservation of the resources developed

Ensuring sustainable funding during the whole life cycle of research infrastructure is essential not only for research infrastructure itself but also to the user community at large. In the financial plan investment and operational costs should be made explicit as well as the associated sources of those funds. Flexible business models are essential to keep research infrastructure sustainable in the long run.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

Proposals by the research organisations, on RI to be included on the roadmap, were evaluated in a two-stage process by international panels of experts. On the basis of the panel's assessments, the Finnish Research Infrastructure (FIRI) Committee decided on the research infrastructures to be selected for the roadmap (see the figure below).

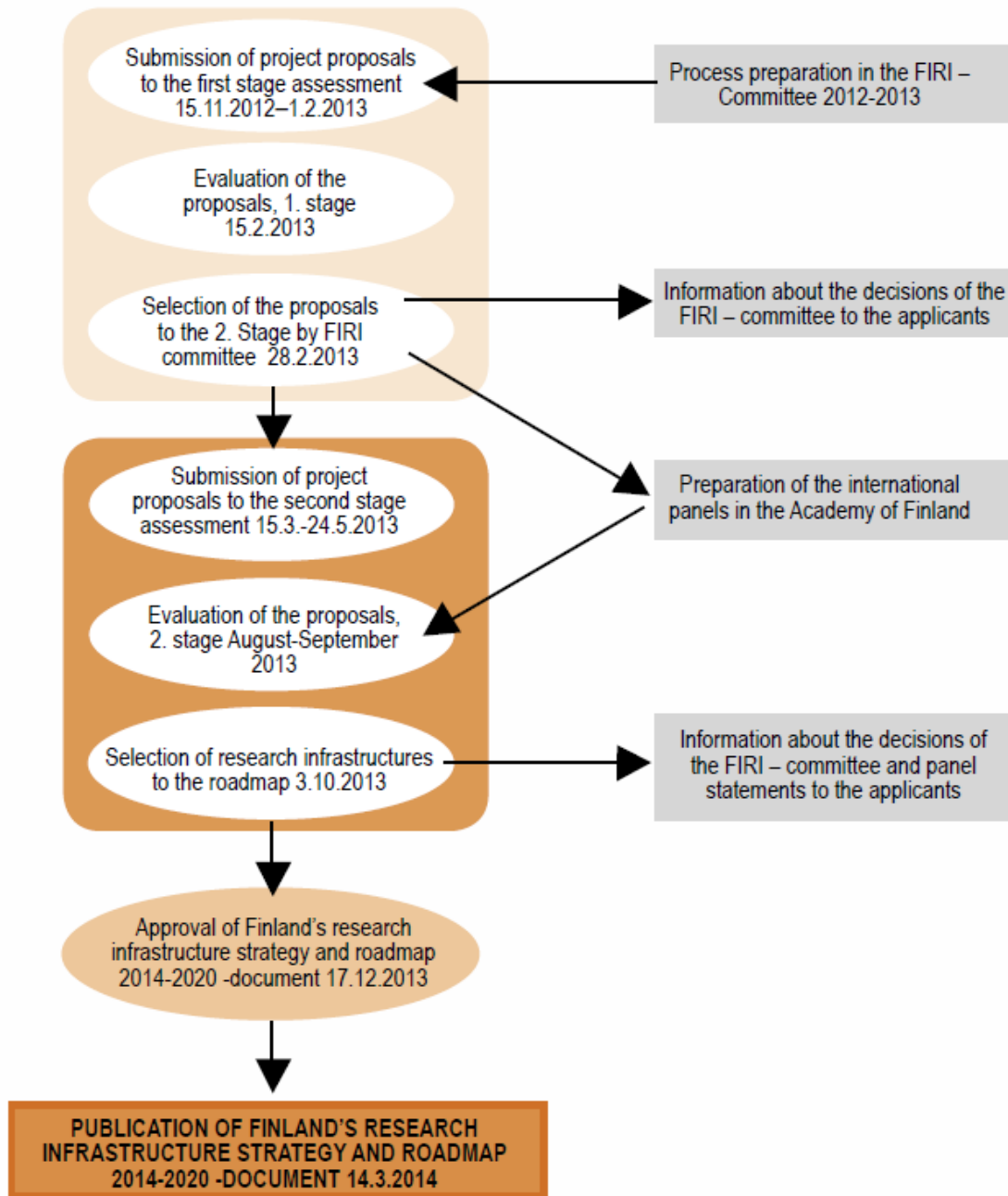


Figure 5: Selection process of RI in Finland.

The evaluations of the proposals sought to identify international-level research infrastructures that support the attainment of Finland's research and innovation policy goals. Projects selected for the roadmap were to create added value in research terms and markedly lift the quality of research in Finland within the discipline in question. They were also to attract excellent researchers to Finland.

When assessing the potential for the successful realisation of each research infrastructure, the panel members took into account the scope of the potential user community, multidisciplinary coverage, multi-sectoral reach and quality. All criteria were interpreted from Finland's perspective. However, when weighing up participation in international research infrastructures, the panel assessed the quality and impact of research from the viewpoint of international needs.

Apart from the evaluation of RI projects to be included in the roadmap, an evaluation of the impact and significance of research infrastructures will also be necessary for fulfilling the Finland's research infrastructure Vision:

- a) The impact, significance and collaborative use of research infrastructures will be subject to regular evaluation.
- b) Decisions on the continuation of international and national research infrastructures of importance to Finland will be based on a systematic evaluation method.

Evaluations will be performed of the direct or indirect benefits of national or important international research infrastructures to Finnish research, business and society. In developing such evaluations, account will be taken of the fact that the nature of research infrastructures may change due to developments in science and technology such as new digital breakthroughs.

2.5. Proposals evaluated and selected (available statistics)

The first Finnish research infrastructure roadmap was published in 2009. A total of 24 major research infrastructure projects (Reference 1) by national actors were selected for this roadmap. Of these, 13 formed part of European roadmap projects under the European Strategy Forum on Research Infrastructures (ESFRI).

Then, a total of 31 projects required for research and innovation in the disciplines in question have been selected for the 2014–2020 roadmap.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

- The mid-term evaluation of the current roadmap has been conducted 2017, results will be published 2018. The main objectives of the evaluation are:
- **Scientific case:**

to evaluate the scientific quality and relevance of research infrastructure. The scientific evaluation of the infrastructures, which will be selected to the roadmap, will be valid for three years. Thus, their scientific quality will not be evaluated again, until the roadmap period ends.

- **Implementation case:**

to assess, whether the infrastructure is fully implemented and operational (like ESFRI Landmarks), or is it mature enough to be in the roadmap? A landmark should meet all of the criteria set for national research infrastructures. Whereas infrastructures selected to the roadmap should demonstrate clear capacity to fully meet the criteria.

- **Finnish research infrastructure committee:**

to decide, based on both scientific and infrastructure specific evaluations, about the final structure of the roadmap and the its categorization

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

The roadmap for research infrastructures will be updated every five years. On the other hand, The implementation of the research infrastructure strategy and the progress of research infrastructures selected for the roadmap will be reviewed every three years.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

The monitoring was based on both reported information 2013-2016 and action plan until 2017 – 2022. In the report, the following KPIs were used:

- Staff of the RI (number of)
- Funding of the staff
 - Users and usage of RI (number of/ annually)
 - Costs and funding base of RI
 - Collaboration and interactions of RI
 - Visits
 - Openness of RI:
- access
- Data handling and storage
- Availability of the data produced
 - Publications
 - Intellectual property rights and other outputs 2013-2016:
- Patents and inventions disclosures
- Other outputs (events like seminars, Current care guidelines, research data guidelines, methods, tools and software, other equivalent, openly or commercially available and documented outputs)
 - New Technologies produced
 - Effects and impact:
- World views, culture and human understanding
- Public services and societal functions
- Economy and commerce
- Health and wellbeing
- The environment and natural resources
- Impact that manifests itself in other ways

In the Action plan, RI were asked to tell about their future plans based on the same above mentioned KPIs.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

All the RI funded through Academy of Finland, report to Academy annually. The same reporting mechanism (KPIs etc.) is used like described above.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex Finland Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	x
Categorisation of RI	x
Access to RI	
Organisation within national procedure	x
<p>Research Infrastructures form a reserve of research facilities, equipment, materials and services. As such, they enable research and development at various stages of innovation, while supporting organised research, researcher training and teaching. They also support and develop research and innovation capacity. RI consist of equipment, knowledge networks, databases, multidisciplinary research centers, research stations, collections, libraries and the related user services, where these are fundamental to research. In general, major RI are international and open to collaborative use, providing cooperation possibilities to researchers both abroad and in Finland. RI can be centralised, that is, based in a single location. They can also be distributed or virtual, and can form mutually complementary entities and networks. (The Finnish Research Infrastructure Committee, 2014, p. 3)</p> <p>Research infrastructures form a reserve of research facilities, equipment, materials and services. As such, they enable research and development at various stages of innovation, while supporting organised research, researcher training and teaching. They also support and develop research and innovation capacity (InRoad Consultation).</p>	

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 6.

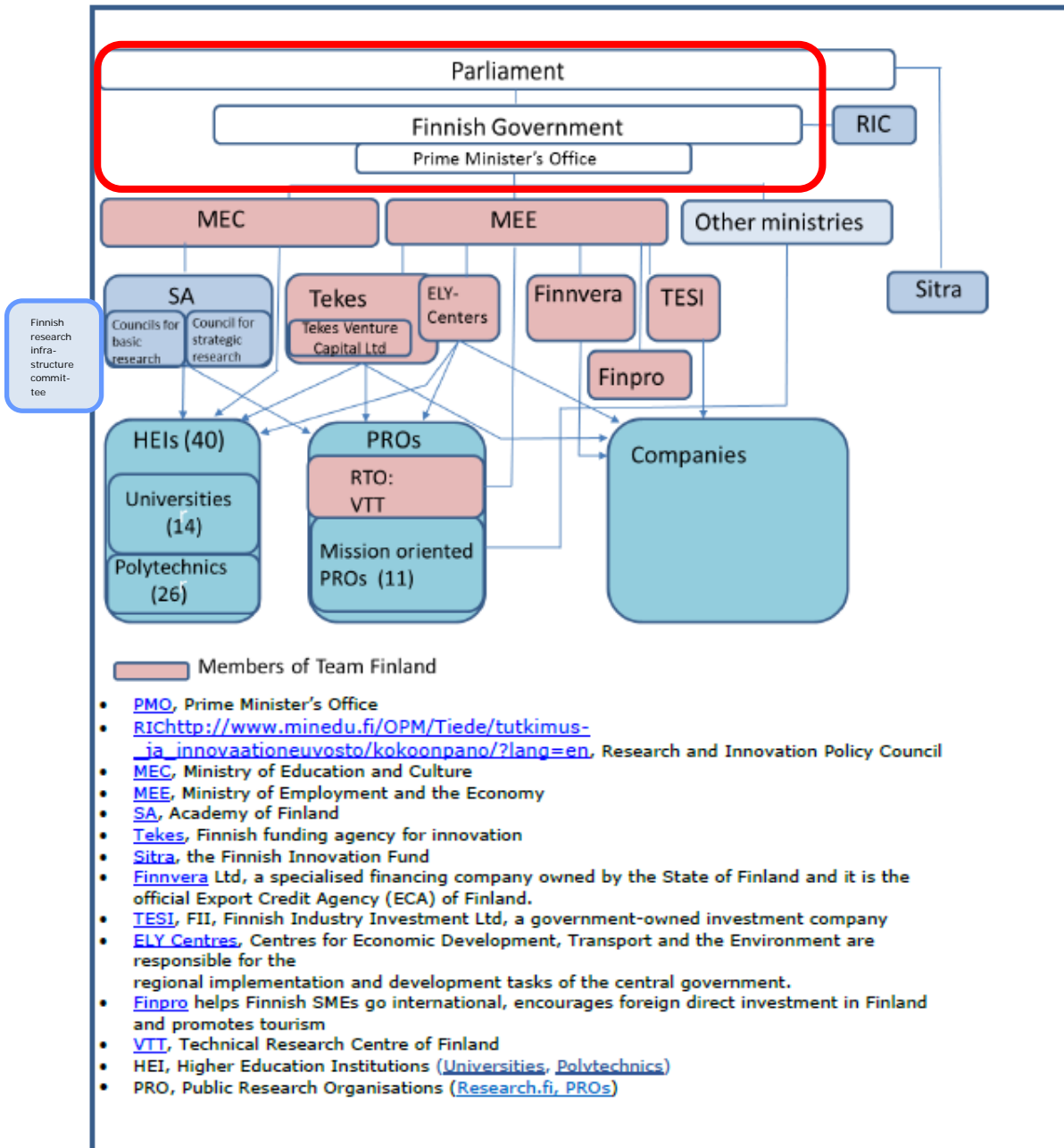


Figure 6: Organisational chart of the R&I system of Finland (Halme et al., 2016, p. 17). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

According to the Finnish Research Infrastructure Committee frontier research requires state-of-the-art infrastructures. At their best, RI are dynamic and open physical or virtual research community structures that cross disciplinary boundaries. They attract international top-flight researchers; provide training and teaching, and enable innovations in partnership with entrepreneurs, companies and industry. A sound research infrastructure ecosystem includes local, national and international research infrastructures of various size categories, complementing and supporting one another. (The Finnish Research Infrastructure Committee, 2014, p. 10)

Embedding of RI in the national R&I system

Finland's Research Infrastructure Committee is a national decision-making body for RI and is located within the Academy of Finland (Halme et al., 2016, p. 21.).

3. RI in the National R&I System

The Finnish governance system is comparably centralized in terms of national guidelines, strategies and funding. Yet a mix of national and local administration allows regions to have a relatively high degree of autonomy in the design and implementation of regional policies. Regions' role is especially focused on allocating structural funds.

The Finnish R&I System is divided into four operational levels:

The Parliament of Finland and the Finnish government rule the highest level. In matters related to research, technology and innovation policy, the latter is supported by a high-level advisory body, the Research and Innovation Policy Council (RIC). The second level consists of the ministries, of which the Ministry of Education and Culture (MEC) and the Ministry of Employment and the Economy (MEE) play the main role in research and innovation policy. On the third level of the Finnish Innovation system, there are the competitive R&I funding and the R&D funding agencies. The fourth level is comprised of organizations that conduct research. (Halme et al. 2016, p. 19)

4. Major national strategies for international cooperation in R&I and strategic integration of RI

The Academy of Finland's strategy, revised and adopted in 2015, draws attention to the quality, impact and renewal of science and research. The strategy also emphasises the importance of international engagement for high-quality science and research.

References

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- **Further links**
- Quality, impact and renewal in international cooperation: Academy of Finland international policy for 2017–2021 <<http://www.aka.fi/globalassets/40akatemia/academy-of-finland-international-policy-23-feb-2017-valmis.pdf>> [Last access: 06/2017].

Annex France Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

See point 2.2 and 2.4.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

For the roadmap 2016 a questionnaire containing some generic questions on budget was used. The main objective of that exercise was to see if the infrastructures were able to measure the investment costs, the operational costs and the personnel. The update which is now underway is a more in-depth exercise aimed at having a better knowledge on criteria related to scientific production and openness to the users, data policy, socio-economic impact and full costs of RI.

2.2. Eligibility conditions

The research infrastructures which candidate for the national roadmap should be able to show that they complete a certain number of criteria such as national character of the infrastructure, identified governance, openness to the research community, offering of services to the users, existence of data management plan and availability of data, production of multi-annual budget. For more information, see the National strategy on research infrastructures 2016.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

The main criteria for evaluating those RI applications willing to be included in the roadmap are:

- Identification and nature of infrastructure, governance
- European / international dimension of infrastructure
- Scientific and technological design of research infrastructure
- Data and data management
- Elements concerning scientific production and training
- Elements of openness and efficiency for existing infrastructure
- Industrial relations, innovation and socio-economic impact

Consolidated budget presentation and full cost calculation

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

The lists of the infrastructures candidates to the national roadmap are provided by the research Alliances in each scientific domain (Social sciences and humanities, Biology and Health, Energy, Environment, Digital and mathematics). In case where there is no research Alliance (Astronomy/Astrophysics, Nuclear physics and engineering, scientific and technical information) the main research organizations are discussing the proposals of infrastructures in the fields and represent the ideas of all the research institutions of the field. The researches Alliances involve all the research institutions of the field + the universities.

1. Thus the first selection of the candidates for the national roadmap is done at the level of the research organizations, which are hosting and financing the research infrastructures and the research Alliances. As soon as the Alliances together with the research organizations select and approve the candidates, the candidates fill in the ministry form (questionnaire), which includes the criteria applied for the research infrastructures.
2. The completed documents are then discussed within the thematic coordination groups including the Alliance and ministry representatives as described in point 3.3
3. Then the proposals are discussed within the project committee (see point 3.3), which is an internal ministry committee
4. As soon as the project committee validates all the lists of candidates from all the research domains, as well as the completed forms of the candidates, all the documents are transferred to the High Council on research infrastructures (see 3.3).

5. After the High Council gives its opinion on the coherence of the national infrastructure landscape and the candidates for the national roadmap, the Steering Committee takes the final decision and validates the inscription of the infrastructures on the national roadmap. The members of this committee are the Director General for research and innovation from the Ministry for research and innovation (he is the chair of the Committee), the presidents of all the research alliances, the presidents of the two major research organizations (CNRS and CEA), the president of the Conference of University presidents (this conference is a kind of union of all the presidents of French universities).

The whole process of selection and evaluation takes about 1.5 years.

2.5. Proposals evaluated and selected (available statistics)

Not applicable or no information presently available.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

The objective of the whole procedure is to rationalize the national landscape of research infrastructures, to optimize the functioning of the research infrastructures as well as the services provided, to make them complementary, more coherent and visible at the national level. This work is naturally done in articulation with the European orientations, as many of the national research infrastructures are French mirrors or national nodes of the European research infrastructures.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

The national roadmap is regularly updated, more concretely every two years. Since 2012, an update of the roadmap (in parallel to ESFRI) was conducted in 2016. Now the roadmap is again being updated in order to have a new version in 2018 in articulation with ESFRI.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

The National Research Infrastructure Strategy is an indispensable framework for the management and management of this component of the research activity. It identifies in a concrete manner the priority infrastructures, existing or planned, in all fields of research, whether national or international. The Research Infrastructure Roadmap must be updated regularly.

All the data presented in the national roadmap 2016 will be updated in 2018 according to the state of progress of each infrastructure in relation to the principles defined. Certain aspects, such as the ability to produce a consolidated budget integrating full costs and to present a data management plan for the infrastructure, will be examined systematically.

This national updating will be carried out in parallel with the next update of the ESFRI roadmap planned for 2018. This harmonization, already carried out for the financial year 2016, is important to harmonize the national landscape and the European guidelines by taking into account the fact that some of the national infrastructures are planned to become the French nodes of the European infrastructure labelled by ESFRI.

Two levels of monitoring of research infrastructures will be conducted by the *Direction Générale de la Recherche et de l'innovation* (DGRI):

- At national level, infrastructures will be required to integrate the following criteria in their approach:
 - The evaluation of a consolidated budget integrating the full costs.
 - Provision of the data produced either immediately or after an embargo period in relation to the international practices of their specific fields.
- At the European level, infrastructures willing to register on the ESFRI 2018 roadmap will be studied according to the method set up to update the ESFRI 2016 roadmap.

Work Methodology

1. Coordination

The follow-up of the development of the infrastructures selected in the roadmap 2016 will be carried

out according to a project method.

The project will be coordinated by a scientific coordinator (DRGI - *Service de stratégie de la recherche et de l'innovation* (SSRI)) "member delegate" of ESFRI, and project management will be entrusted to the project manager (*Département des Grandes Infrastructures de Recherche* (DGRI) – SPFCO B4). They will lead and coordinate the actions of the monitoring of research infrastructures by the DGRI with the objective of consolidating the national roadmap in 2018.

2. The Project Committee

A project committee from DGRI specifically set up to work on the national RI roadmap 2016 will continue with the process. This project committee supervises the project, specifying as much as possible the framework of the work of the working groups, and analyzing the returns of these groups at each meeting of progress. It ensures the permanent monitoring of the project and the "reporting" to the *Très Grand Instrument de Recherche* (TGIR) Steering Committee.

This committee consists of:

- Scientific coordinator member of ESFRI
- Project Manager
- Representatives of the scientific domains DGRI SSRI present at the Strategic Working Group (SWG) of the ESFRI
- Coordinators of the working groups for the monitoring of research infrastructure indicators

The Department of Major Research Infrastructures (DGRI SPFCO B4), the Head of the DGRI SSRI Service and the Heads of DGRI SSRI Thematic Sectors will attend Project Committee meetings as a standing guest.

3. Work organization:

A reflection will be set up around certain subjects that deserve to be deepened and consolidated for 2018:

For monitoring at the national level, research organizations and infrastructures will be actively involved in this collective action, and will participate in reflections (see supplementary sheets):

- on the establishment of the consolidated budget and the method for calculating the full cost of research infrastructures
- on some key indicators
- on the management of data generated by research infrastructures

For monitoring at European level, the coordination groups set up to update the ESFRI 2016 roadmap will continue operating. These thematic groups include the representatives of the Research Alliances and research organizations in the non-Alliances scientific domains and are supported by the scientific representatives DGRI SSRI present at the ESFRI Strategic Working Group (SWG).

3.4. Role of the TGIR High Council and the TGIR Steering Committee:

The TGIR High Council will give a strategic scientific opinion on the maturity of the projects and on the evolution of the research infrastructures included in the national roadmap. The opinion of the TGIR High Council will also be requested concerning the candidate projects for the ESFRI 2018 roadmap.

The work carried out within the framework of this monitoring of the national research infrastructures will be presented regularly to the TGIR Steering Committee for information, validation and final assessment.

3.5. deliverables:

- Beginning 2017: list of projects approved by the TGIR Steering Committee and supported by the State for the ESFRI 2018 roadmap registration
- Mid 2018: national road map Updated with consolidated research infrastructures

It should be also mentioned here that there are several types of the infrastructures on French national roadmap:

- Those being directly financed by the ministry through the corresponding budget lines in the state budget (the so-called Very Large Research Infrastructures - VLRI) and the international organisations (IO)

The Research Infrastructures (RI) and Projects which are financed by the research organisations with no direct budget lines in the state budget.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

The indicators are in the ministry form (questionnaire) that all the candidates have to fill in. The ministry of research is participating in the preparatory meetings of the Councils of the VLRI and the OI and also in some Council meetings. Thus, the monitoring of the VLRI and the OI is done regularly thanks to these close interactions with these infrastructures. Concerning the RI and Projects, the ministry is quite regularly informed about the development of these infrastructures because the scientific questions of these infrastructures are followed up closely by the service for strategy of research and innovation of the ministry. Thus, the ministry has a general overview of the infrastructures and hasn't established any additional monitoring instruments.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

See point 3.4.

Annex France Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	
Access to RI	
Organisation within national procedure	
<p>The following principles must be applicable for RI:</p> <ul style="list-style-type: none"> • It must be a tool or a device that has unique characteristics identified by the scientific community that makes use of it as required for conducting high-level research activities. The targeted scientific communities can be national, European, or international, according to the case. • It must have governance that is identified, unified and effective, and strategic and scientific bodies for steering. • It must be open to any research community that wants to use it, accessible based on peer-reviewed scientific excellence; it must therefore have suitable evaluation bodies. • It can conduct its own research, and/or provide services to one (or several) communities of users that integrate the stakeholders of the economic sector. These communities can be present on the site, conduct work there on a one-off basis, or interact remotely. • Moreover, RI will in the future have to be able to: Produce a multi-annual budget schedule as well as a consolidated budget that incorporates the full costs, and make the data produced available, either immediately, or after an embargo period corresponding to the international practices of the field involved. 	

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 7.

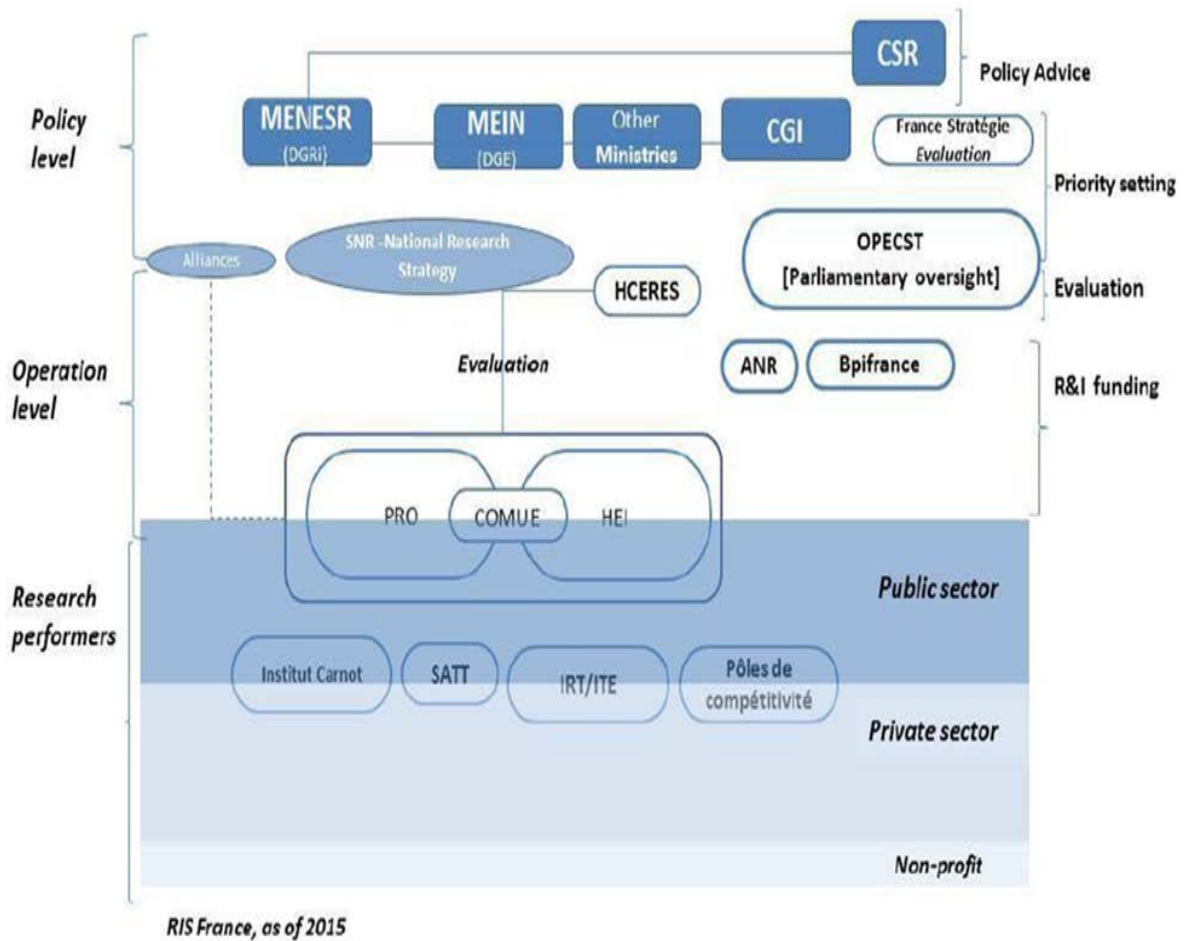


Figure 7: Organisational chart of the R&I system of France (Bitard & Zacharewicz 2016, p. 17).

Acronyms: ANR: National Research Agency, Bpifrance: Public Investment Bank, CGI: General Commission for Investments, CSR: Strategic Research Council, COMUE: Higher Education and Research Institutions and University Clusters, DGE: Directorate-General for Enterprises at Ministry of the Economy, Industry and Digital Sector, DGRI: General for Research and Innovation (within the MENESR). HCERES: High Council for Evaluation of Research and Higher Education, HEI: Higher Education Institution, Institut Carnot: Research network of 34 institutes dedicated to fostering enterprise innovation through public-private collaboration, IRT: Technology Research Institute (Investments for the Future Programme), ITE: Energy Transition Institute (Investments for the Future Programme), MEIN: Ministry for the Economy, Industry and Digital Affairs, MESRI: Ministry of Higher Education, Research and Innovation, OPECST: Parliamentary Office for the Evaluation of Scientific and Technological Choices, *Pôles de compétitivité*: Competiveness clusters, PRO: *Organisme public de recherche*, SATT: Private company (full public capital) dedicated to boosting technology transfer from universities through intellectual property, SNR: National Research Strategy, NB: The 'bottom layer' encompasses Institut Carnot, SATT, IRT and '*Pôles de compétitivité*'.

National relevance of RI

With the RI National Roadmap France wants to achieve a controlled view on particularly heavy investments, allowing the state to have a solid basis for multi-year action plans. RI play a crucial role for strengthening the competitiveness of the broad-based French research landscape through targeted investments and to make the data generated in research visible and accessible to the society. RI are one of the central prerequisites for excellent basic research, significant technological advancements and the development of new research areas. RI are essential for the performance of research and innovation in France.

Embedding of RI in the national R&I system

The French R&I system is **centralised at state level and is divided into three main areas** of activity: policy-making (policy level), implementation (operational level) and execution (enforcement of regulation). In 2014, a specific mission of evaluation of innovation policies and of the innovation policy mix was assigned to the General Commission for Strategy and Economic Foresight and a related committee was installed.

At **policy level**, the MESRI and the Ministry for the Economy, Industry, and Digital Affairs are responsible for research and innovation policy. The High Commission for Investments (CGI), which is subordinated directly to the Prime Minister, has a complementary structuring role. The Ministry for the Economy, Industry, and Digital Affairs is responsible for industrial research and plays a specific role on the subject of business R&D. Innovation policies are shared by the two ministries. The Interministerial Mission on Research and Higher Education (MIREs) is mainly responsible for research funding.

At **operation level**, the R&I system is structured around main research agencies. The High Council for Evaluation of Research and Higher Education (HCERES) carries out regular assessments of institutions, research units and courses and trainings delivered by HEIs. The Parliamentary Office for Evaluation of Scientific and Technological Choices (OPECST) is responsible for evaluating the effectiveness of the National Research Strategy (including public aid to private research). The National Commission for the Evaluation of Innovation Policies is in charge of evaluating innovation policies. The research is carried out by companies (private sector) and public research performers. (Bitard & Zacharewicz 2016)

3. RI in the National R&I System

In the French national R&I system competencies are shared between the different federal ministries with respect to policy, implementation and execution. At operation level, the French R&I system is structured around a number of agencies. The vast majority of public funding of research and higher education originates from a single interministerial budget, the MIREs (Mission interministérielle recherche et enseignement supérieur) (Bitard & Zacharewicz 2016). MIREs supervises 10 programmes of the national budget, 5 of these programmes are in the direct responsibility of the Ministry of higher education, research and innovation (MESRI) which covers 90% of the MIREs budget. Thus, the main ministry in charge of the budget dedicated to research is the MESRI.

The French Ministry of Higher Education, Research and Innovation (MESRI) has a ring-fenced budget for very large research infrastructures (VLRIs) and International Organisations (IOs). The budget is discussed annually with the Ministry of Economy and Finance (MEF) during the preparation of the annual state budget

The VLRIs and the IOs, which are on the national Roadmap, are considered as the national priorities and are financed directly from the ministry budget with a special budget line in the state budget.

4. Major national strategies for international cooperation in R&I and strategic integration of RI

The National Strategy for Research (SNR), following the EU's Europe2020 strategy and the Horizon2020 research programme, was adopted in 2015 and is entitled "France Europe 2020". It contains orientations according to which research performers shall alter their research priorities in order to better meet societal challenges, in the context of the European research policy framework. (Bitard & Zacharewicz 2016)

The National Strategy on Research Infrastructures is accomplished in coherence with the National Strategy for Research, reinforcing the national effort to support fundamental research via long-term investment engagement into research facilities, equipment and personnel.

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Further links:

- Mises à jour de la roadmap ESFRI et de la feuille de route nationale des grandes infrastructures de recherché H2020 - Journée nationale d'information <http://cache.media.education.gouv.fr/file/2015/05/0/H2020_INFRA_Feuille2Route-Actualites_InfoDay_20150915_470050.pdf> [Last access: 06/2017].
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Annex Germany Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

The science-driven, economic driven evaluation and the societal relevance and research policy driven prioritization shall serve as the basis for the national roadmap.

2.2. Eligibility conditions

RI to be included in the roadmap have to comply with the following conditions:

- Being of national strategic importance.
- Being characterized by a long lifespan.
- They are required more than EUR 50 million of investment and operating costs during the first ten years.
- Their access and hence their use is regulated via an evaluation of the scientific quality.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

The Federal Ministry of Education and Research has divided the evaluation of concepts for RI into three clearly defined processes: The scientific evaluation, the economic evaluation, and the research policy and evaluation of societal relevance (BMBF, 2016).

Scientific evaluation process

The science-driven evaluation of research infrastructure projects takes place in two successive steps: a qualitative **individual evaluation** of each project, and a **comparative overall evaluation**. Both evaluations comprise four dimensions of evaluation.

- *Scientific potential*: Considering relevant specialised and interdisciplinary aspects, the scientific potential of the planned RI is assessed in terms of its significance for the future, bearing in mind the current state of research in the respective research fields, and any rival or complementary projects.
 - Scientific prospects
 - Potential modes of operation during life-time
 - Competing and complementary research infrastructures
- *Utilisation*: The use of research infrastructures is appraised in terms of structure, size and the internationality of the user group. Furthermore, access regulations are reviewed to evaluate the degree of open accessibility for external use and their orientation towards scientific quality.
 - Expected user groups
 - Access management and service
 - Data concept
 - Process integrity
- *Feasibility*: The evaluation of this dimension includes questions regarding technical feasibility, and the institutional and staffing conditions at the host institution(s).
 - Technical requirements and risks
 - Institutional requirements
 - Personnel requirements
 - State of realisation
- *Significance for Germany as a location of scientific and technological developments*: The significance of the planned infrastructure project is assessed, both in the context of Germany's stand-

ing as a scientific location and in terms of its European and international degree of visibility and attractiveness.

- Visibility
- Attractiveness
- Transfer and impact

Economic evaluation process

- *Financing concept*
 - Costs of the development phase
 - Description of the financing structure
 - Costs of the utilisation and closure phases
 - Economic risk assessment
- *Implementation and realisation concept*
 - Project plans
 - Management concepts
 - Governance
 - Implementation phase risk analysis
- *Utilisation concept*
 - Target group analysis
 - Access management and service
 - Business plan
 - Data utilisation and data management concept

External experts from industry and science were involved in the economic evaluation process to the extent that several (up to seven) persons were consulted for each planned research infrastructure project. All concepts submitted for the planned research infrastructures were assessed with regard to the estimated costs. In so doing, a distinction was made between the amount of the investment costs and the operating costs for each research infrastructure.

For each project, the cost estimate was calculated in two steps:

1. an individual cost estimate by the respective experts
2. a joint cost estimate by all experts allocated to each research infrastructure project

No comparison was drawn between the various projects in the course of the economic evaluation process.

Research policy and evaluation process of societal relevance

The research policy and societal evaluation takes place in the Federal Ministry of Education and Research.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

The **scientifically supported evaluation process** took place in two consecutive phases, an individual qualitative assessment of each project and a comparative overall assessment:

1. The individual evaluation of each project was carried out in three steps according to the evaluation dimensions:
 - For each project, a written report was prepared by three different experts, the vast majority from abroad
 - The concept was discussed by the scientists in charge of the research infrastructure project and the external experts
 - An individual qualitative evaluation and recommendations on the further development of the research infrastructure concept were drawn up
2. Then followed the comparative overall evaluation of all projects, divided up according to the four dimensions. In each dimension, the concepts were given a classification in one of five quality levels.

For the science-driven evaluation the German Council of Science and Humanities established a man-

dated Committee in July 2011. The committee should include representatives from all major areas of science, including:

- o engineering and natural sciences
- o environmental sciences
- o biological and medical sciences
- o humanities, social sciences, law and economic sciences
- o IT infrastructures.

This Committee consisted of 17 members:

- 6 of these members are currently also members of the Council
- 3 external experts working in Germany
- 8 external experts from Switzerland (3), Austria (1), Great Britain (2) and the US (2)

In addition, 3 reviewers (high-ranking scientists with international experience in the specific areas) for each RI project were consulted.

Each RI proposal was assigned to one Committee member who was close to the subject to function as *rapporteur*. The federal government and the state governments were not part of the Committee.

2.5. Proposals evaluated and selected (available statistics)

In the pilot phase of the roadmap process the Federal Ministry of Education and Research (BMBF) nominated nine research infrastructure projects, on whose funding had to be decided. From the pilot phase three projects were selected for implementation.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

Not applicable or no information presently available.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

Not applicable or no information presently available.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Not applicable or no information presently available.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

All RI independent of their costs underlie a specific "BMBF Controlling" process. This process is called "MAP" which means "minimal requirements for projects". It is a phase-model for planning and implementation of (large) projects to make an efficient project management possible. The different projects phases are: initialisation, definition, planning, steering, decommissioning.

All RI which cost more than 50 Mio. € need an external project controller; RI have to deliver structured quarterly reports. Key figures are important for the reports.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex Germany Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	x
Categorisation of RI	x
Access to RI	
Organisation within national procedure	x
<p>RI for the purposes of the BMBF's National Roadmap Process are comprehensive, long-term resources that benefit research in all fields of science. These include laboratories, equipment, instruments, collections of materials and databases as well as service facilities. RI for the purposes of the National Roadmap Process distinguish themselves through the following features:</p> <ul style="list-style-type: none"> • They are of national importance for research policy. • They have a long service life – generally of at least ten years. • Access to them is generally open, and their utilisation is regulated on the basis of scientific quality standards. • The cost of establishing and installing the infrastructures is so high that considerable national public funding is necessary, justifying a comprehensive national decision-making process. • They must have an extensive governance system that is adequate for the relevant task. In cases involving various locations with complementary tasks, they must form a functionally integrated RI with common standards that can be regarded as a single entity. • The German share of planned development costs is at least € 50 million. For research infrastructures in the fields of humanities and social sciences or educational research, a threshold of € 20 million (German share) applies. • RI are an essential component of every scientific system and are of particular importance for Germany as a research location. They provide extensive, long-term research resources, such as laboratories, large-scale equipment, instruments, and collections of materials, databases and service facilities. • RI are either new and extensive RI or substantial upgrades of existing infrastructures (BMBF, 2016, p. 4). <p>Currently there are four basic categories of RI:</p> <ul style="list-style-type: none"> • Instruments are items of large-scale equipment that are directly available for conducting research projects. Examples in the natural sciences include the "FAIR" particle accelerator or the "CTA – Cherenkov Telescope Array" (see page 7). The research vessel SONNE (see page 11), for example, belongs to the environmental and engineering sciences category, and the "INFRAFRONTIER – Mouse models for research into complex diseases" (see page 6) to the category life sciences and medicine. • Resource and Information Infrastructures are information infrastructures that pool, process and provide data for specific research purposes; such as the German Socio-Economic Panel (SOEP) (see page 9), archives and libraries as well as object-related collections such as the "Deutsches Museum" in Munich. • Information Technology Infrastructures are so called e-infrastructures such as the high-performance computer for climate studies "HLRE 3" (see page 10) or high-performance communication and computer grids such as the "GCS – Gauss Centre for Supercomputing". • Social RI are, for example, centres for research and academic exchange that have been recently established in order to facilitate exchanges on or the development of new research topics – mainly in the humanities and social sciences – such as the Institute for Advanced Sustainability Studies and the Oberwolfach Research Institute for Mathematics (BMBF, 2016, pp. 6-11). <p>Some RI may fit into a number of categories at the same time. For example, technology centres that work with large-scale equipment such as particle accelerators may also serve as social science RI or information infrastructures. In recent years, "distributed" RI that draw on a range of instru-</p>	

ments at various locations have also been developed alongside conventional “centralised” RI. One example is the Cherenkov Telescope Array. Furthermore, existing laboratories in the life sciences have joined together to form distributed infrastructures under a common roof. These structures are characterised by a uniform governance system which, among other things, regulates the use of the RI. This allows participating research groups to work together on complex research issues and to access technologies and infrastructures at various locations (BMBF, 2016, p. 7).

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 8.

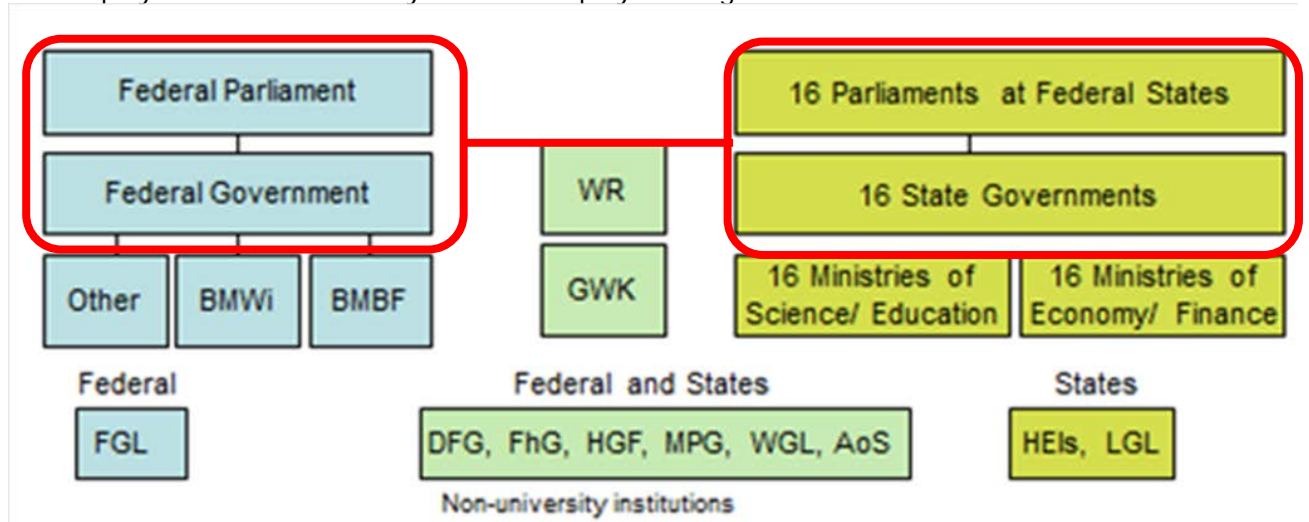


Figure 8: Organisational chart of the R&I system of Germany (Sofka u. Sprutacz, 2016, p. 18). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

RI are one of the central prerequisites for excellent basic research, significant technological advancements and the development of new research areas. Thus, RI are essential for the performance of research and innovation in Germany. Furthermore, the availability of innovative RI is essential for strengthening Germany’s international competitive position and its integration into international research as well as for providing highly performing RI especially for use by scientists and researchers from the German universities. This includes the relevant finance structures, the portfolio management of RI as well as the provision of a professional management for planning, construction, and operation of large-scale projects and infrastructures.

Embedding of RI in the national R&I system

RI are integrated in the German research and innovation system in all higher education and non-university research institutions as well as in federal and state-owned research institutes (Figure 8). The funding of RI in higher education institutions is shared by state governments and the Deutsche Forschungsgemeinschaft (DFG). Non-university RI are funded by the federal government and the state governments. RI at thematic research institutions are financed by both respective federal government ministries and state governments (BMBF, 2014).

3. RI in the National R&I System

Germany is organised on a **federal basis**, with competencies shared between the federal and the “Länder” (federal states) level. R&I policy making is organised within the federal system of Germany.

The cooperation between federal and Länder level is based on **Article 91b (Basic Law)** and has organised the administrative arrangement to establish a **Joint Science Conference (Gemeinsame Wissenschaftskonferenz – GWK)**. Since RI are operated by institutions which are financed by the government and the federal states, the GWK convention includes a **shared financing ratio**. The Federal Ministry of Education and Research (BMBF) has a clear share of responsibilities concerning costs for construction and operation: The implementation of RI concerning **operational costs lies purely in the hands of the research organisations** respectively on institutional level. Construc-

tional costs could be applied at federal level (BMBF) by those RI which have successfully passed the NRIRMP.

Since 2005 the funding share for RI is organised in the “pact for research and innovation”. The pact was extended in 2014 to cover the period 2016-2020. It is binding for the **Deutsche Forschungsgemeinschaft (DFG)** and the four major organisations for non-university research: **Fraunhofer-Gesellschaft (FhG)**, **Helmholtz-Gemeinschaft (HGF)**, **Max-Planck-Gesellschaft (MPG)**, and **Leibniz-Gemeinschaft (WGL)**. In the pact a significant target is set to extend Germany’s contribution for developing, constructing and extending as well as operating international unique RI. Research organisations and institutions are responsible for the construction and operation of RI (BMBF, 2014).

4. Major national strategies for international cooperation in R&I and strategic integration of RI

National High-tech strategy:

The high-tech strategy of the federal government of Germany determines the national strategic fields which are further specified in the respective thematic programmes and strategies (e.g. research on health, national research strategy bio economy 2030 and individual calls for research such as the call on energy storage). These strategies and programmes are orientation for respective thematic strategies of RI. Linked with the European dimension, the federal government of Germany operates according to its strategy for the European research area and has committed itself to contributing to the construction and operation of European and international RI. Furthermore, the federal government of Germany has been actively designing processes such as ESFRI and GSO, as well as the integration of the national Roadmap processes with the ESFRI processes.

Leibniz Roadmap for Research Infrastructures:

With the Leibniz Roadmap for Research Infrastructures, the Leibniz Association is now presenting a plan for the future so that excellent research can continue to be carried out over the next 10 to 15 years, and to advance the standard of this research to the highest levels. The Leibniz Roadmap contains concepts for RI which the Leibniz Association has prioritised in an internal process – with priority going to concepts which require a larger consortium of Leibniz partners and external partners (Leibniz Association, NN).

HGF-Roadmap:

This Roadmap presents a list that has been coordinated within the Helmholtz Association of those RI which will be strategically relevant for the Helmholtz Association, or in the individual research fields, for implementation of the scientific portfolio. These projects are regarded as being desirable and necessary in the six research fields of the Association from a scientific point of view and in consideration of scientific policies involved. The Helmholtz Roadmap serves as a basis:

- For discussing the strategic planning with the sponsors. It therefore forms a cornerstone for binding planning within the BMBF processes, e.g. for preparation of a national Roadmap.
- For consultations on the strategies for financings, setup and operation of RI using already-formulated evaluation criteria and processes (i.e. using precise timescales and budgets, summary cost estimates, setting priorities, including the planning for closures/switch-offs and [new] structuring of the management for these infrastructures),
- for independent assessment of the research infrastructures by the Science Council, if applicable,
- for concrete consultation with the user community

and not least, for the ongoing discussion within the Helmholtz Association itself, for regular revision and updating of the Association’s research portfolio, as well as the infrastructure planning (Helmholtz Association, 2016, p. 5).

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Annex Greece Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Evaluation process and criteria are included in the current multiannual investment plan for RI

2.2. Eligibility conditions

ON/OFF criteria

Compliance with the definition of research infrastructure

- Reference to the definition of RI in EU Regulation 651/26.6.2014 regarding state-aid rules. However, this definition is the same with that of Horizon 2020 RI.

Contribution to the RIS3 priority areas:

- Its main activities are fully aligned to product / process / organizational innovation of RIS3 priority sectors
- The majority of the RI deliverables and services contribute to the RIS3 priority sectors

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

The main evaluation criteria are:

Scientific, technological potential and maturity of the RI (1-5)

- Scientific excellence (significance of the RI for the specific research fields addressed)
- Degree of interdisciplinarity
- Perspectives for scientific and technological breakthroughs in the field of operation of the RI
- Maturity of the RI

Effective Networking, Synergies within the Knowledge Triangle and International Visibility (1-5)

- Competence and complementarity of the partners and added-value of the national RI network at the regional, national and international level
- Synergies, degree of networking and creation of critical mass
- International networking, openness and visibility of the RI with emphasis on ERA integration effects, e.g. ESFRI participation
- Education and training for students, researchers, technicians, engineers and administrators of RI

Access Policy (1-5)

- Access policy for researchers
- Access policy for industry and enterprises (addressing IP rights – if applicable – fees and confidentiality issues - collaboration with enterprises - open access policy to enterprises and the private sector in general)
- International Openness and Access for International Users

Governance and Sustainability of the RI (1-5)

- Clear management structure & governance of the proposed research infrastructure
- Involvement of private sector representatives in the Research Infrastructure
- Technical feasibility, including human resource issues & cost effectiveness in the proposed infrastructures
- Clear investment plan securing the long-term viability of the RI

Innovation Potential & Contribution to Private Sector Innovation (1-5)

- Contribution to increase the potential for innovation and technology transfer through the construction and operation of the RI, based on expected results and spillover effects of the RI
- Contributes to the creation of high growth SMEs
- Foresees support of SMEs in organizational innovation

Contribution to National and Regional Growth & Socioeconomic Benefits (1-5)

- Contributes to private sector R&D investment
- Creation of an attractive environment for knowledge intensive activities and new employment for highly skilled scientists and engineers
- Contributes to exports of products or services
- Generates revenue from licensing and/or patents commercialization
- Economic and social benefits for Greece as a location for conducting cutting edge research at national, regional and international level
- Expected impact of the RI on additional socioeconomic issues (e.g. employment, environment, related commercial/business activities) in the national & regional economy.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

In a first step, a bottom-up approach for setting up the National Roadmap for Research Infrastructures was followed by the General Secretariat for Research & Technology (GSRT) through launching of 2 open calls for expression of interest.

Selection involved peer review for the evaluation of the scientific excellence and innovation potential of the proposed research infrastructures and for the integrated assessment of their strategic importance.

1st thread: The *Evaluation of the scientific and technical merit and innovation potential of the proposals* was implemented through peer review by high ranking experts of international standing and thematic committees on the basis of the above mentioned criteria.

Upon completion of this step, the thematic evaluation committee reached a consensus opinion for each proposal and submitted a recommendation regarding the placement of the proposal in the National Roadmap.

For a proposal to be considered for inclusion in the National Roadmap it must attain a grade from 4 to 5 (Grade ≥ 4) for each of the aforementioned groups of criteria, as an average grade from the evaluators. Only integer grades will be assigned by each evaluator. The total ranking will be based on the sum of the average grades for each evaluation criterion.

2nd Thread: *Strategic prioritization of the proposed RI*, as set within RIS3 at the national and regional levels and the National Strategic Framework for Research and Innovation, as drafted with GSRT's coordination with the guidance of the National Council for Research and Technology (NCRT). The strategic prioritisation was based on:

- Contribution to RIS3 priority sectors
- Contribution to private sector innovation
- Contribution to national and/or regional growth

The proposals selected through the above procedure formed the core of the multiannual investment plan for RI and a reserve list with RI.

The detailed process described above is presented schematically in Fig 9:

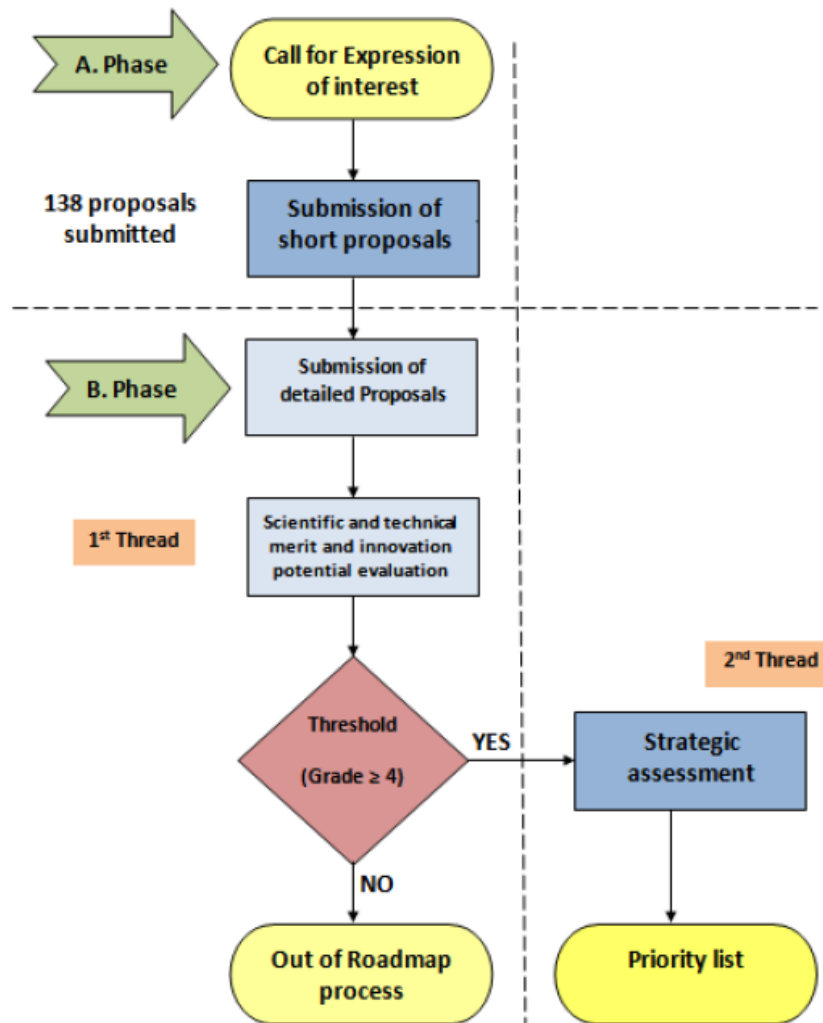


Figure 9: RI proposals prioritization process for the Roadmap in Greece.

The selection framework, in line with relevant practices followed internationally for the evaluation of RI, comprised of peer review, strategic prioritisation and subsequent clustering, where appropriate, to maximize critical mass and avoid duplication of investments.

2.5. Proposals evaluated and selected (available statistics)

The 1st step for drafting a national Road Map for RI began in 2013 with the launching of a call for expression of interest.

This call resulted in 138 applications, submitted mainly by academic and research institutions, distributed among all scientific fields:

- 13 proposals from / in the field of Social Sciences and Humanities,
- 31 proposals from the field of Biological and Medical Sciences,
- 31 proposals from the field of Physical Sciences and Engineering,
- 20 proposals from the field of Material Sciences and Analytic Facilities,
- 9 proposals from the field of Energy,
- 20 proposals from the field of Environmental Sciences, and
- 14 proposals from / in the field of e-infrastructures.

This step was followed by a 2nd step for submission of full proposals. It was completed in July 2013, based on the Expressions of Interest of the 1st Phase. Major revisions and consolidations of the aforementioned Expressions of Interest were encouraged, according to the recommendations given

through the Guideline and FAQ documents as well as the detailed guidance given by GSRT representatives through two open workshops organized by GSRT. This Phase resulted in the submission of 75 proposals.

Evaluation (peer review and strategic prioritization) resulted to the selection of 20 RI for funding from ESIF.

2 in ICT

5 in Biosciences & Health

2 in Energy

5 in Environment & sustainable Development

3 in Materials

1 in Culture and Creative Industries

2 in Agrofood

In 2016 a 2nd call for expression of interest was launched in order to complete the road map with RI necessary in the fields of Agrofood and Transport (priorities of the National RIS3 - Research and Innovation Strategy for Smart Specialization) that were not adequately covered in the first round.

This call resulted in the submission of 30 proposals. These were evaluated by the same evaluation process and criteria as the previous round. The evaluation resulted in the selection of 8 proposals for funding from ESIF.

2 in Agrofood

2 in ICT

1 in Transport

2 in Biosciences & Health

1 in Environment & sustainable development

In total 28 RI have been selected for funding. They are distributed infrastructures with hubs all around Greece in the following fields:

- e-infrastructures (ICT): 4
- Biosciences & Health: 7
- Energy: 2
- Environment & sustainable Development: 6
- Materials: 3
- Culture and Creative Industries: 1
- Agrofood: 4
- Transport: 1

17 of the RI selected for funding are ESFRI related Infrastructure

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

Not applicable or no information presently available.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

The roadmap will be continuously assessed and revised in 2019.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

The methodology and procedures conducted for the Monitoring of RIS3 will be also applied for the monitoring of RI. The RIS3 monitoring and evaluation mechanism has being conceived, in order to assess the effectiveness and efficiency of the RIS3 Strategy through appropriate indicators and statistics. The mechanism also provides for the identification of new priorities according to ongoing developments, in order to introduce possible adjustments.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

Indicators of the Operational Program EPANEK (number of researchers working in advanced facilities) and RIS 3 monitoring mechanism.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex Greece Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	x
Categorisation of RI	SIMILAR TO ESFRI
Access to RI	
Organization within national procedure	ESFRI procedures are taken into consideration
<p>Research Infrastructures are facilities, resources, and related services that are used by the scientific community to conduct top-level research in their respective fields and covers: major scientific equipment or sets of instruments; knowledge-based resources such as collections, archives or structures for scientific information; enabling ICT-based infrastructures, or any other entity of a unique nature essential to achieve excellence in research. Such infrastructures may be 'single-sited' or distributed, that is, an organised network of resources. A new vision for global RI focuses on the key role of RI for innovation. (GSRT, 2014,p. 9)</p>	

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 10.

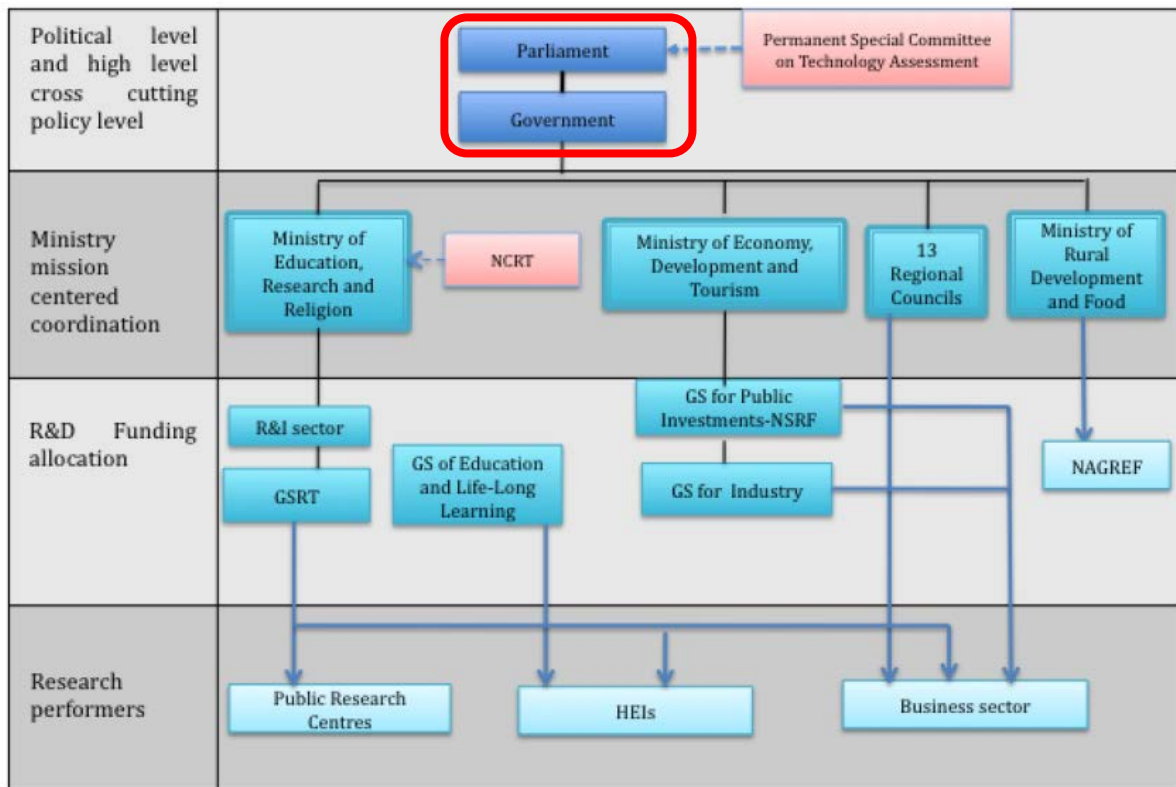


Figure 30: Organisational chart of the R&I system of Greece (Tsipouri et al., 2016, p. 17). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

A vision of shaping a strong National R&D ecosystem needs a robust policy framework for establishing RI of strategic importance in Greece as accessible hubs for research, synchronised with international standards and responding to public and private research needs. The infrastructures are expected to:

- Create an attractive environment for highly-skilled scientific, technical and

- administrative personnel and facilitate the access of Greek research teams to
- global RI.
- Act as enablers of regional development with long-term socio-economic benefits
- for the host regions through the creation of jobs, training and specialisation of
- human resources.
- Foster an entrepreneurial climate favourable to industrial investment on research
- and innovation, with a direct impact across society (e.g. through spin-offs, new
- market opportunities related to procurement. (GSRT, 2014, p. 11)

Embedding of RI in the national R&I system

The General Secretariat for Research and Technology (GSRT) of the Ministry of Education and Religious Affairs is the main public agency responsible for the design and implementation of Research, Technological Development and Innovation Policy and for the administration of the Greek R&D system and RI (GSRT, 2014).

3. RI in the National R&I System

The R&I system of Greece is organised top down. The Department of Research and Innovation (Ministry of Education, Research and Religious Affairs) is responsible for research under the supervision of the Greek government. The implementation of the research policy is carried out mainly by the **Secretary General for Research and Technology (GSRT), which is subordinated to the Ministry and also the main entity responsible for RI.** In autumn 2016 the national Hellenic Foundation for Research and Innovation (HFRI) was formally set up to promote research and innovation. The National Council for Research and Technology (NCRT) is the supreme State advisory body for formulating and implementing the national policy for research, technology and innovation. **The corresponding funding schemes are implemented by the Management Authority for the Operational Programme of Competitiveness.** The General Secretariat of Education and Life-Long Learning of the Ministry of Education, Research and Religion is responsible for designing and implementing programmes for basic research and capacity building. Other public entities responsible for R&I governance include the Ministry of Economy, Development and Tourism, the Ministry of Rural Development and Food which supervises the National Agricultural Research Foundation (NAGREF) and the country's 13 Regional Councils. (Tsipouri et al., 2016, p. 16)

4. Major national strategies for international cooperation in R&I and strategic integration of RI

- The National Research and Innovation Strategy for Smart Specialization 2014-2020" (RIS3), adopted by ministerial decision in August 2015. The "National Strategy for Research and Technology" (NSFT) had already been introduced at the end of 2014.
- The Greek national roadmap and in particular the multi-Annual Budgeting plan for RI's 2014-2020
- The Greek strategy/initiative for the support of blue sky research based exclusively on excellence with no thematic or geographical limitations. For its implementation the Hellenic Foundation for Research and Innovation-HFRI was established in 2016 with a total initial capital/budget of 240 million €€ for the three first years. It mainly provides grants to young researchers for doctoral and post-doctoral fellowships. The upgrading of the equipment of the relevant RPO is also eligible.
- The support of Greek RPOs for their participation in Horizon 2020 projects and programmes, including research infrastructures and partnerships and the Greek national strategy for the ERA-national roadmap 2014-2020.
- Other initiatives in the area of e- infrastructures/cloud computing and in particular the Signature of the European High Performance Computing Declaration (EuroHPC) by Greece on 10 November 2017.

References

- General Secretariat for Research and Technology (2014). National Roadmap for Research Infrastructures 2014. <https://ec.europa.eu/research/infrastructures/pdf/roadmaps/greece_national_roadmap.pdf#view=fit&pagemode=none> [Last access: 08/2017].
- Tsipouri, L., Athanassopoulou, S. and R. Gampfer (2016). RIO COUNTRY REPORT 2015: Greece. <http://publications.jrc.ec.europa.eu/repository/bitstream/JRC101186/el_cr2015.pdf>. [Last access: 08/2017].

Further links

- Ex-ante Conditionality (EAC/1-2) Research and Innovation Infrastructures "The existence of a multi-annual plan for budgeting and prioritization of investments <http://www.gsrt.gr/Financing/Files/ProPeFiles88/ex-ante-1-2_Nov%202016%20V.11.pdf> [Last access: 08/2017].

Annex Hungary Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Not applicable or no information presently available.

2.2. Eligibility conditions

Not applicable or no information presently available.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

Not applicable or no information presently available.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

Not applicable or no information presently available.

2.5. Proposals evaluated and selected (available statistics)

Not applicable or no information presently available.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

Not applicable or no information presently available.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

Not applicable or no information presently available.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Not applicable or no information presently available.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

The regular evaluation of the Hungarian research infrastructures – in accordance with the Union methodologies, e.g., ESFRI – is essential for their development. This means a continuous, iterative process, as one result of which the demand for connections to foreign research infrastructures has been assessed. It is also recommended to operate an independent monitoring unit in the field of RI since the RI is one of the key elements of the National Innovation System.

It is worth measuring the performance of research infrastructures by a separate indicator; this is also required because of the evaluation. Possible indicators are:

- The number of publications by external researchers per research organisation (number)
- The utilisation rate of research infrastructure by external researchers (%)
- The average value of economically oriented projects implemented in research infrastructures (euro per project).

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex Hungary Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	
Access to RI	
Organisation within national procedure	
The definition of RI matches the ESFRI definition.	

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 11.

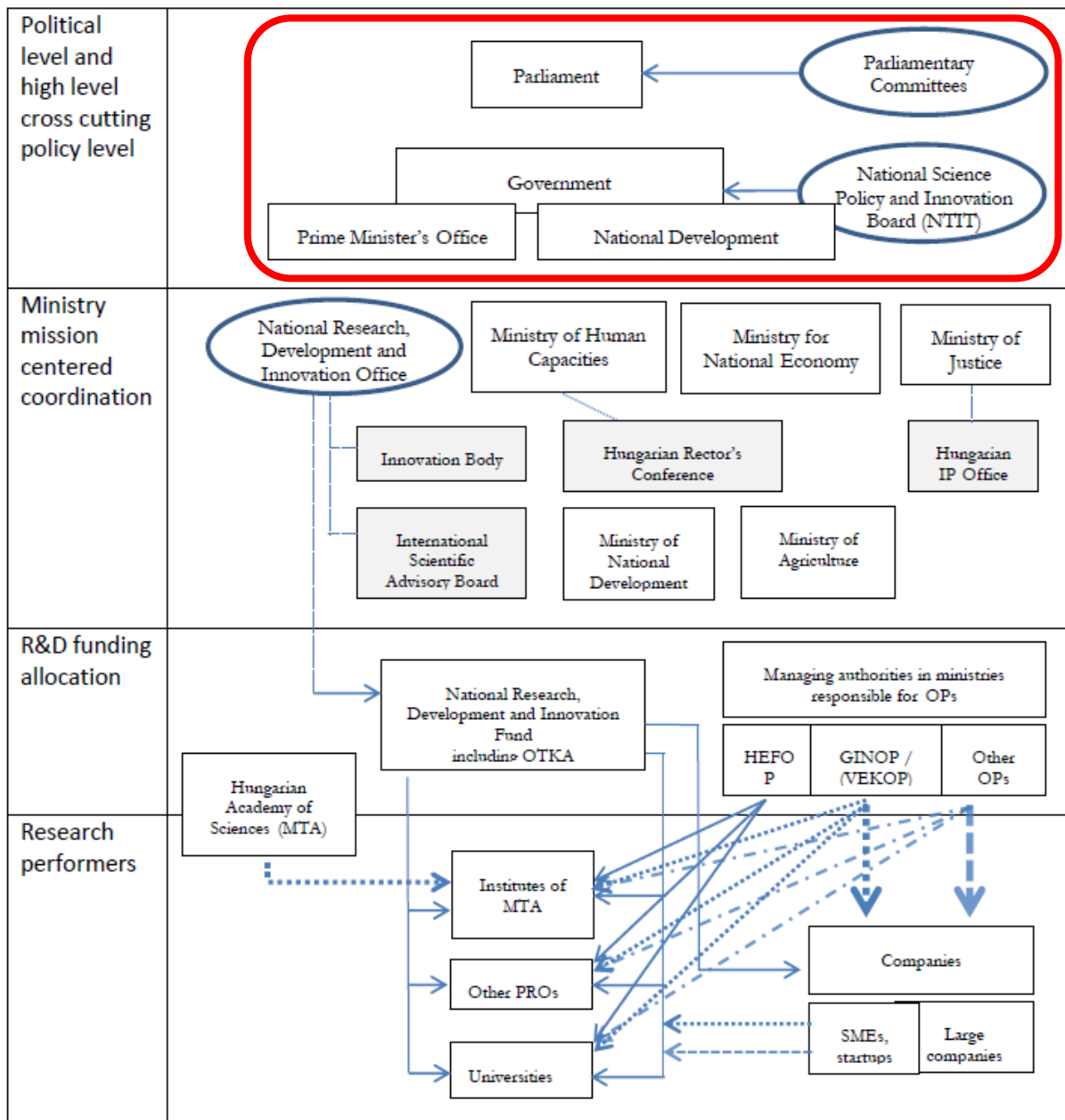


Figure 41: Organisational chart of the R&I system of Hungary (Dóry and Slavcheva, 2016, p. 17). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

The international competitiveness of Hungary's scientific community is increasingly influenced by the state and quality of its RI. The development of RI is also a headline target in the strategic plans of the EU. In addition to being the essential base for basic researches and frontier researches, RI have a significant role in shaping the society and economy. (NIH, 2014, p. 3)

Embedding of RI in the national R&I system

Responsibilities for RI are shared between the National Research Development and Innovation Office, the Ministry of Human Capacities and the Ministry of Economy.

3. RI in the National R&I System

The main policy making bodies in Hungary are the Parliament and its committees. The National Development Cabinet (NFK) is headed by the prime minister and co-ordinates all major governmental development actions. Also involved in the NFK are the ministers of the Prime Minister's Office, the Ministry of National Economy and Ministry of National Development. Additionally, the Ministry of Human Capacities, the Ministry of Justice and the Ministry of Agriculture have responsibilities for R&I. The National Science Policy and Innovation Board (NTIT) was established in 2015 as a main policy advisory board for the government. The NTIT provides advice, evaluates and makes recommendations on strategic issues of scientific, research and development and innovation programs, the sustainable finance of these programs and the evaluation methodology to be carried out at scientific institutions. At operational level, the National Research, Development, and Innovation Office (NKFIH) is the main governmental body responsible for research, development and technological innovation and is also responsible for the National Research, Development and Innovation Fund. The Innovation Body was established within the National Research, Development and Innovation Office in order to ensure the effective use of financial instruments available for R&I. (Dóry and Slavcheva, 2016, p. 18.)

Structural Funds play a prominent role in the total national R&D funding. Direct public funding is usually the main source of the total governmental support to R&D. The EU is the most important external public source of R&D funding, whereas external public funding from other governments and higher education entities as well as from international organizations only contribute to a small extent. (Dóry and Slavcheva, 2016, pp. 39-40)

4. Major national strategies for international cooperation in R&I and strategic integration of RI

A National Research-Development and Innovation Strategy was approved in late 2012. The strategy aims to raise the RDI investments, to mobilise the Hungarian economy and to strengthen its competitiveness. A National Smart Specialisation Strategy (S3) was approved by the government in 2014 including a strategy on RI aiming to develop an own National RI Roadmap. (Dóry and Slavcheva, 2016, pp. 22-23)

References

- Dóry, T. and M. Slavcheva (2016) RIO COUNTRY REPORT 2015: Hungary. <https://rio.jrc.ec.europa.eu/sites/default/files/riowatch_country_report/HU-CR2015_0.pdf> [Last access: 09/2017].
- National Research Development and Innovation Office (2014) Research infrastructures in Hungary. <<http://nkfi.gov.hu/policy-and-strategy/national-strategies/research-infrastructures/research-infrastructures-in-hungary>> [Last access: 09/2017].

Further links

- National Smart Specialisation Strategy of Hungary <<http://nkfi.gov.hu/szakpolitika-strategia/national-smart>> [Last access: 09/2017].

Annex Iceland Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

A national Roadmap for RI in Iceland is in the preparation phase. The Science Committee of the Icelandic Science and Technology Policy Council has formulated the allocation policy of the Infrastructure Fund. The rules for the grant year 2017 are based on the Science Committee's current allocation policy, which was approved on November 17th 2016. The main aim of this call is to support research infrastructure in the country by co-financing purchase and/or build-up of equipment, databases, software and any other research infrastructure that is important for scientific progress.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Not applicable or no information presently available.

2.2. Eligibility conditions

Research infrastructure fund:

- To be an example or part of any of the four target groups defined: universities, research institutions, organizations or companies
- Funding is only possible for any of the following grant types: equipment, build-up, access, upgrade/operation

In relation to the Eligible Cost, the minimum contribution of the Infrastructure fund is ISK 2 million for Equipment, Build-up and Upgrade/operation and can be up to 75% of the total cost excluding VAT. Applicants are not eligible to apply for installation or build-up of instruments that cost less than 2 million. Access grants do not have a minimum.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

In the evaluation of proposals to the research infrastructure fund the following points are taken into consideration:

- The infrastructure is important for research progress in Iceland and for the proposer's research.
- The infrastructure creates new possibilities in research and/or is related to research projects already being funded by the Icelandic Research Fund.
- The infrastructure is important for education and training in the relevant scientific field.
- The infrastructure facilitates cooperation between institutions, or between institutions and companies.
- Budget plans are realistic.
- Infrastructure realised with support from the fund is accessible to other research groups as capacity allows.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

A special expert panel appointed by the Science Committee of the Icelandic Science and Technology Policy Council evaluates all proposals before presenting the decision to the Infrastructure Fund Board.

2.5. Proposals evaluated and selected (available statistics)

Information available on request from the Icelandic Centre for Research (www.rannis.is [Last access: 09/2017])

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

Not applicable or no information presently available.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

Not applicable or no information presently available.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Not applicable or no information presently available.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

Not applicable or no information presently available.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex Iceland Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	
Access to RI	
Organisation within national procedure	
No definition available, since a National RI Roadmap has not been published.	

2. RI players in the national R&I system
<p>The RI players within the R&I system</p> <p>The Science and Technology Policy Council is responsible for setting public policy in matters of science and technology in Iceland. The Council is chaired by the Prime Minister and its members include the Minister of Education, Science and Culture Minister of Finance and Economic Affairs, the Minister of Tourism, Industry and Innovation as well as 16 representatives nominated by different ministries and higher education institutions and by the social partners. The Council sets the official science and technology policy for a three-year period. The Council's deliberations in each of the two fields are prepared by its working committees, the Science Board and the Technology Board. The Icelandic Centre for Research (RANNIS) cooperates closely with the STCP and administers among other funds the Icelandic Research Infrastructure Fund. The fund is governed by a board which decides on the allocations.</p> <p>National relevance of RI</p> <p>Public competitive funding of research infrastructure has mostly been based on bottom-up needs of individual scientists/research groups. The aim of a first draft version of a National RI Roadmap developed in 2009 was to strengthen the Icelandic science and research community. This should be achieved by ensuring national access to electronic journals and databases as well as high-speed internet connections to international research networks in Europe and North-America (Skogland, 2016, p. 28). Currently a roadmap process is being prepared at the ministry of education, science and culture.</p> <p>Embedding of RI in the national R&I system</p> <p>Responsibility for RI mainly lies with the STPC (under supervision of the Ministry of Education Science and Culture) which appointed a committee to develop a Roadmap in 2009 and decided on the implementation of a Roadmap in its most recent strategy (2017)</p>

3. RI in the National R&I System
<p>The R&I system of Iceland is organised top-down. The Ministry for Education, Science and Culture is the key ministry in charge of R&D policy in Iceland supported by other ministries. Several other public bodies are responsible for promoting research and innovation in Iceland, including the Icelandic Centre for Research (Rannis), which has an important role at operational level in funding R&I e.g. administering the public competitive funds such as the Research infrastructure fund. The Science and Technology Policy Council (STPC) is the main policy-making body responsible for design and coordination of R&D policy. (Skogland, 2016, pp. 10-12)</p>

4. Major national strategies for international cooperation in R&I and strategic integration of RI

The STPC is in charge of developing the official national science and technology policy for a period of three to four years. The latest published strategy from 2017 (English translation will be available in 2018) is an action plan including the implementation of a national roadmap for RI. In 2015, the Ministerial Action Plan "Frumkvæði og framfarir" was launched. The plan lists 22 measures with the aim to strengthen innovation in the country (Skogland, 2016, p. 15). A Roadmap on development of the Research Infrastructures in Iceland was prepared in 2009 by a committee appointed by the STPC, yet was never formally introduced.

References

- Prime Minister`s Office (2017) <<https://eng.forsaetisraduneyti.is/ministry/about>> [Last access: 09/2017].
- Rannís (2016) Infrastructure Fund – Rules for the grant year 2017. <<https://en.rannis.is/media/innvidasjodur/Infrastructure-Fund-rules-and-guidelines-2017.pdf>> [Last access: 09/2017].
- Skogland, H.-H. (2016) RIO COUNTRY REPORT 2015: ICELAND. <<https://rio.jrc.ec.europa.eu/en/country-analysis/Iceland/country-report>> [Last access: 09/2017].

Annex Ireland Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

In early summer 2006, the Higher Education Authority (HEA) and Forfás agreed to conduct a review of the research infrastructure in Ireland. The purpose of the review was to internationally benchmark the research infrastructure in the higher-education sector in particular and to identify gaps in the national platform of research infrastructure, which could be addressed in the short to medium term. The review was conducted mindful of the goals, objectives and enhanced investment proposed in the Government's Strategy for Science, Technology and Innovation, 2006–2013 (SSTI), and of the new National Development Plan 2007–2013 (NDP).

A key feature of the process was the appointment of an independent international Steering Committee, which had oversight of the comprehensive process review of research infrastructures in ten broad disciplinary areas covering the spectrum of research activity in Ireland. The review included:

- The preparation of a database of the existing infrastructure in the higher education sector, which built upon earlier work of the Capital Review and Prioritisation Group ('Kelly Review'—September 2004).
- A consultation questionnaire was prepared and submissions were sought from a range of stakeholders.
- An advertisement was also placed in the national press welcoming submissions from all those who wished to engage with the review.

In addition, 34 international experts conducted visits across a sample of RI in the Irish higher education sector. Owing to time constraints of this Review, not all facilities could be visited. As a result, a selection was made on the basis of the relative amount of research space in a given discipline area. These visits provided the independent international benchmark for the RI and were invaluable to the process. During the Review, in the region of 95 facilities were visited. Visits took approximately one half-day per institution per discipline area. Individual reports from different discipline areas were submitted to the Steering Committee for the Review and summaries of these reports are published here. The reports have been grouped as follows:

- Arts & Humanities, Education, and Creative Arts & Media.
- Psychology and Social Sciences
- Biological and Medical Science (including Agricultural Sciences and Chemistry)
- Clinical Research Facilities
- Computer Sciences
- Earth, Atmospheric, and Ocean Sciences
- Engineering
- Physical Sciences and Mathematics

*** Chemistry facilities were also visited under the category of 'Physical Sciences'*

A special workshop was organised to obtain inputs from the business and enterprise sector with knowledge of the existing RI base. There was a high level of congruence between the views of the enterprise sector on key gaps and needs, and that of the international reviewers.

The outcomes from the site visits and the emerging findings from the process were presented and discussed at a specially convened Forum. This event provided an opportunity for the international Steering Committee to get feedback and engage with the Irish research community in advance of the conclusion of the process.

To achieve its potential, weakness and gaps identified in the higher-education and national RI required an enhanced investment in R&D (announced in 2006) by the Irish Government under the SSTI.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Open call to research community of needs.

2.2. Eligibility conditions
Standard national rules apply (i.e. eligibly Research body or Higher Education Institution)
2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap
Various criteria, available through HEA.
2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap
Various criteria, available through HEA.
2.5. Proposals evaluated and selected (available statistics)
Various criteria, available through HEA.
3. Update / Monitoring and ex-post Evaluation of RI Roadmap
3.1. Objective of the monitoring of the RI national roadmap as a whole
Available through HEA.
3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)
Available through HEA.
3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap
Available through HEA.
3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap
Available through HEA.
3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented
Available through HEA.

Annex Ireland Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	RM developed before ESFRI RM. Ireland's RM was established in 2007. The first ESFRI roadmap was only 2006.
Categorisation of RI	RM developed before ESFRI RM.
Access to RI	RM developed before ESFRI RM.
Organisation within national procedure	RM developed before ESFRI RM.
<p>The tools provide essential services to the research community for basic or applied research. They may concern the whole range of scientific and technological fields, from social sciences to astronomy, going through genomics or nanotechnologies. Examples include libraries, databases, biological archives, laboratories, clean rooms, communication networks, research vessels, satellite and aircraft observation facilities, coastal observatories, telescopes, synchrotrons, accelerators. They may be "singlesited", "distributed", or "virtual". What we are dealing with are the necessary tools for the future to do research in many areas at the cutting edge, in accordance to ESFRI definition. (Higher Education Authority & Forfás, p. 58)</p> <p>Ireland uses the same definition as the EC. The term 'Research Infrastructures' refers to "facilities, resources and related services used by the scientific community to conduct top-level research in their respective fields." Examples are scientific equipment, sets of instruments, archives and ICT-based infrastructures. The definition of Research Infrastructures also encompasses technical operators, (bespoke) buildings, access and support services and, in specific cases, R&D and education programmes that are linked to the RI and research centres that are the custodians of RI.</p>	

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 12.

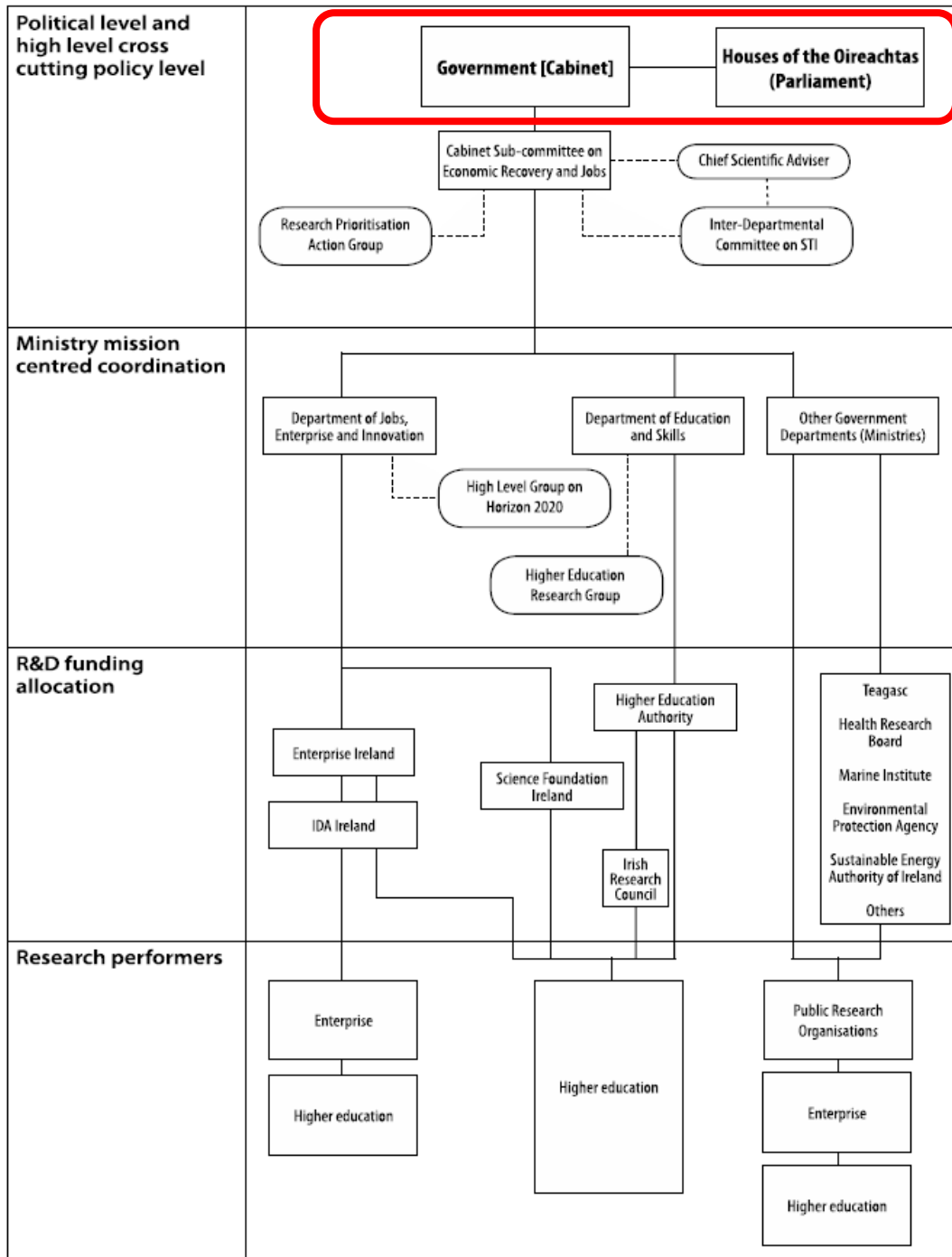


Figure 52: Organisational chart of the R&I system of Ireland (Martin & La Placa 2016, p. 17). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

The Irish national government acknowledged the importance of RI for achieving the objectives of Ireland's National Development Plan (2000-2006 and 2007-2011) and Ireland's Science, Technology and Innovation priorities (adopted in 2006 and updated in 2010/2011). The main government-financed intervention is the Programme for Research in Third Level Institutions (PRTLTI). This programme is coordinated by the HEA and funded by the Department of Education and Skills (2000-2010) and the Department of Jobs, Enterprise and Innovation (2010-ongoing). Using five calls for proposals, PRTLTI has invested in buildings, large RI, specific items of research equipment, research

centres, research programmes and structured PhD programmes. Both HEA and Science Foundation Ireland (SFI), established in 2003, launched dedicated calls for research equipment. In addition, a number of government departments (such as Agriculture, Food and the Marine), public agencies (such as Enterprise Ireland and IDA) and research councils provided grants for research equipment and RI in general. Moreover, universities, Institutes of Technology and research performing organisations used some of their funding (such as block grants and core funding) to invest in RI. (Technopolis Group 2015, p. 3)

Embedding of RI in the national R&I system

Responsibility for RI are shared between the HEA and the Department of Jobs, Enterprise and Innovation.

3. RI in the National R&I System

Ireland's R&I system is organised top down. At the top level, the Cabinet Sub-Committee on Economic Recovery and Jobs is the executive body of the government. It is supported by a high level governmental co-ordinating body in the form of the **Inter-Departmental Committee on Science, Technology and Innovation and by the Research Prioritisation Action Group** which oversees the implementation of the National Research Prioritisation Strategy. **The coordination of policies is located at the ministerial level.** The Higher Education Authority (HEA) has a statutory responsibility, at central government level, for governance and regulation of higher education institutions and the higher education system. The Inter-Departmental Committee on Science, Technology and Innovation supports the preparation of new Science, Technology and Innovation (STI) strategy, Innovation 2020, which was published in December 2015. (Martin & La Placa 2016, p. 18.) The bulk of the R&I budgets is being controlled by the governmental departments (ministries) (Martin & Fákó 2017, p. 6).

4. Major national strategies for international cooperation in R&I and strategic integration of RI

In 2015, Ireland's new strategy for research and development and science and technology (Innovation 2020) was published. One of the main objectives of this strategy is to increase total R&D investment in Ireland to 2.5 % of the Gross National Product. The Enterprise 2025 strategy was developed as a complement to Innovation 2020. The aim is to stronger promote innovation in companies. A national Roadmap for RI was developed by the HEA and Forfás in 2007. Forfás, which has been the national policy advisory board for enterprise, trade, science, technology and innovation in Ireland, was dissolved in 2014 and its policy functions were integrated with the Department of Jobs, Enterprise and Innovation.

References

- Higher Education Authority of Ireland and Forfás (2007). Research Infrastructure in Ireland: Building for tomorrow, 2007. <<http://hea.ie/assets/uploads/2017/06/Research-Infrastructure-in-Ireland-Building-for-Tomorrow.pdf>>. [Last access: 08/2017].
- Information included in the InRoad Consultation (survey sent on 02/05/2017).
- Martin, T & G. La Placa (2016). RIO COUNTRY REPORT 2015: Ireland. <<https://rio.jrc.ec.europa.eu/en/file/9538/download?token=ZTTPT3Om>>. [Last access: 07/2017].
- Martin, T & P. Fákó (2017). RIO COUNTRY REPORT 2015: Ireland. <<https://rio.jrc.ec.europa.eu/en/file/10760/download?token=R9JKBpAk>>. [Last access: 07/2017].
- Technopolis Group (2015). Ireland's future Research Infrastructure needs, Dublin, Ireland. July 2015 <<https://www.djei.ie/en/Publications/Publication-files/Irelands-Future-Research-Infrastructure-Needs-Study.pdf>>. [Last access: 07/2017].

Further links

- Research infrastructure in Ireland. Building for tomorrow 2007. <https://ec.europa.eu/research/infrastructures/pdf/roadmaps/ireland_national_roadmap.pdf> [Last access: 07/2017].

Annex Israel Part 1: Evaluation and monitoring procedure²⁵

1. Ex-ante Impact Assessment
1.1. Methodology and procedures conducted (if applicable)
Not applicable or no information presently available.
2. Procedure for selection of the research infrastructures to be included in the roadmap
2.1. Objectives of the evaluation
Not applicable or no information presently available.
2.2. Eligibility conditions
Not applicable or no information presently available.
2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap
Not applicable or no information presently available.
2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap
Not applicable or no information presently available.
2.5. Proposals evaluated and selected (available statistics)
Not applicable or no information presently available.
3. Update / Monitoring and ex-post Evaluation of RI Roadmap
3.1. Objective of the monitoring of the RI national roadmap as a whole
Not applicable or no information presently available.
3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)
Not applicable or no information presently available.
3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap
Not applicable or no information presently available.
3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap
Not applicable or no information presently available.
3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented
Not applicable or no information presently available.

²⁵ No evaluation and monitoring procedure has been established because most of the roadmap has not been implemented. For the few projects financed by VATAT, there exists financial monitoring by VATAT personnel, and project monitoring by ad-hoc professional committees established by VATAT.

Annex Israel Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	
Access to RI	
Organisation within national procedure	
The 2016 roadmap lists all present ESFRI landmarks in which Israel participates and recommends two new ESFRI projects.	

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 13.

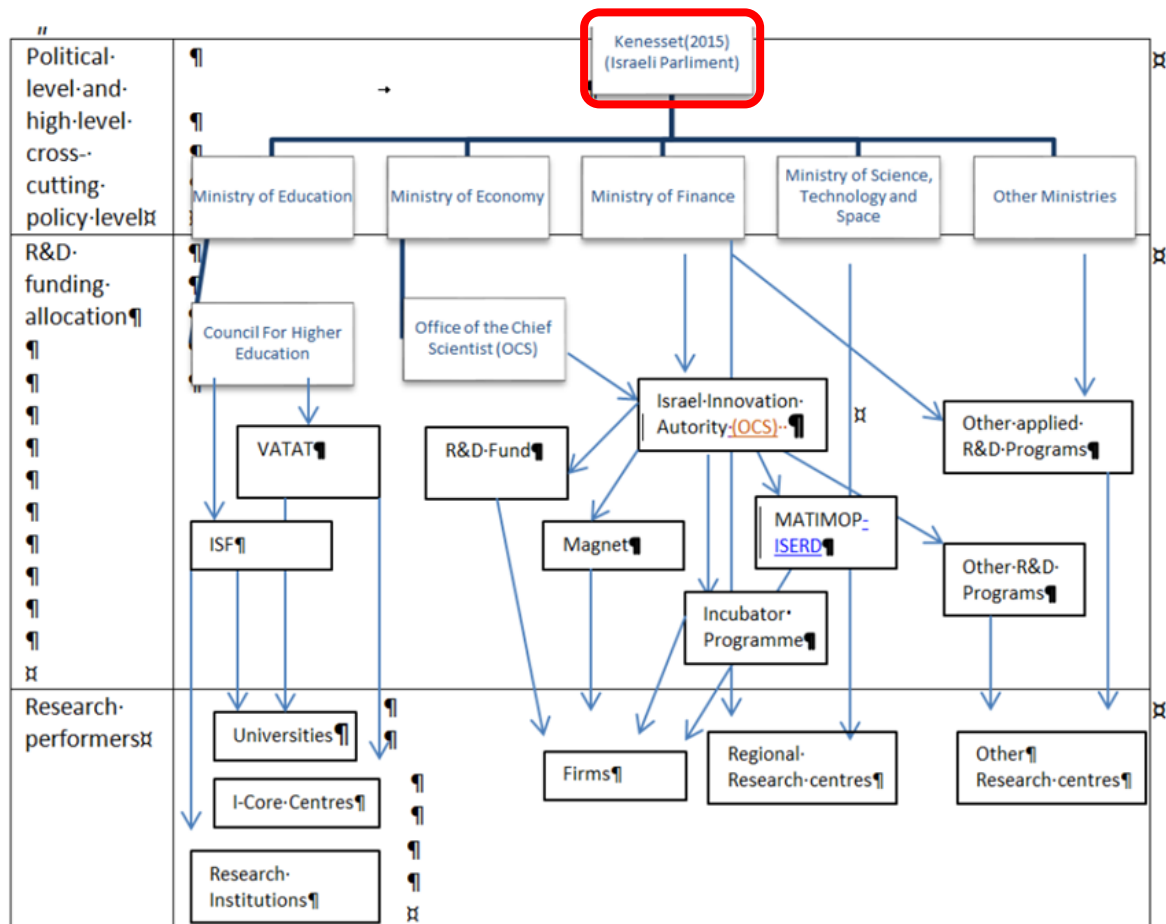


Figure 63: Organisational chart of the R&I system of Israel (Garcia-Torres, 2016, p. 13). Red colour indicates the bodies with the main decision power regarding RI.

Abbreviations: NATI (National Agency for Technological Innovation), VATAT (Planning & Budgeting Committee, CPB), IIA (Israel Innovation Authority), ISERD (Israel Europe R&D Directorate), NCRD (National Council on Research and Development).

National relevance of RI

By introducing an RI roadmap Israel wants to map the existing RI and take advantage of the resulting benefits (Garcia-Torres, 2016, p. 33).

Embedding of RI in the national R&I system

On the political level the Israeli Parliament and all relevant ministries are responsible for R&I. The main actors are the National Agency for Technological Innovation, NATI or Israel Innovation Authority, IIA, and the Planning & Budgeting Committee (known as VATAT) of the Council for Higher Education, which covers academic R&D. Since 2011, the Ministry of Finance, the ultimate source of funds for R&D initiated by the government and academy (GBAORD and HERD respectively), has become much more involved in innovation policy making. The interministerial Israel Europe R&D Directorate (ISERD) is responsible for cooperation in the European research area. (Garcia-Torres, 2016, p. 12)

Outside of the government, most academic research is carried out in eight research universities. Private Research Organisations (PRO) do not play a central role except in the field of agriculture. R&D in the business sector is divided between local firms (many of which went public on NASDAQ), subsidiaries of multinationals (mainly American corporations), and a large number of technological start-up companies. Many of the local subsidiaries of multinationals were set up after the acquisition of local start-ups. One of the problems of Israel's relatively large venture capital industry is that it has become far more difficult to float Israeli companies on NASDAQ, the preferred option in terms of liquidity and visibility, meaning that most of the prevalent strategy for Israeli start-ups is through Mergers and Acquisitions (M&A). (Garcia-Torres, 2016, p. 13)

3. RI in the National R&I System

Israel's innovation policy is not centralised but distributed across different ministries, while regional authorities play a marginal role. The Israeli innovation system is a dynamic one, with a **large investment in R&D mostly from private funding and almost half of it coming from foreign investors.**

The Ministry of Science, Technology and Space promotes projects to encourage research and is focused on leading strategic research infrastructure. The ministry is responsible for the promotion of science and technology infrastructure in Israel, research and development in the periphery, international scientific relations and the Israeli Space Agency.

9 international research infrastructures are funded by governmental budgets. The Ministry of Science and Technology, and the National Council for Research and Development (MOLMOP), deal with the future needs related to establishing new research infrastructures and effecting significant improvements in the existing research infrastructures (Samuel Neaman Institute for National Policy Research).

The Israeli Centres of Research Excellence (I-CORE) programme, which dates from 2011, envisions the establishment of cross-institutional clusters of top researchers in specific fields.

I-CORE is run jointly by the Council for Higher Education's Planning and Budgeting Committee and the Israel Science Foundation (Garcia-Torres, 2016, p.12).

The RI roadmaps of 2013 and 2016 were approved by the CPB (VATAT) but only a small fraction of their recommendations has been implemented.

4. Major national strategies for international cooperation in R&I and strategic integration of RI

The government's innovation policy aims at achieving broad national goals in the coming decade, including: encouraging the growth of industrial companies, injecting technological innovation into traditional fields which are not traditionally R&I dependent, strengthening RI as well as capital and labour, harnessing innovation for the improvement of the public sector and increasing the participation of sectors currently under-represented in the high-tech work force. In light of the great importance of innovation in Israel, which in recent years has become the main engine of growth for the Israeli economy and a source of national pride, the government's capabilities must be improved, via a structural change to the OCS which is intended to bring about improved operational capabilities for Israeli industry. The structural change is designed to enable the government to continue to determine its policies in this field.

Establishing the authority will reinforce the government's long-term goals for the high-tech industry,

namely, maintaining and even increasing Israel's global leadership in the face of growing competition while at the same time connecting wider parts of the economy to this engine of growth. The authority will have the professional capabilities and maximum flexibility to allow it to take initiatives and efficiently promote technological innovation in industry at a pace that befits the market. The additional goals of the authority are encouraging growth, increasing productivity and promoting technological innovation in various fields of industry in Israel. (Garcia-Torres, 2016, p. 12.)

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- Getz, Daphne; Tadmor, Zehev (2015). Israel. In: UNESCO Science Report: towards 2030
- Samuel Neaman Institute (2017) <<http://www.neaman.org.il/mapping-infrastructures>> [Last access 09/2017].

Further links

- Getz, D., Segal V., Zalmanovich B., and Katz O 2010. "Mapping of National Research Infrastructures in Israel: Updated Mapping of Israel Research Infrastructures and International Research Infrastructures, Which Are Used by Israeli Researchers (only in Hebrew)."
- Samuel Neaman Institute for National Policy Research: <<http://www.neaman.org.il/mapping-infrastructures>> [Last access 09/2017].

Annex Italy Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

In Italy the ex-ante impact assessment is neither yet conducted nor applicable.

The initial reference point for RI national Roadmap is the S&T Merits related to the Italian research system.

RI are also evaluated as promoters of technology innovation and potential providers of high-level skills. The Italian Minister MIUR (Ministero dell'Istruzione dell'Università e della Ricerca) is the central Administration which promotes and coordinates the process of RI assessment, selection and funding.

In the future, MIUR intends to operate through the procedure described in the reference document PNIR (Programma Nazionale per le Infrastrutture di Ricerca).

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

- An input for funding decisions on RI between institutional, regional and national stakeholders.
- A list to achieve agreement on the RI with institutional, regional and national stakeholders on strategic priorities, which are foreseen for funding.

The objectives are S&T Merits to respond to scientific and technological as well as to socio-economic challenges and to increase the significance of the Italian research system in the international scenario.

2.2. Eligibility conditions

RI of the Italian Roadmap respond to the following conditions:

- Level of participation for scientific interest of National Research Performing Organizations (RPOs)
- Being within the priority scientific domains of National RPOs

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

RI are evaluated according to the following characteristics:

- Scientific quality
- Technological quality
- Managerial quality (implementation parameters, including a business plan)
- Added value at European level
- High-level connected services
- Free transnational access on a competitive basis (peer review)
- Open source available results

The evaluation of RI of pan-European interest to be included in the national Roadmap applies when possible the H2020 methodology taking into account five criteria:

1. ESFRI/ERIC typology
2. Localization
3. Scientific community
4. Impact (including technological one)
5. Pan-European impact

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

In the last roadmap exercise, MIUR managed an internal process to conduct an analysis of RI of strategic interest for Italy and of pan-European interest. This process considered:

- Analysis and assessment of RI
- Regional interest and involvement in RI
- Past investments valorization

A group of priority RI was identified to be included in the National Roadmap, considering also international and specific strategies:

- Thematic areas (mapped on ESFRI)
- Country Research strategy PNR-PNIR
- Coherent with regional strategies(S3)

Organization in charge

MIUR is in charge of the National roadmap. For the future roadmap process, PNIR provides some elements of the evaluation in phases: ex-ante, in-itinere and ex-post.

Timing

The roadmap has not fixed timeline.

2.5. Proposals evaluated and selected (available statistics)

- Analysed 97 RI according to the 2013 mapping.
- Identified 56 RI of priority interest for Italy.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

In the future, PNIR provides elements of the monitoring process to modulate interventions.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

Not applicable or no information presently available.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Not applicable or no information presently available.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

Updates might be available in the tri-annual plans of the RPOs.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex Italy Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	
Access to RI	
Organisation within national procedure	
The Italian definition for RI corresponds to the ESFRI definition for RI.	

2. RI players in the national R&I system
<p>National relevance of RI The National Research Programme 2014-2020, presented by MIUR defines research specialised areas. National Public Funds for Research Institution are approved by Italian Parliament and reported in FOE 2016. At institutional level, each RPO (including CNR) holds funding for running with internal procedures. Regional funds are also used for RI at local level. For running activities at single-site, RI may have different types of grants for funding the respective research activities.</p> <p>Embedding of RI in the national R&I system RI are within the priority scientific domains of National RPOs with related high-level scientific participations. The responsible body for RI is the MIUR.</p>

3. RI in the National R&I System
<p>The Italian Ministry MIUR is the central Administration which promotes and coordinates the process of RI assessment, selection and funding.</p> <p>In the future, MIUR intends to operate through the procedure described in the reference document PNIR (Programma Nazionale per le Infrastrutture di Ricerca).</p> <p>RI players in the Italian R&I System are:</p> <ul style="list-style-type: none"> • Several Ministries: Research, Health, Environment, Economic development, Cultural heritage, Foreign Affairs, etc.; • Research performing Organizations: National Research Council, National Institute of Nuclear Physics, etc.; • National Agency of Alternative Energy (ENEA); • The Conference of Italian University Rectors (Conferenza dei Rettori delle Università Italiane – CRUI).

4. Major national strategies for international cooperation in R&I and strategic integration of RI
<p>The objectives are S&T Merits to respond to scientific and technological as well as to socio-economic challenges and to increase the significance of the Italian research system in the international scenario.</p> <p>A group of priority RI was identified to be included in the National Roadmap, considering also international and specific strategies:</p> <ul style="list-style-type: none"> • Thematic areas (mapped on ESFRI); • Country Research strategy PNR-PNIR; • Coherent with regional strategies (S3).

References

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- MIUR (2016c) Programma nazionale per la ricerca 2015-2020, Roma. <
www.istruzione.it/allegati/2016/PNR_2015-2020.pdf > [Last access: 07/2017.].
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<<http://www.ponrec.it/media/388972/pnir.pdf>>. [Last access: 07/2017.].

Annex Lithuania Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Not applicable or no information presently available.

2.2. Eligibility conditions

Not applicable or no information presently available.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

Not applicable or no information presently available.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

The proposals for Lithuanian RI projects submitted to the Research Council of Lithuania in order to be included in the Roadmap of 2011 were all considered at the respective sub-groups of the Research Council of Lithuania: humanities and social sciences, biomedical, physical, and technology sciences.

With the aim of obtaining an objective and unbiased opinion a summary evaluation of the proposals was performed by foreign experts.

2.5. Proposals evaluated and selected (available statistics)

In 2011, the Research Council of Lithuania drew up and published the first Roadmap for research infrastructures of Lithuania designed to identify the strategic directions of the long-term development of the national RI. The Lithuanian Roadmap for research infrastructures presents the Lithuanian RI projects that are prioritised in relation to Lithuania's progress towards the membership of the European research infrastructures included in the ESFRI Roadmap, as well as other international RI. The Roadmap introduces 15 national infrastructure projects important for the national research and development, and specifies international infrastructures that Lithuania should seek to join.

At the request of the Ministry of Education and Science, in 2014 the Research Council of Lithuania updated the Roadmap to include new infrastructure projects: the Roadmap 2011 list consisting of 15 RI projects was in 2014 supplemented with 7 other RI projects selected from 26 project proposals received.

An inclusion of any RI project into the national Roadmap means recognition of its significance. The current Roadmap for research infrastructure of Lithuania introduces 22 initiatives of national significance.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

Not applicable or no information presently available.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

According to the established procedure, the Research Council of Lithuania reviews and updates the Lithuanian Roadmap for research infrastructures no less frequently than once per 5 years.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

When updating the Roadmap, the experts of the Council took into consideration the links of all national infrastructures with the priority directions of the smart specialisation of Lithuania. Then, all the infrastructures included in the updated Roadmap implement one or several priorities of the smart specialisation.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

Not applicable or no information presently available.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex Lithuania Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	
Access to RI	
Organisation within national procedure	
<p>Facilities, resources and services that are used by the research communities to conduct research and foster innovation in their fields. They include major scientific equipment (or sets of instruments), knowledge-based resources such as collections, archives or scientific data and e-infrastructures such as data and computing systems and communication networks. Such infrastructures may be 'single-sited', 'virtual' or 'distributed'.</p> <p>The tools that provide essential services to the research community for basic or applied research. They may concern the whole range of scientific and technological fields, from social sciences to astronomy, going through genomics or nanotechnologies.</p> <p>Examples include libraries, databases, biological archives, laboratories, clean rooms, communication networks, research vessels, satellite and aircraft observation facilities, coastal observatories, telescopes, synchrotrons, accelerators. They may be "singlesited", "distributed", or "virtual". What we are dealing with are the necessary tools for the future to do research in many areas at the cutting edge, in accordance to ESFRI definition. (Higher Education Authority, p. 58)</p>	

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 14.

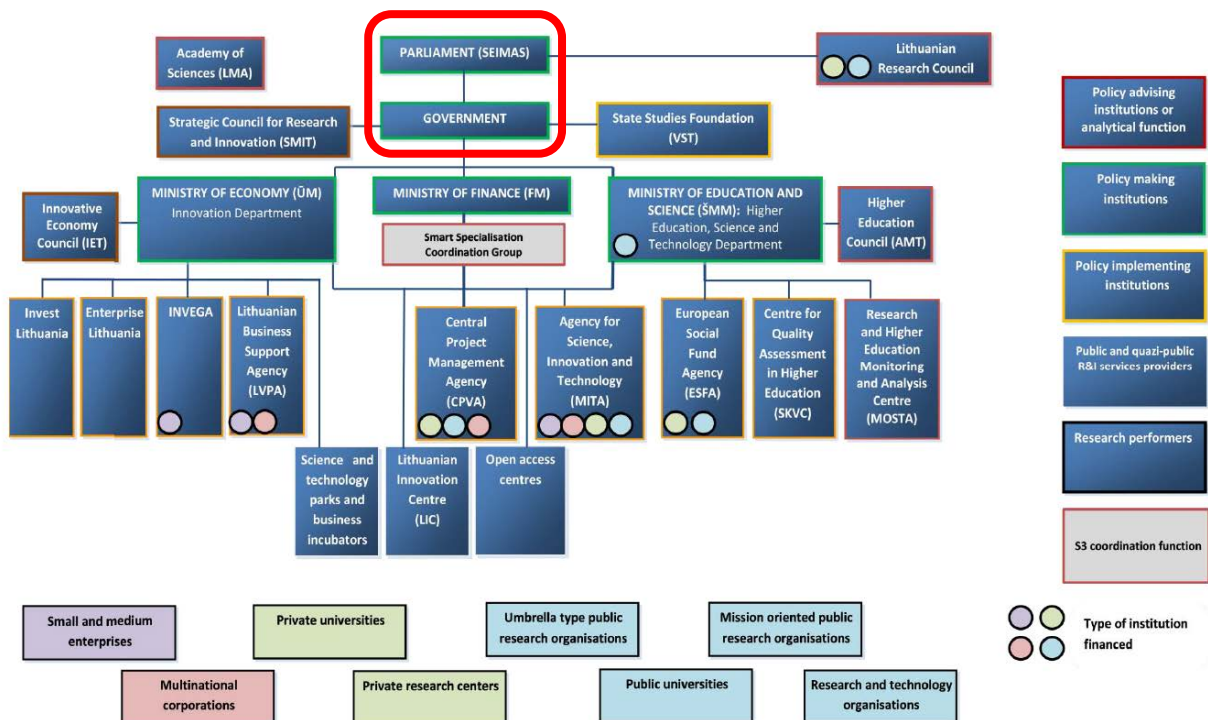


Figure 14: Organisational chart of the R&I system of Lithuania (Paliokaitė, 2015, p. 17). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

In April 2009, the Ministry of Education and Science set up a working group consisting of Lithuanian and émigré researchers and innovative business representatives and tasked with drafting guidelines for the development of the Lithuanian RI. With a view to identifying the main directions in the development of the national RI for the coming 10 to 15 years, the working group suggested that its members, in cooperation with the scientific community, identify the most viable projects.

Following the draft guidelines on the development of the RI, in 2011 the Research Council of Lithuania drew up and published the first Roadmap for Research Infrastructures of Lithuania designed to identify the strategic directions of the long-term development of the national RI.

The Lithuanian Roadmap for Research Infrastructures presents the Lithuanian RI projects that are prioritised in relation to Lithuania's progress towards the membership of the European research infrastructures included in the ESFRI Roadmap, as well as other international RI. The Roadmap introduces 15 national infrastructure projects considered important for the national research and development, and specifies international RI that Lithuania should seek to join. In 2012, the Minister for Education and Science of the Republic of Lithuania approved the Description of the procedure for the participation in international infrastructures. In the same year, the Research Council of Lithuania approved the Description of the procedure for the initiation of the participation of Lithuanian institutions in international RI, according to which the Research Council of Lithuania set up a Commission for Research Infrastructures of the Research Council of Lithuania. The Commission evaluates the plans on the membership in European RI consortia drawn up by Lithuanian research institutions or their groups. (Research Council of Lithuania, 2015)

Embedding of RI in the national R&I system

The Strategic Council for Research, Development and Innovation is responsible for the overall coordination of the R&I policy.

When implementing the programmes for the development of integrated science, higher education and business centres (valleys) during 2007–2013 ESIF funding period, significant investments were made into development and upgrading of R&D and innovation infrastructure in research and higher education institutions. Modern infrastructure and resulting growth in scientific potential served as a basis for identifying Priority R&D&I development areas and their priorities and will provide prerequisites for their implementation by developing new knowledge, technology, products, processes and methods. Modern R&D and innovation infrastructure because of its unique possibilities and exclusiveness also enabled research and higher education institutions and their scientists to strengthen relations with science centres and their scientists of other countries. With respect to continuity of investments, Lithuania is in a process of allocation of funding for RI in the 2014-2020 ESIF funding period. The measure "Joining international research infrastructures (ESFRI) and upgrading and development of open access R&D infrastructure needed for joining international research infrastructure (ESFRI)" is going to be fully implemented in 2018.

3. RI in the National R&I System

The R&I system in Lithuania is centralised and regional governance plays a minor role in public policy as **R&I policy decisions are made at the national level**. Comparing funding sources, **the Lithuanian R&I system is mainly funded from the EU ESIF and the national budget**. The 14 State universities are the core of the Lithuanian research system. The higher education sector is the main R&D performer. (Paliokaitė et al., 2016, p. 15.)

Lithuania has a stable centre-of-government R&I structure, which provides predictable policy and budgetary framework. Approved legislative documents define how R&I funding will be distributed, so there is less uncertainty about budgetary procedures.

In Lithuania the institutional **system for the formation and implementation of research and innovation policy is rather fragmented**. **The two principal governing bodies, shaping R&D and innovation policy in Lithuania, are the Ministry of Economy**, which is responsible for innovation policy, and the **Ministry of Education and Science**, responsible for higher education and (mainly public) R&D policy. The role of R&I Council is played by the Strategic Council for Research, Experimental Development and Innovation (SMIT). The five main agencies (MITA, LVPA, ESFA, LMT, CPVA) are responsible for funding of research and innovation. (Paliokaitė et al., 2016, p. 15)

4. Major national strategies for international cooperation in R&I and strategic integration of RI

The National Progress Strategy 'Lithuania 2030' which broadly defines the direction of the country's development also covers R&I even if in general terms. Overall, six key long-term and midterm policy documents were introduced or revised since 2012: the National Progress Strategy 'Lithuania 2030', the "National Progress Programme for Lithuania for the period 2014-2020 (NPP)", the "Programme for Development of Studies and R&D for 2013-2020", the updated "Concept of the Establishment and Development of Integrated Science, Studies and Business Centres (Valleys)", the "Lithuanian Innovation Development Programme for 2014-2020" and the "Programme on the Implementation of the R&D&I Priority Areas and their Priorities" which comes together with separate Action Plans for each priority. The priorities will be reviewed in 2017-2018. The principles of coordination and monitoring provide that a Coordination Group formed by key stakeholders will be established to monitor and coordinate the implementation of the priorities. (Paliokaitė et al., 2016, p. 18)

The Ministry of Economy launched an update of the broad "Lithuanian Innovation Strategy for 2010-2020" and replaced it by a new strategic document in the form of the "Lithuanian Innovation Development Programme for 2014-2020" which was approved by the Government in December 2013. (Paliokaitė 2016 et al., 2016, p. 18)

International cooperation is emphasised in programmes such as the "National Progress Programme for Lithuania for the period 2014-2020 (NPP)". At the same time, bilateral or multilateral agreements as well as programmes with third countries are in force, both in Europe and outside. Most policy documents apply similar measures towards R&I cooperation with EU and third countries.

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Further links

- International Research infrastructure evaluation was organised in 2016. Output of the evaluation-ranking of LT RI, which is the basis for upcoming RI funding decisions and recommendations for RI politics formation. International Research infrastructure evaluation report is available online: <<http://www.smm.lt/uploads/documents/darbo%20grupes/Lietuvos%20mokslini%C5%B3%20tyrim%C5%B3%20infrastrukt%C5%ABr%C5%B3%20projekt%C5%B3%20ve>> [Last access: 08/2017].

Annex Montenegro Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

The Roadmap has been developed through extensive consultation with the research sector to identify strategic priorities for Montenegro over the period 2015-2020. It relies on national strategic documents related to the infrastructure planning and investment in recent years.

Successful implementation of Montenegrin Research Infrastructures Roadmap requires several steps including, among others, the identification of strategic directions for the development of infrastructure on national level and the use of available EU funds and programmes to support significant projects aimed at improving and building the research infrastructures.

Based on the proposal of the Council for scientific research activities in 2011, the Ministry of Science defined 10 research priorities with their specific research subareas, which is strategic orientation of Montenegro in the field of R&D in long term period. The identified priorities are: Energy; Identity; Information and Communication Technologies; Competitiveness of the national economy; Medicine and health; Science and education; New materials, products and services; Sustainable development and tourism; Agriculture and Food; and Transport.

Among the above priority areas of research, the Council for Scientific Research Activity identified areas of research that are of particular importance for the short-term development of Montenegro, such as: Energy; Information - Communication Technology; Medicine and health; New materials, products and services; Sustainable development and tourism; Agriculture and Food.

In the last two years, the Government and the Ministry of Science significantly increased their support for development of these areas as the major topics in the field of research, technology and innovation. These areas are in line with EU policy actions recommendations and initiative such as ESFRI.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Not applicable or no information presently available.

2.2. Eligibility conditions

Not applicable or no information presently available.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

Not applicable or no information presently available.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

For the set-up of the research infrastructure in priority areas, strong inter-ministerial cooperation has been established, as reflected by the announcement of a call for proposal co-funded by seven ministries to finance national research projects for the period 2012-2015, with a budget of €5 million. In this case, the Ministry of Science (MoS) is responsible for the coordination of the preparation, monitoring and administration of 104 selected projects.

2.5. Proposals evaluated and selected (available statistics)

Not applicable or no information presently available.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

Not applicable or no information presently available.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

Not applicable or no information presently available.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Not applicable or no information presently available.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

Not applicable or no information presently available.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex Montenegro Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	x (World Bank funds)
Categorisation of RI	
Access to RI	
Organisation within national procedure	
Not applicable or no further information presently available.	

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 15.

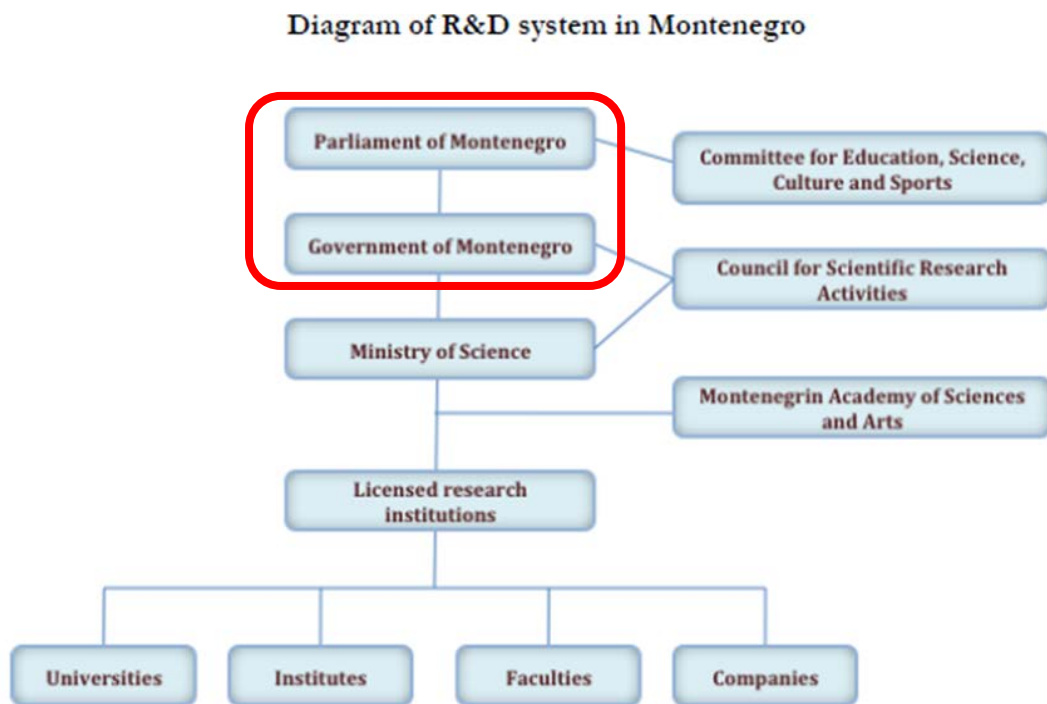


Figure 15: Organisational chart of the R&I system of Montenegro (Kaludjerovic, 2014, p. 7). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

In 2012, for the first time, a statistical survey on investment in research and innovation (R&I) according to the EU regulation based on the Frascati Manual, was conducted in Montenegro.

The aim is to enhance the effectiveness of investment planning for research infrastructures, at national and regional levels and to support the development of an evidence-based national strategy, linked to EU priorities, particularly to the European Strategy Forum on Research Infrastructures (ESFRI). (Ministry of Science, 2015, p.6)

Embedding of RI in the national R&I system

The main legislative body in Montenegro is the parliament, which has a Committee for Education, Science, Culture and Sports (CESCS). It is advised by the Council for Scientific and Research Activi-

ties (CSRA), which is in charge of preparing and proposing R&D strategies and monitors their implementation. On the administrative side, the Ministry of Science (MoS), emerging from the former Ministry for Education and Science, is the main body for planning, funding, and monitoring the Montenegrin research system. (Kaludjerovic, 2014, p. 6)

3. RI in the National R&I System

Policy measures in Montenegro aim to promote higher levels of private R&I investments and facilitate innovations among companies. This includes the support to establishment local/regional business centres (6 regional and 3 local business centres), to establishment business incubators (two business centres), to establishment clusters, voucher schemes for innovative SMEs (introduced in 2012 as a pilot project) and European Information and Innovation Centre Montenegro (EIICM).

A basis of the infrastructure is the Montenegrin Research and Academic Network (MREN), which enables all scientific research institutions to be connected among them and informational system on scientific research activities in Montenegro (E-CRIS.CG).

There is an action plan for the implementation of Strategy for Scientific Research Activity 2013 - 2016, two activities related to infrastructure are foreseen. (Kaludjerovic 2014, p.30)

4. Major national strategies for international cooperation in R&I and strategic integration of RI

The most relevant R&I document is the Strategy for Scientific and Research Activity (SSRA) 2012-2016, which was last updated in 2012. There is no information available if a new version is under preparation. The strategy emphasised the need for reinforce existing RI through regular investments in improving the existing capacities and access regulations (Kaludjerovic, 2014, p. 19).

This strategic objective was implemented by further developments and investments in RI in the last years, especially in the area of Information and Communication Technologies (ICT), biomedical and life sciences and material sciences were pushed (Kaludjerovic, 2014, p. 16).

Nevertheless, the mainly service-oriented industry sector and the low level of private sector participation in sciences are responsible for the continuing low level of research infrastructure landscape (Kaludjerovic, 2014, p. 20).

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Annex Netherlands Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Not applicable or no information presently available.

2.2. Eligibility conditions

Facility proposals are required (Netherlands Organization for Scientific Research, 2016):

- To meet the financial lower limit (€10 million) for large-scale research facilities

Not to be included into or be part of the existing landscape (focus on new facilities)

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

For composing the Roadmap, the following criteria were assessed:

The importance for science and the potential to attract researchers (science and talent case)

- The committee will assess the scientific importance and urgency of the intended infrastructure in light of the developments in the relevant disciplines/research areas. The expected innovation that the infrastructure will help to realise, and the intended scientific breakthroughs will be assessed.
- Also describe the expected attractiveness of the infrastructure for foreign and Dutch researchers. Advanced scientific infrastructures are also vital for attracting scientific talent to the Netherlands or for keeping such talent in the Netherlands. The infrastructure should therefore be attractive enough for foreign and Dutch researchers.

The importance for society and/or industry and the connection with societal developments (innovation case)

- The committee will assess the societal and/or economic importance of the intended infrastructure.
- Research infrastructures are also attractive for industry and for innovative government and/or have a broader societal importance. Large-scale research infrastructure, in particular, works as a magnet for new knowledge and insights and that creates an outstanding climate for both small and large companies and/or contributes to the solution of societal challenges like integration, ageing population. It is therefore important to connect with national policy frameworks and trends, if possible, such as the top sectors policy and the societal and scientific themes that are playing a role in the Netherlands and Europe. Besides this aspect the possible value in terms of valorisation and other non-scientific use will be assessed.

The importance for the Netherlands

- Describe the importance of the intended infrastructure for the Netherlands and the Dutch research community taking into account the European/global context. Describe whether there are similar possibilities elsewhere for use and if yes, why these cannot be used.
- Large-scale scientific infrastructures should serve a major national interest and often have a strong international status as well. State how unique this infrastructure would be in the Dutch research community and what the possible interface or overlap is with existing infrastructures.

Financial aspects of the new infrastructure

- If the infrastructure is submitted for the National Roadmap, then you need to provide a detailed description. If the infrastructure is not registered for the National Roadmap, then a brief description will suffice.
- Describe which possible sources of funding have been or will be applied for.
 - Providing a budget for the intended investments.
 - Description of how a cost-effective exploitation of the infrastructure will be realised.
 - An estimation of the use of the infrastructure (utilisation rate) and which costs users will be invoiced for (in comparison with other similar infrastructures).
 - Description which of the institute's own resources will be used for the infrastructure.
 - Answering the question of how the long-term continuity, decommissioning of the infrastructure and the investments will be provided.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

The Permanent Committee for Large Scale Scientific Infrastructure of NWO assessed the facilities and decided which facilities should be part of the Roadmap and which not. The committee also decided to bring together facilities in the same field of research or facilities using the same equipment. Those facilities were clustered in one coherent national facility. The researchers involved were asked to develop a joint investment plan and to set clear priorities. At the end the roadmap was proposed to the executive board of NWO who approved the National Roadmap.

2.5. Proposals evaluated and selected (available statistics)

An inventory of the landscape of existing and proposed new facilities in Netherlands is the basis for the selection of facilities for the National Roadmap for Large-Scale Scientific Infrastructure.

The *Permanent Committee for Large-Scale Scientific Infrastructure* received a total of 164 facilities from 54 different institutions. Of these, a total of 113 have been incorporated into the landscape of existing large-scale research facilities in the Netherlands (see www.onderzoeksfaciliteiten.nl [Last access: 08/2017]). A number of facilities did not meet the financial lower limit (€10 million) for large-scale research facilities and have therefore not been incorporated into the landscape.

The committee concluded that the facilities need to harmonise and cooperate more effectively in order to prevent duplication and to use the available infrastructures in the best way.

Harmonisation with the field and the evaluation of the Permanent Committee has led to a new National Roadmap consisting of 33 facilities. These are in part individual facilities (16), as was the case with the previous National Roadmap. In addition, the National Roadmap consists of clusters of facilities (17) that are asked to draft a joint investment plan for the entire cluster.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

The objective is to evaluate which facilities in the Netherlands are still considered of the utmost importance and therefore should be added to the roadmap.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

This National Roadmap is set to run for a period of 4 years. This might be changed into once in six years. It must be stressed that in urgent cases we allow additions in between. The next update of the National Roadmap will take place sometime in 2020. In addition, bi-annual progress report and an annual overview of the outputs are required to RI projects.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

In 2018 the Permanent committee will develop the procedure for the coming update of the Roadmap. This includes the evaluation of the present roadmap facilities and the clusters of facilities.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

The Permanent committee has decided to ask for annual progress reports and will visit the granted facilities in the coming years. In the coming month a more detailed monitoring procedure will be developed using also the results of the INROAD project

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex Netherlands Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	x
Categorisation of RI	
Access to RI	
Organisation within national procedure	
<p>The National Roadmap defined a minimum size of the facility. Further the ESFRI definition is used. We do not divide between roadmap and landmarks because in both cases the funding of the facility has to be provided by NOW.</p> <p>RI are facilities, resources and services that a research community uses to conduct research and promote innovation in its field. Where relevant, the infrastructure can also be used for other purposes than research, for example education or public services. Among other things, it concerns important scientific equipment or collections of instruments; knowledge-based resources such as collections of natural specimens, archives and collections of scientific data; e-infrastructure such as (interlinked) data files, and computer systems and communication networks; and any other unique infrastructure that is critically important for achieving excellence in research and innovation. This could refer to infrastructures situated in a single location, or virtual or distributed infrastructures (in the Netherlands or abroad).</p> <p>At the very least, an infrastructure that is also part of the National Roadmap for Large-Scale Scientific Infrastructure must provide access based on scientific excellence or promote a broad access policy.</p>	

2. RI players in the national R&I system

National relevance of RI

Cohesion between the various facilities, uniqueness, overlap and cohesion, affiliation with ESFRI, cooperation and selectivity in the field is requested.

Affiliation with strategic developments, with the Dutch National Research Agenda (NWA), with strategic goals and priorities of institutions and with scientific fields, top sectors is demanded.

Participation and use (The facility's national and international target group and user group) and significance to science and society, as well as status/maturity of facility (Phase of life, support, governance and organisational structure, substantiation of the investment plans, institutional commitment, funding also in the long term) is equally relevant for RI.

A total amount of approximately 200 million € will be available for the coming five years. Of this amount 20 million € are available for the humanities/social sciences, 90 million € for science/technology and 90 million € for the life sciences. The committee recommends using this ratio for upcoming National Roadmap calls.

The Permanent Committee believes that it is important for the Netherlands to also harmonise, where possible, with ESFRI's European Roadmap.

Dutch facilities that dovetail with an ESFRI infrastructure should be part of the ESFRI infrastructure.

The Permanent Committee has therefore decided not to include facilities in the National Roadmap that are aligned with an ESFRI facility, which are not part of it. In the current transition phase the committee will require facilities to which this applies to first become part of an ESFRI facility before submitting an application for Roadmap resources. In doing so, the committee will look at ESFRI landmarks, ESFRI projects and ESFRI emerging facilities. The committee generally believes that harmonisation with international priorities is important in order to prevent duplication.

Embedding of RI in the national R&I system

The NWO (Netherlands Organisation for Scientific Research) is most important when it comes to embedding international research priorities in a national competitive scheme. Procedures regarding definition of priorities, selection decisions, reporting requirements, eligibility criteria, definition of eligible costs, intellectual property rights, standards for proposal evaluation, funding rates can be found on the NOW websites.

3. RI in the National R&I System

The R&I structure in the Netherlands is mainly centralised. The central government remains the main financing body. Policy choices and focus areas are gradually becoming more regionalised. Direct support to business R&I is also increasingly provided at the regional level. The main policy actors in R&I are the Ministry of Education, Culture and Science (ECS) and the Ministry of Economic Affairs (EA) share the responsibility for science policy. EA is responsible for enterprise policy, which includes innovation policy. ECS is responsible for education policies and the allocation of institutional funding to the universities. The main R&I policy implementation bodies are the NWO, the Royal Netherlands Academy of Arts and Sciences (KNAW), and the Netherlands Enterprise Agency (RVO). In the field of Health science, the Netherlands has several private and non-profit organisations and foundations that fund research.

4. Major national strategies for international cooperation in R&I and strategic integration of RI

The Netherlands is actively involved in increasing international cooperation in research, development and innovation with third countries. According to the latest progress report on the ERA, the Netherlands spends 3.1% of its R&D budget on collaboration programs carried out with third countries, ranking fourth of all ERA Member States. Several measures exist that stimulate collaboration in research, which usually take the form of bilateral agreements. Next to long-standing research cooperation with countries such as the U.S. and China, in the past years agreements have been set up or strengthened with emerging countries such as Brazil and India. The NWO Strategy 2015-2018 describes that these collaborations will be continued in the upcoming years. The basis for cooperation with third countries consists of Memoranda of Agreements which form around specific themes.

(Janssen et al. 2016, p. 69)

***Roadmap Call: facilities on the National Roadmap can apply for funding**

Step	Action	Responsible actor	Result?
1	Planning/ Preparation of Guidelines	Permanent Committee Large scale RI / NWO	
2	Call	NWO	
3	Landscape analysis	Permanent Committee Large scale RI / NWO.	
4	Mapping	Permanent Committee Large scale RI / NWO	
5	Eligibility Check	Permanent Committee Large scale RI	
6	Science-driven Evaluation	Roadmap international assessment committee	
7	Economic evaluation	Roadmap international assessment committee	
8	Evaluation of societal relevance	Roadmap international assessment committee	
9	Decision	NWO	
10	Validation	NWO	

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- Information included in the InRoad Consultation (survey sent on 02/05/2017).
- KNAW (February 2015). KNAW gives impulse to free accessibility of scientific information. In Dutch. < https://www.knaw.nl/en/news/publications#b_start=20 > [Last access: 08/2017].
- NWO (April 2015). NWO Strategy 2015-2018. < <https://www.nwo.nl/binaries/content/documents/nwo-en/common/about-nwo/publications/items/nwo/strategy-memorandum-2015-2018/NWO+Strategy+2015-2018+eng-web-pdf.pdf> > [Last access: 08/2017].

Further links

- Key Figures is a statistical publication in which the Dutch Ministry of Education, Culture and Science (OCW) presents the latest figures regarding the results and status of its policy areas. <<https://www.government.nl/topics/science/documents/reports/2012/07/24/key-figures-2007-2011>>. [Last access: 08/2017].

Annex Norway Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Not applicable or no information presently available.

2.2. Eligibility conditions

RI eligible for funding must fit to any of the RI categories defined, namely:

- Advanced scientific equipment and large-scale equipment facilities
- Electronic infrastructures (e-infrastructures)
- Scientific databases and collections

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

Grant applications for national infrastructures must satisfy the strategic requirements and guidelines set out in the funding announcements. Applications will also be assessed on the basis of the following criteria:

- The infrastructure must be of widespread national interest;
- The infrastructure must support strategic priorities specified in national strategies and described in more detail in the funding announcement;
- The infrastructure must promote effective task-sharing and coordination between Norwegian research groups within the relevant research areas;
- There must be plans in place to make the infrastructure accessible to users outside the host institutions;
- The infrastructure must support national industrial priorities (when relevant);
- The infrastructure must contribute to long-term competence building in research areas that are expected to be of major importance to Norway;
- The infrastructure must reflect and reinforce the host institutions' strategic plans and priorities, and there must be plans in place for funding the operation of the infrastructure once the project period is concluded;
- The infrastructure must be of relevance and benefit to Norwegian society.

It is essential that research infrastructure projects exhibit high scientific merit to be deemed worthy of funding. The scientific review is carried out by international referees and serves as important input for the Research Council's strategic review and decision-making process. Grant applications are normally assessed on the basis of the following criteria (The Research Council of Norway, 2012):

- Quality and impact of the proposed research using the infrastructure;
- Planned ability of the infrastructure to enhance innovation in existing industries and/or newly established companies as well as the competitiveness of Norwegian industry internationally;
- Quality and national standing of the research groups in their particular field, as well as the institution's suitability as a host institution for the infrastructure;
- Interaction between new infrastructure and any existing infrastructures;
- Position of the infrastructure in the international landscape as well as in planned and existing international cooperation;
- Potential to establish international networks, and capacity to carry out high-priority research that Norwegian research groups could not otherwise conduct on their own;
- Quality of the project plans and competence of the project management team.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

The application review procedure to be used in connection with the call for proposals for funding for research infrastructure for 2016 is described below. The application review process includes a **scientific review by external referees** and a **strategic-administrative review by the Research Council administration**. The process will culminate in the selection of projects for funding and the selection of projects for inclusion on the Norwegian Roadmap for Research Infrastructure.

The application review process will take place in one phase for all types of research infrastructure. This also applies to applications for funding for large-scale infrastructure. All grant proposals will initially be assessed by committees comprised of external referees (called referee panels), which will determine whether the research infrastructure will facilitate research activities of high **scientific quality**. This scientific assessment serves as important advisory input for the Research Council in further processing of the applications.

Next, the Research Council administration will assess applications with regard to the **strategic relevance** of the research infrastructure and whether or not it fulfils the criteria of being a national research infrastructure. The administration will then prepare a recommendation to be submitted to a steering committee comprised of members of the Executive Board and the division research boards who satisfy the applicable impartiality requirements.

Scientific review

The makeup of the referee panels will be determined in relation to the scientific profile of the grant applications received. Almost all panel members will be international referees to satisfy the applicable impartiality requirements. The referee panels will review each application on the basis of stipulated criteria before the applications are submitted for administrative review.

Administrative review and recommendation

The first segment of this review will be conducted by *administrative review panels* comprised of Research Council staff members who have thorough knowledge of a scientific, thematic and/or technology area as well as of the Norwegian research actors in this area. To the degree possible and appropriate, the makeup of the administrative review panels will mirror that of the referee panels. All grant applications that have received a high mark from the referee panels (5, 6 or 7) will be assessed by the administrative review panels. Applications for infrastructure with high investment costs or infrastructure deemed to be of major national importance ("large-scale infrastructure") will be assessed by the administrative review panels even if these have received a mark lower than 5 from the referee panels. To be eligible to be ranked by the administrative review panels, grant applications must receive a mark of 5 or better for the criteria "Overall assessment of the referee/panel" and "Feasibility".

In the second and final segment of the administrative processing, the Research Council's administration group for research infrastructure will compile the ranked lists from the administration review panels and will prepare a recommendation for a final ranking within the given budget framework, which will then be quality assured by the Research Council's administrative leadership. Finally, this recommendation will be submitted to the steering committee comprised of qualified impartial members of the Executive Board and the division research boards, which will take the final decision regarding grant allocations.

Figure 16 shows the entire procedure of review for the RI applications:

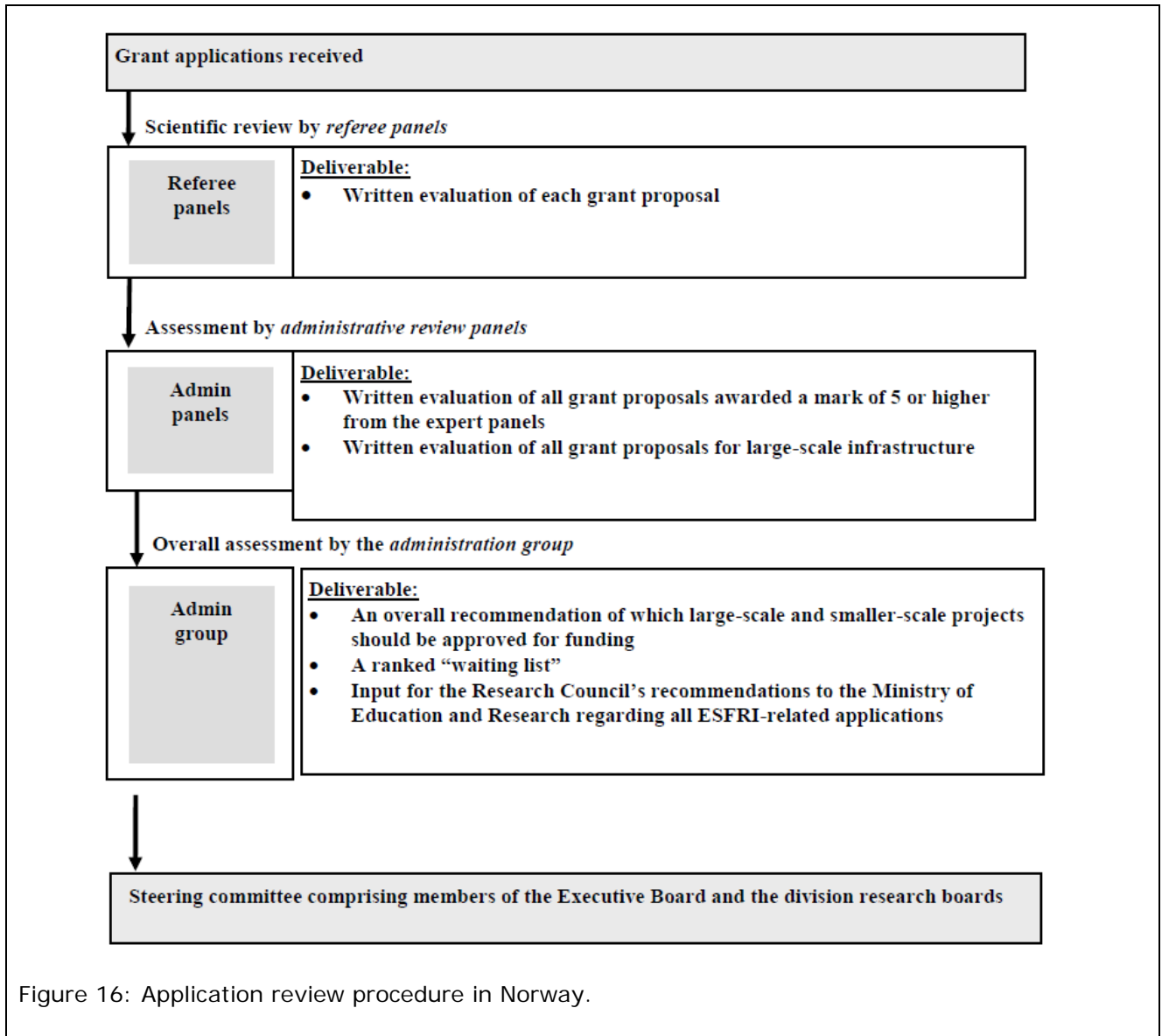


Figure 16: Application review procedure in Norway.

2.5. Proposals evaluated and selected (available statistics)

Since the publication of the first version of the Norway’s national strategy for research infrastructure in 2008, A total of over 200 grant applications have been processed, and funding has been awarded to around 40 infrastructure projects. On the other side, the last version of the Norwegian roadmap published in 2016 includes a total of 57 RI projects.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

Not applicable or no information presently available.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

The roadmap is not meant to be a static document, and it will be revised in the wake of each major funding announcement.

The first version of the Norwegian Roadmap for Research Infrastructure was published in 2010, in line with similar roadmaps drawn up in other countries. The roadmap is revised after each major funding announcement under the National Financing Initiative for Research Infrastructure issued by the Research Council. The first and second revisions were published in 2012 and 2014, respectively. The Norwegian Roadmap for Research Infrastructure 2016 is thereby the third revision of the

roadmap (The Research Council of Norway, 2016).
3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap
Not applicable or no information presently available.
3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap
Not applicable or no information presently available.
3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented
Not applicable or no information presently available.

Annex Norway Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	
Access to RI	
Organisation within national procedure	
ESFRI-projects that have received funding from the Research Council have been assessed on the same terms as other projects under the National Financing Initiative for RI.	

Source: Data derived from InRoad Consultation on RI (2017).

2. RI players in the national R&I system	
The RI players within the R&I system are displayed in figure 17.	
<p>Political-level and high-level cross-cutting policy-level</p> <p>Ministry-mission-centered coordination</p> <p>R&D-funding-allocation</p>	
<p>Figure 17: Organisational chart of the R&I system of Norway (Solberg, 2016, p. 17). Red colour indicates the bodies with the main decision power regarding RI.</p>	
<p>National relevance of RI</p> <p>The national RM highlights major RI that are essential for achieving research policy objectives:</p> <ul style="list-style-type: none"> • communicate the strategic basis for the Research Council’s priorities relevant to emerging funding announcements under the National Financing Initiative for Research Infrastructure, • provide a guide for public and private funders of RI by presenting thoroughly reviewed projects that are quality-assured and considered worthy of support, but are in need of full or partial funding, • emphasise Norwegian participation in international RI. 	

The Norwegian Roadmap for Research Infrastructure 2016, p. 5).

Embedding of RI in the national R&I system

On the political level, several ministries contribute to R&D funding. The Ministry of Education and Research (MER) has the formal responsibility as coordinator for R&D policies and provides the largest share of budget. Besides, other ministries also fund R&D activities, especially the Ministry of Trade, Industry and Fisheries, responsible for innovation policy and the Ministry for Health and Care Services, which is nowadays the second largest contributor with regard to R&D funding (Solberg, 2016, p. 12).

3. RI in the National R&I System

Norway has a centralised system with regard to R&D policy, however in the case of innovation policy, counties and regions have proven to become more active players in initiating, funding and implementing regional innovation policies (Solberg, 2016, p. 13).

Three main entities are responsible for implementing the R&I policies developed by the government. The research Council of Norway (RCN) administers a large share of the national research funds in all sectors and disciplines including research based innovation. Among others, **RCN is responsible for funding of RI.** Further RCN acts as adviser to the government in research policy to the government and facilitates networking and communication among STI stakeholders in Norway. The RCN administers funding from 15 different ministries. Innovation Norway and the Industrial Development Cooperation of Norway (SIVA) are the main institutions in the area of innovation support. Innovation Norway addresses especially small and medium sized enterprises on a regional and national level. SIVA supports the development of science parks, incubators and services with special focus on start-ups (Solberg, 2016, p.13).

4. Major national strategies for international cooperation in R&I and strategic integration of RI

The most important strategic document for research policy in Norway is the **long-term plan for research and higher education – LTP (2015-2024)**. The strategy was adopted in 2014. Its major objectives are to strengthen competitiveness and innovation capacity, solve major challenges to society and develop high-quality academic groups. The LTP was developed in open process, involving ministries and other major actors in the area of R&D such as the RCN (Solberg, 2016, p. 18).

The LTP emphasises the importance of investment in RI, including a financial commitment in the period 2015-2024. On the basis of a governmental white paper on research, "Climate for Research" in 2009 and the national strategy for RI, "tools for research" (2008-2017), the national financing initiative for RI was launched (Solberg, 2016, p. 34).

Furthermore, Norway provides funding for participating in Nordic, European and other international cooperation initiatives such as the European Strategy Forum for Research Infrastructures' (ESFRI) roadmap. Norway hosts three of the ESFRI initiatives (Solberg, 2016, p. 34f.).

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- The Research Council of Norway (2016). Norwegian Roadmap for Research Infrastructure 2016: Tools for Research Part II. <https://www.forskingsradet.no/prognett-infrastruktur/Norwegian_Roadmap_for_Research_Infrastructure/1253976312605>. [Last access: 08/2017].

Further links

- Call of the Norwegian national financing initiative for research Infrastructure <<http://www.forskingsradet.no/en/Funding/INFRASTRUKTUR/1254020181335/p1184150364108?progId=1232959222815&visAktive=false>>. [Last access: 09/2017].
- Norway's national strategy for research infrastructure 2012-2017<http://www.forskingsradet.no/prognett-infrastruktur/National_strategy_for_research_infrastructure/1253976458361>. [Last access: 09/2017].

Annex Poland Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

The creation of a national roadmap was preceded by a review of the research base, owned by the scientific units and current investment policy implemented by successive offices managing scientific research in Poland. As a result, it was found that the vast majority are small devices whose similar copies found in various scientific units, often not fully used. In addition, it was made also a review of large investments undertaken in recent years by scientific units from funds structural funds under the Operational Programs. Using these analyses, it was determined that the infrastructure project research on the road map should be the core of the research centre bringing together the leading ones, national scientific units in a given field of science.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

- Road map is to be an expression of needs and aspirations of Polish science in the medium-term perspective in the field of research equipment and tools.
- Compliance with the assumptions of the science policy, National Research Program

2.2. Eligibility conditions

New investment projects in the strategic RI, or updating of investment projects currently located at PMDIB, if their assumptions require significant changes, significant changes are:

- changes in the composition or status of the consortium implementing the project,
- changes in the scope (reduction or increase of investment) and the budget of the project,
- changes to the research plan carried out in the planned infrastructure.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

The following criteria of the different RI proposal will be evaluated:

1. The *overall rationale* behind the proposed RI.
2. The proposed *ownership and operational structure* (e.g. single sited, distributed, network, anticipated working life):
 - proposed organisational arrangements (e.g. management model , relations between consortium members, etc.)
 - proposed legal structure
 - proposed localisation(s)
3. The technical concept (e.g. use of existing buildings or construction of new facilities, acquisition of new scientific instrumentation, acquisition of new service equipment, time scale to the start of operations):
 - technical feasibility / technical challenges
 - time schedule with clearly marked milestones (including preparation and implementation stages of the investment, i.e. preparation of documentation, fulfilment of administration procedures, including environmental impact assessment and building permits, public procurement, beginning and completion of project tasks).
4. The *overall research objectives* and the *research programme*.
5. The *uniqueness of the proposed RI* and its *potential contribution to the advancement of scientific research* (e.g. at national or European level):
 - envisaged contribution to the consolidation of the relevant research capacity in Poland (e.g. including list of leading centres involved in the R&D field of the proposed RI in Poland)
 - envisaged contribution to the increased competitiveness of the Polish research sector (e.g. enhanced capability to compete for HORIZON 2020 projects, prospect for future enlargement into a pan-European RI) and to the attractiveness of conducting research in Poland (the potential for "brain gain" or preventing "brain drain")
6. The *research potential of the consortium* (e.g. number and quality of publications relevant to the future RI's activities):

<ul style="list-style-type: none"> • human resources in the R&D field of the proposed RI and expected future requirements (e.g. number of relevant personnel, concept to reach the target) • research base of the consortium members (e.g. available scientific instrumentation, computes and systems, data bases, etc. – only major, usable equipment) • previous and current involvement in national or international scientific activities, e.g. list of EC projects (FP6, FP7...) and other relevant projects (NATO, ESF), list of selected publications (last 4 years – max. 10 positions) <p>7. The concept for <i>execution of the research programme</i>:</p> <ul style="list-style-type: none"> • proposed access rules for external users • expected national or international dimension of the RI (e.g. envisaged proportion between domestic and external users after the first 5 years of operations) <p>8. The <i>overall cost estimates of the construction</i> (e.g. main components, indication of the level of already available funding, expected sources of funding), the <i>yearly cost estimates of future operations</i> (including expected sources of funding).</p> <p>9. Previous experiences, current involvement and plans with regard to <i>collaboration with other sectors on regional and national level</i> (e.g. industry, services, NGOs, scientific, social or cultural societies, SMEs, etc.)</p> <p>10. Future possibilities for <i>education and training of students and scientists</i> (e.g. involvement in dissemination and/or exploitation, and management of intellectual property)</p> <p>11. <i>Interconnections of the proposed RI with the landscape of research infrastructures in Europe</i> (e.g. list of similar RI in Europe, anticipated international collaboration, prospect for upgrading to regional RI level):</p> <ul style="list-style-type: none"> • vision for future collaboration with other national or pan-European RI (e.g. from the ESFRI roadmap) • vision for collaboration with other European initiatives (e.g. with European Technology Platforms, EIT or Joint Technology Initiatives) <p>12. Previous <i>experience in serving the scientific community, the industry or the society</i> (e.g. technology or knowledge transfer projects or initiatives)</p> <ul style="list-style-type: none"> • expected socio-economic impact (e.g. collaboration with local industry, with local schools or NGOs, SMEs) • expected service activities <p>13. <i>Coherence of the proposed RI with goals and priorities of the Operational Programme Smart Growth</i> – the version of September 2013 or/and regional strategic documents (e.g. regional development strategies, regional innovation strategies)</p> <p><i>Other relevant information/comments</i></p>

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

With the decision of the Minister of Science and Higher Education No. 9/2010 of 4:

In February 2010, an Interdisciplinary Team was established for the Polish Roadmap for Research Infrastructure. The Team's tasks included, among others, providing the Minister of Science and Higher Education with support expert in the field of creating an RI road map. The applications were evaluated independently by two separate bodies, a panel of foreign experts and members of the Interdisciplinary Team. Members of the panel of foreign experts representing the scientific fields, were selected from among candidates nominated by members of the Interdisciplinary Team, taking into account their qualifications in particular fields of science. The selection of projects for the Roadmap includes two stages. The first stage required the submission of condensed, 3-page proposals containing a vision proposed research infrastructure. Joining the second stage, based on the results of the first stage selection, was related to the preparation of broader, 12-page descriptions of the proposed infrastructure, containing information on the proposed scope of research, team qualifications and organizational assumptions.

2.5. Proposals evaluated and selected (available statistics)

List of the selected RI <http://www.eitplus.pl/wp-content/uploads/2017/07/Lista-RI.pdf> [Last access: 09/2017].

The eligible projects concerned the following fields of science: astronomy, biomedicine, chemistry, energy, physics, materials, natural environment, technology and interdisciplinary issues.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

The existing investments in the field of infrastructure and innovations implemented with the support of structural funds and the Cohesion Fund (including the effectiveness of the use of funds) financed from the EU budget should be constantly evaluated. Thanks to this, it will be possible to indicate the correction mechanisms. This will allow the perspective of building the potential to be used after 2020

In 2020 the assessment of the impact of the implementation of selected actions of the 4th axis (increase of research and scientific potential) on the development of scientific units, stimulation of cooperation and commercialization.

Ex-post evaluation of effectiveness, durability, usefulness, effectiveness of projects implemented in under Measure 4.2 IR OP Development of modern research infrastructure in the science sector. Planned methodology. Analysis of existing data, interviews with representatives of the implementation system institutions, interviews with beneficiaries, case studies, review of foreign good practices in the field of R & D infrastructure development.

January -June 2018 Mid-term verification and assessment of the effects of financial support received on the development of R&D infrastructure.

Assessment of the degree of preparation of beneficiaries of measure 4.2 of OP IR for project implementation, absorption of funds from the European Union and identification of risk areas

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

Up to date there are no monitoring actions of the National Roadmap process. However, in June 2016, the Ministry published a draft ordinance concerning the evaluation of scientific organisations that determines future institutional R&D national funding. The institutional evaluation took into account publications and other R&D results from 2013-2016. The methodology relies on quantifiable data such as counts of publications, R&D grants and knowledge transfer revenues, but does not include indicators of broader scientific impacts or even citation-based indicators to incentivise an increase in the quality of publications. In 2016, the Ministry further improved the Information System on Science (POL-on) that aggregates data about researchers, research infrastructures, publications and R&D projects of PHEIs and PROs in order to better monitor the performance of the system.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Up to date there are no monitoring actions of the National Roadmap process.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

No information presently available.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

No information presently available.

Annex Poland Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	Strategic research infrastructure - a research device (or a set of research devices): having a unique character on a national, European or international scale and crucial for the development of scientific research, development works or for the development of IT infrastructure for long-term consolidation of national scientific potential, meeting the criteria of excellence scientific and organizational as well as the principles of open access to conducting and using research results, focused (e.g. large telescope) or dispersed (e.g. a network of observatories with small telescopes), stationary (e.g. synchrotron) or mobile (e.g. driving objects, flying or floating), as well as science IT infrastructure, such as data banks, telecommunications networks and information systems, and knowledge resources such as archives, collections and deposits (e.g., content collected in databases).
Access to RI	
Organisation within national procedure	Apart from a few exceptions, the weaknesses of the projects were aspects of their management, organizational concepts and issues of access to 'national laboratories' by external users. This indicates the need to organize specialized training related to the management of large research centers with significant research infrastructure. In this respect, the Ministry of Science and Higher Education plans to include relevant initiatives taken by ESFRI
<p>RI are facilities, resources and related services that are used by the scientific community to conduct top-level research in their respective fields and covers major scientific equipment or sets of instruments; knowledge-based resources such as collections, archives or structures for scientific information; enabling Information and Communications Technology based infrastructures such as Grid, computing, software and communication, or any other entity of a unique nature essential to achieve excellence in research. Such infrastructures may be 'single sited' or 'distributed' (an organised network of resources).</p> <p>As for the evaluation there is no evaluation mentioned in any documents. The categories about categorisation of RI, Access and organisation within national procedure. The national road mapping procedure is not available on-line, no documents, from 2015 still awaiting for the up-date.</p>	

Source: Data derived from InRoad consultation on RI (2017).

2. RI players in the national research and innovation system

The RI players within the R&I system are displayed in figure 18.

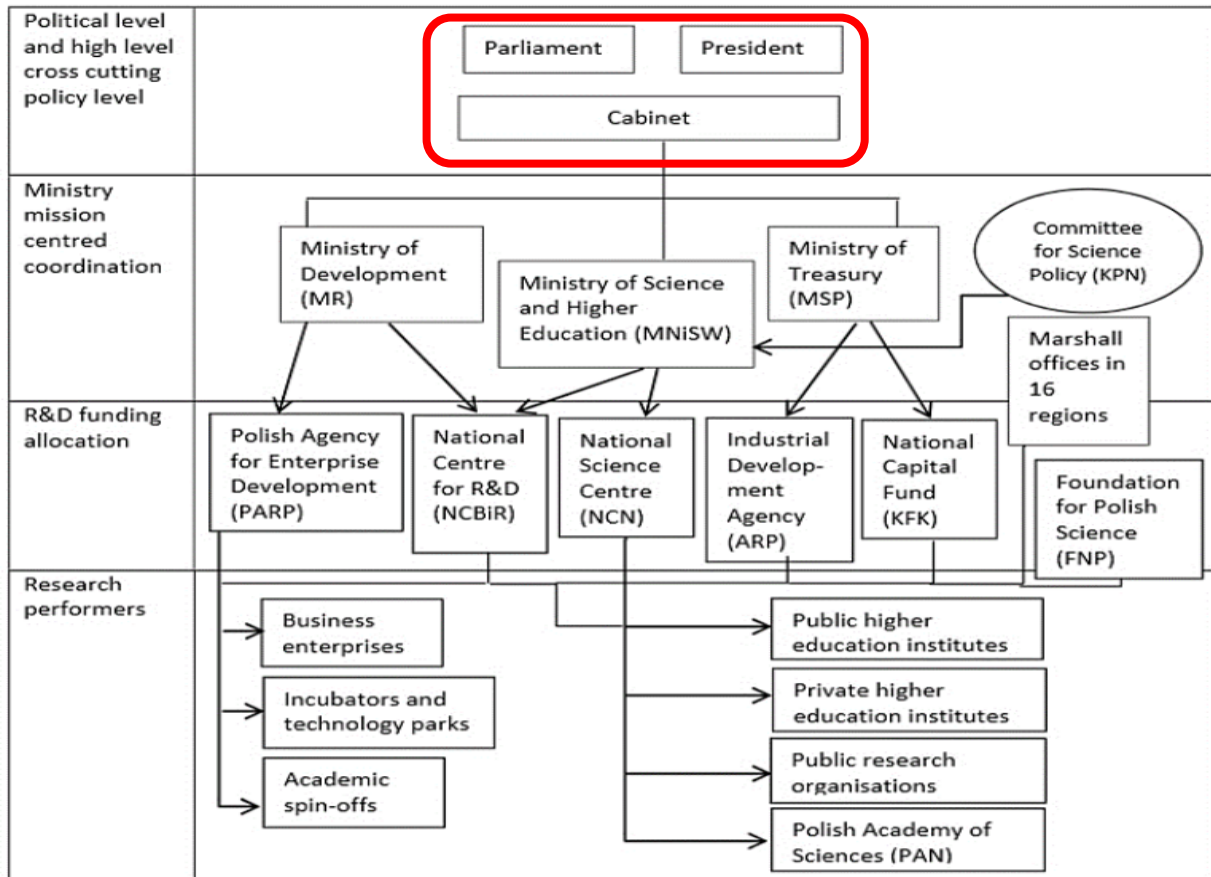


Figure 18: Organisational chart of the R&I system of Poland (Klincewicz and Szkuta 2016, p. 20). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

Up to now 53 projects had been selected on the basis of assessments by expert teams: 14 representing the physical and mathematical sciences, 14 – engineering, 11 - earth and biological sciences, 6 - interdisciplinary issues, 6 - medical science and agriculture, and 2 - social sciences and humanities. As many as 23 projects are international ones.

The Polish Roadmap for Research Infrastructures projects will be implemented in eight science areas: basic research, interdisciplinary research, high quality of life in society, healthcare and increasing the efficiency of pro-health, increasing production efficiency, energy storage and transmission, the development of advanced materials and technologies, the development of intelligent systems and infrastructure, sustainable development of natural and human environment.

The National Information Processing Institute is responsible for launching of a competition for projects (previously National Centre for Research and Development) included on the list of the Polish Roadmap for Research Infrastructures and distribution of the funds based on the condition that The minimum cost of the project should amount to PLN 30 million (approx. € 6.8) , with at least 10% of the amount of investment to be obtained from entrepreneurs. The project could be submitted in the consortia with scientific institutions and enterprises. The total budget for the RI funding program (2014-2020) is PLN 804 million (approx. €182. 7 million). Competition for PRRI projects (Measure 4.2 Development of modern research infrastructure of the science sector) is held within the framework of the Smart Growth Programme, which aims to increase innovation in the Polish economy through research with an active participation of enterprises. However the total investment in research and higher education including the RI (modern laboratories, research centres, university campuses in the years 2007-2013) but not related directly with the road mapping process – amounts nearly PLN 29 billion (approx. € 6.6 billion).

Embedding of RI in the national R&I system

The MNiSW is the main responsible entity for RI and Roadmapping.

The formation of the PMDIB was preceded by a review of the research base held by the research units and the current investment policy. As a result, it was found that the vast majority of available equipment is small, often not fully utilised devices, which are similar in different scientific units. In addition, a review of large investments carried out since 2007 by research units from the Structural Funds has also been completed.

Using these analyses, it was found that the proposal for a research infrastructure project on PMDIB should describe the idea of creating a research centre, at home or abroad, consolidating national research potential in a given field. Strong research teams with relevant national and international achievements should be involved in this centre. The organization's concept should include the principle of open access to research equipment, based on the criterion of scientific excellence.

Awaiting the new legal basis of The Act on Financing Science in Poland.

3. RI in the National R&I System

The governance structure on the **national level is divided into the parliament as legislative body** and the **cabinet as the executive part** to develop national policies. **The Ministry of Science and Higher Education is the responsible body for research and innovation** and is **also in charge of the RI Roadmapping**. It is **supervised by two major funding agencies**: The National Science Centre (NCN), responsible for financing basic research project and the National Information Processing Institute, former National Centre for Research and Development (NCBiR), in charge of financing applied and innovative development research projects. (Klincewicz and Szkuta 2016, p. 16)

The Ministry of Science and Higher Education's Grants are dedicated to support the participation of the Polish scientific community in international RI projects (mainly ESFRI). The Ministry of Science and Higher Education's annual allocation is earmarked to cover Poland's financial contributions to international institutions or organisations under international agreements. The Polish research system is characterized by the dominance of public funding. R&D expenditures in Poland have improved gradually over the last years. R&D intensity increased from 0.6% of GDP in 2007 to 1% of GDP in 2015, which remains below half of the EU average.

4. Major national strategies for international cooperation in research and innovation and strategic integration of RI

The National Information Processing Institute (previously National Centre for Research and Development) is responsible for launching a competition for projects that are going to be included on the list of the Polish Roadmap for Research Infrastructures and the distribution of the funds. The minimum cost of the project should amount to 30 million PLN (approx. 6.8 million €), with at least 10% of the amount of investment to be obtained from entrepreneurs. The project could be submitted by consortia with scientific institutions and enterprises. The total budget for the RI funding program (2014-2020) amounts to PLN 804 million (approx. 182.7 million €). The competition for PRRI projects is held within the framework of the Smart Growth Programme, which aims to increase innovation in the Polish economy through research with an active participation of enterprises. However, the total investment in research and higher education including the RI (modern laboratories, research centres, university campuses in the years 2007-2013) but not related directly with the road mapping process – amounts nearly 29 billion PLN (approx. 6.6 billion €).

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Further links

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Annex Portugal Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

The main objectives of the evaluation are:

- a) Evaluate existing and emerging RI in need of support for implementation
- b) Develop a strategic plan for investment in RI until 2020, promoting synergies and overcoming redundancies
- c) Prioritise funding, identify areas and, when possible, potential beneficiaries

Create a database and a national Roadmap for RI of strategic interest

2.2. Eligibility conditions

Eligible institutions/organisations will be:

- a) Public or Private National Higher Education Institutions
- b) State Laboratories or International Laboratories based on national territory
- c) Private non-profit institutions whose main objective is to carry out S&T activities
- d) Other public and private non-profit institutions which carry out or participate in scientific research activities

Each application must have a Principal Investigator and an implementation team, which will ensure the adequate implementation of the work plan and other activities that are explicit in the application.

According to the RI definition eligible institutions will have:

- 1) A professional management that guarantees implementation of an action plan and the accomplishment of the specific aims there defined, with an efficient and transparent internal management of resources
- 2) Capacity to relate with, and provide services to, the scientific, educational, business and industrial communities

Well defined policy of access conditions to national and international researchers external to the infrastructure

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

The main criteria to be evaluated in the selection of RI are:

1. Scientific Assessment

- Scientific and technological excellence of the RI
 - The significance of the RI for the specific research fields, including:
 - ✓ Relevance of the scientific objectives of the RI to facilitate and promote top-level science in Portugal;
 - ✓ Capacity of providing potential for world class research and scientific breakthrough;
 - ✓ Expected benefits for the Portuguese scientific and technological system for conducting cutting edge research at an international level, namely to increase the participation in international collaborative research projects, such as, those of the Horizon 2020;
 - Adequate identification of the RI's strengths, weaknesses, opportunities and threats (SWOT analysis);
 - Degree of internationalization, including the integration in international RI initiatives, namely those of the European Strategy Forum for Research Infrastructures (ESFRI) Roadmap;

- Degree of interdisciplinarity, including the effect of the RI on strengthening interdisciplinary research in Portugal;
- Quality of the proposed training of researchers.
- Governance capacity and implementation feasibility
 - Degree of adequacy of the management structure and governance of the RI to the proposed scientific aims;
 - Adequate management and action plan implementation including:
 - ✓ Leadership;
 - ✓ Distribution of responsibilities;
 - ✓ Experience and capacity;
 - ✓ Identification of (and adequate strategy to address) RI's strengths, weaknesses, opportunities and threats (SWOT analysis);
 - Competence and complementarities of the nodes and added value of the national RI at the regional, national and international levels, including contribution to increase access to knowledge resources and scientific capacity in the field of operation of the RI;
 - Adequate equipment and relevance of improvements to the existing and/or acquisition of new equipment, considering the scientific aims of the RI;
 - Quality of the access policy and data management plan:
 - ✓ Transparent policy for access to the infrastructure, including international access activities, conditions for provision of access, addressing remote access needs in relation to availability of e-infrastructures and data management issues;
 - ✓ Access policy for industry (addressing IP rights - if applicable - fees and confidentiality issues);
 - Operational readiness: maturity of the RI and appropriate relations between partners of the infrastructure and, if relevant, of the integration in an international research infrastructure.
- Budget and sustainability
 - Technical feasibility, human resource costs and cost-effectiveness of the proposed infrastructure, based on adequacy of:
 - ✓ Requested funding and envisaged sources of funds;
 - ✓ Multi-annual budget plan with funding sources information;
 - ✓ Long-term sustainability plan of the investment.
 - Adequate identification of (and answer to) RI's strengths, weaknesses, opportunities and threats (SWOT analysis);

2. Strategic Assessment

- RI's contribution to the regional and/or national development strategy
 - Degree of adequacy of the RI proposal to the national policies;
 - Integration of the proposal in sectors / technologies considered key to one or more regions (NUT II), in articulation with the smart specialization objectives defined by each region for the 2014-2020 structural funds programming period.
- RI's contribution to the strengthening of national and international competitiveness
 - Potential of the research infrastructure to become a national and international scientific and technological reference hub as a service provider;
 - Potential of the research infrastructure to increase the industrial knowledge base and innovation capacity;
 - Strategic anchor effect of the infrastructure for the emergence of new research and technology initiatives.
- Potential for social and economic development and for the implementation of public policies on science and technology
 - RI's contribution to the growth and consolidation of national and regional scientific competences;

Degree of engagement and impact on regional and national stakeholders' activities.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

The evaluation process of eligible applications comprises two stages: scientific and strategic. For each stage a distinct panel will carry out differentiated readings towards a final evaluation and selection. The scientific merit and quality of the research infrastructure will be evaluated by an international panel of experts. The panel will be subdivided in seven sub-panels, corresponding to the thematic areas defined in the Call. One member of each sub-panel will be designated as the thematic coordinator.

A national strategic relevance panel will focus on key criteria of national and regional policy coherence and potential socio-economic impact at national and regional levels. The reading of the strategic relevance panel will only take place after the scientific panel assessment and will consider its result as the basis for any further recommendations.

Scientific Assessment

All applications will be subjected to scientific evaluation and will be distributed by 7 sub-panels, which are responsible for the preliminary remote reviewing. This distribution is in accordance with the 7 thematic areas defined in the Call, complemented with the scientific areas indicated in the application.

Each application will be remotely assessed by 3 panel members. Remote panel members will produce individual evaluation reports for each application (about 10 to each panel member, accordingly to their field of expertise), and a consensus report drafted by one of the 3 readers and validated by all readers before being forwarded to the final Evaluation Panel Meeting.

Individual remote report includes:

- The scores of each evaluation criterion and sub criterion;
- A global average weighted score, based on the scores of each criterion;
- A succinct but substantial explanatory global comment addressing the extent to which the proposal actually meets the criteria and that explains the evaluator's overall judgment on the proposal.

Consensus report includes:

- The consensus scores for each evaluation criterion;
- A global average weighted score, based on the scores of each criterion;
- A succinct but substantial explanatory consensus global comment, based on the 3 individual reviews submitted beforehand;
- An overall score, that is not a direct result of the individual scores;
- Recommendation for integration of the RI in the roadmap;
- Specific directions and suggestions for the final evaluation panel meeting not to be transmitted to the applicants. These suggestions can, for example, take the form of recommendations about possible fusion of RI in larger partnerships or elimination of parts of the RI, or recommendations to include selected RI in national or international networks of RI;
- Confidential comments to Fundação para a Ciência e a Tecnologia (FCT), if necessary.

Final Scientific Evaluation Panel Meeting

The final Scientific Evaluation Panel Meeting should gather the 7 thematic coordinators. One of them will be designated the panel chair. The panel chair will have the added duties of coordinating and moderating the meeting, of elaborating the panel report, and of conveying the results of the discussions to the Board of Directors of FCT. The thematic coordinators will validate all consensus reports from their thematic field, prior to the final meeting and will be acquainted with those applications to be presented and discussed during the final meeting.

The main aims of the Panel Meeting are to:

- Ensure that each application receives a fair judgment and is discussed appropriately
- Produce a consolidated ranking list of the applications;
- Define the quality threshold above which the proposals will be included in the Roadmap
- Elaborate a short final evaluation report of each application, to be made available to the applicants
- Recommend changes in the proposed RI, if needed

- Final evaluation report includes
- The final scores for each evaluation criterion
- An overall score that can be independent from the average scores for each criterion
- A succinct but substantive explanatory final comment including eventual recommendations for changes in the proposed RI
- Recommendation for integration of the RI in the roadmap
- Confidential comments to FCT, if necessary

Scientific Assessment

After the scientific assessment, applications will be submitted to a strategic relevance evaluation. These applications will be assessed by at least one national level ministerial representative and one regional level representative. National level representatives will be defined in accordance with the main thematic domain of the research infrastructure. Regional level representatives will be defined according to the territorial implementation of the RI.

The readings of the strategic relevance panel members will take the form of qualitative reports, with the main aim of analyzing coherence with national and regional strategies and policies. These reports may include eventual recommendations for a better alignment of the RI with national and regional policies and priorities. FCT, as chair of the strategic relevance panel, will compile the final evaluation report to be transmitted to the applicants, including the decision of inclusion in the Roadmap.

Scoring System

A scoring system using a 9-point scale is used to rate proposal. A score of 9 indicates an exceptionally strong application with essentially no weaknesses. A score of 1 indicates an application with serious and substantive weaknesses with few assets.

Impact, regards the research infrastructure likelihood to have a sustained, influence or strong impact:

- High impact = 7 to 9
- Medium impact = 4 to 6
- Low impact = 1 to 3

2.5. Proposals evaluated and selected (available statistics)

A scientific panel, composed of 105 international experts, evaluated 121 eligible applications grouped within seven thematic areas, in line with the ESFRI Roadmap:

- 24 in Social Sciences and Humanities
- 27 in Physical Sciences and Engineering
- 17 in Environmental Sciences
- 29 in Biological and Medical Sciences
- 10 in Materials and Analytical Facilities
- 6 in Energy
- 8 in e-Infrastructures

A total of 40 Research Infrastructures, involving 55 applications, were recommended for integration in the national roadmap. A total of 23 from the 40 infrastructures included in the roadmap (that is 57.5% of the total set) are or plan to be linked to the European ESFRI roadmap.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

To continuously meet the needs of a highly competitive and ever-evolving global community, it is necessary to regularly monitor the pace of implementation of the action plans of each infrastructure. Close monitoring will be essential for further revision of the national roadmap, and the Research Infrastructures Monitoring Committee will play a critical role in this.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

The Roadmap provides an overview of the current landscape of research infrastructures, both in

terms of geographical distribution and across scientific areas. Nevertheless, this document is not written in stone and the recently created Monitoring Committee will follow up the landscape and analyse gaps, thus providing the basis for regular reviews, as required for a continuously updated, strategy-oriented policy. The Committee, composed of members of scientific boards and reputed international experts, was created not only to monitor, support and guide the implementation of research infrastructures, but also to identify emerging areas which require new infrastructure initiatives of strategic interest for the country.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

The Research Infrastructures Monitoring Committee plays a critical role in the follow-up and monitoring processes carried out. This Committee is chaired by a member of FCT's Board of Directors, and is composed of Portuguese scientific experts, in the seven thematic areas of the roadmap, and international experts with well-established expertise in research infrastructures, including occupying high-level positions at ESFRI.

To support the work of the Committee, three permanent Working Groups have been created, with the following responsibilities:

- WG on Implementation – develop indicators for monitoring RI implementation, and elaborate an annual progress report, including general recommendations.
- WG on Regional Issues – liaise with the management bodies of the Regional Operational Programmes, promote regular mutual information sharing and analyse potential synergies and alignment of priorities.
- WG on ESFRI – interact with the working groups of the European Strategy Forum on Research Infrastructures, develop a coherent analysis of the alignment of national infrastructures with ESFRI's priorities, and contribute to the national position in relation to emerging trends and opportunities within the ESFRI.

The Committee is mandated to monitor, evaluate and guide implementation and development of the roadmap, including:

- Monitoring of the implementation of the roadmap by:
 - Analysing the annual implementation reports
 - Conducting field visits
 - Other monitoring actions deemed necessary
- Analyse the impact of existing research infrastructures

Identify gaps in the different scientific domains

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

Not applicable or no information presently available.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex Portugal Part 2: National Embedment

1. RI Definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	
Access to RI	
Organisation within national procedure	
<p>RI Definition from the Evaluation guidelines (call for RI to be included in the Roadmap, 2013): "A Research Infrastructure (RI) is here defined as an organizational system used by the scientific community to conduct top-level research and innovation in their respective fields. It may include large scientific equipment or sets of scientific instruments, collections and other knowledge based resources, data files and scientific data, computational and programming systems, communication networks that promote digital open access as well as other infrastructures of a unique nature, essential to achieve excellence in research. Research infrastructures can be single-sited or distributed as organized resource networks. To be included in the Roadmap, a Research Infrastructure must have: professional management that guarantees implementation of an action plan and the accomplishment of the specific aims there defined, with an efficient and transparent internal management of resources; capacity to relate with, and provide services to, the scientific, educational, business and industrial communities; clear, well defined and widely advertised policy of access conditions to national and international researchers external to the infrastructure, integrated in their aims and action plan."</p>	

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 19.

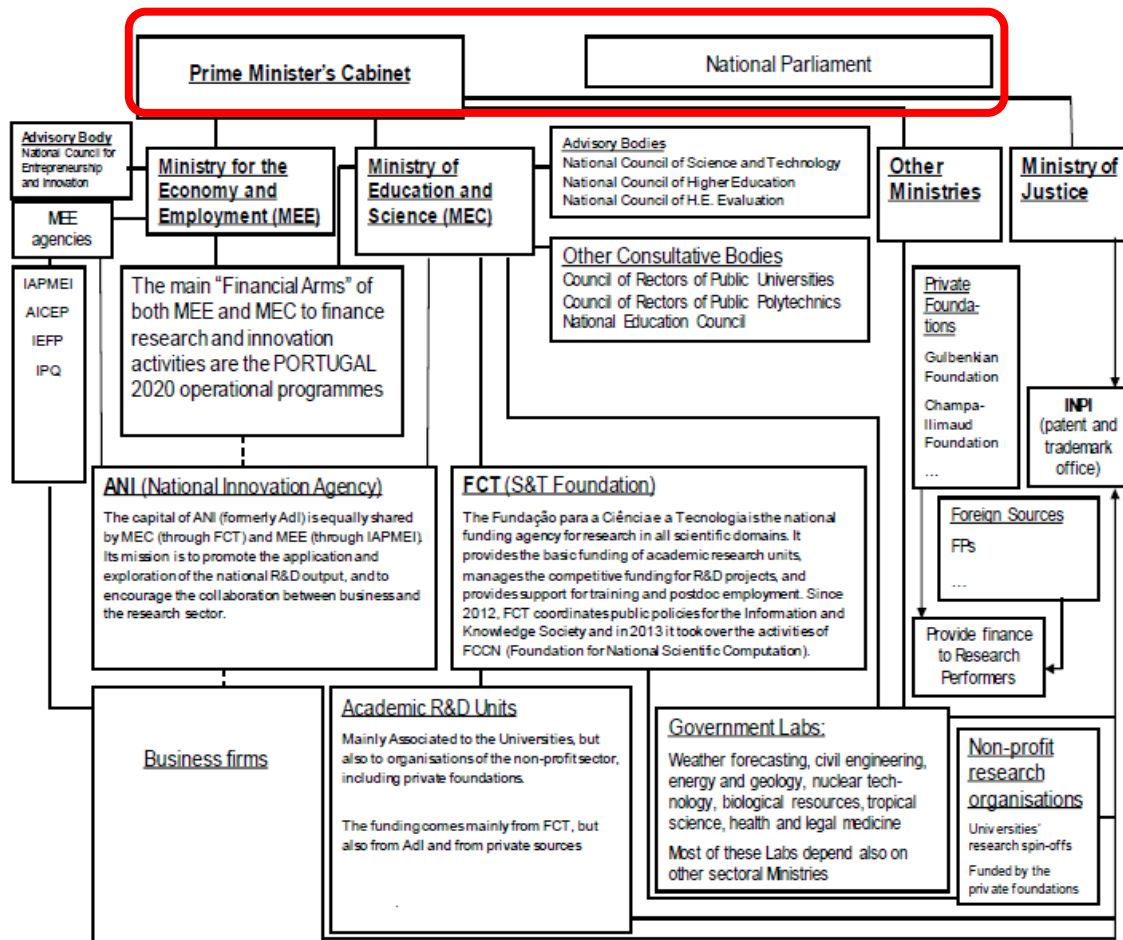


Figure 19: Organisational chart of the R&I system of Portugal (Godinho et al. 2016, p. 17). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

Formally there is a well-structured consultation system with several bodies (see the organisation chart above), though their activity and actual impact have been quite uneven. The National Council of S&T has been active and on a few circumstances, has made public its views, reflecting different perspectives existing within the research community. In contrast, the National Council for Entrepreneurship and Innovation, though having within its composition representatives of some of the most dynamic R&D performing firms, seems to be less active in promoting its activities. Beyond these two National Councils, there are no other formal channels to seek advice of professional, regional or scientific associations. Further, the degree of organisation and networking of these types of groups is also limited, which may account for their weak involvement in the policy-making process.

The main funding agency providing support for academic research has been FCT (The Foundation for Science & Technology). FCT has performed a role as research council, providing funding for the academic research units, support for research projects and also for advanced training, mainly at the PhD and postdoc levels. In parallel, the *Agência Nacional de Inovação* (formerly *Agência de Inovação*), has also had a role in funding applied research and innovation activities. In contrast to FCT, which is more oriented towards academic research, this entity has managed policy tools directly related with support to innovation-driven research. Despite no multiannual budgeting being in place, the resources that are allocated through the OPs of the national reference framework Portugal 2020 allow for a certain coordination and predictability of public expenditure on R&D, though several factors have historically interfered with the execution of the OPs.

Embedding of RI in the national R&I system

As displayed in the chart, **the research system is organised in three levels. The first level (the political level)** contains the Prime Minister's Office and the main ministries in charge of supporting R&D: the Ministry for Education and Science and the Ministry for the Economy. Other sectorial ministries, including the Agriculture, Health, Environment, Foreign Affairs and Defence ministries, also allocate funds for R&D, but their importance in R&D funding is not comparable.

The second level (the operational level) is comprised of the managing bodies of the main operational programmes that provide funds for research, together with the major executive agencies.

Finally, **the third level (research performers)** displays those entities that actually perform R&D activities, namely academic R&D units and public laboratories. The entities that provide advice to the 18 Ministry for Education and Science are also displayed. The Parliament is not formally connected in the organisation chart with the remaining sectors, as this political body has had a limited role in discussing and defining policy objectives in the area of S&T.

3. RI in the National R&I System

The research system has been marked by a high degree of centralisation, through fund allocation and political coordination. **The regions have had a minor role in the allocation of research funds.**

4. Major national strategies for international cooperation in R&I and strategic integration of RI

The Operational Programmes under the Portugal 2020 Partnership Agreement started to be implemented and several measures have reached cruise speed. The 2013 evaluation of the research units carried out by FCT was finished in May 2015. The October 2015 election led to the establishment of a new government in December, with changes expected in relation to research policy; a new FCT President was already nominated.

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Further links

- 2013 call for the National Roadmap of Research Infrastructures of Strategic Relevance <<http://www.fct.pt/apoios/equipamento/roteiro/2013/index.phtml.en>> [Last access: 07/2017.]
- Research Infrastructures Roadmap information <<http://www.fct.pt/apoios/equipamento/roteiro/index.phtml.en>> [Last access: 07/2017.]
- Detailed call information for research infrastructure projects <<http://www.poci-compete2020.pt/concursos/detalhe/AAC-01-SAICT-2016>> [Last access: 07/2017.]

Annex Romania Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

The new Romanian National Roadmap for Research Infrastructures aims to highlight the volume, quality, utilization of the RDI equipment, installations and laboratories of RDI with significant relevance for their fields, developed by national and / or European programmes.

A particular aspect is the participation of the Romanian scientific community in pan-European ESFRI projects as one of the essential sources of identification of national research infrastructures, in line with the provisions of the National Strategy for Research and Development 2014-2020 (SNCDI 2014-2020).

The first Romanian Committee for Research Infrastructures (CRIC) was constituted both as a scientific advisory council of ANCS for the implementation of the programme "Capacities" of the 2nd National RDI Plan (PN II), and a strategic forum, that will draw up reports and will make recommendations for the allocation of resources necessary to create, develop and use the research infrastructure, important to the Romanian scientific community. In these circumstances, CRIC acted the years 2007 and 2008. Its final report can be found at:

http://www.research.gov.ro/uploads/imported/1242293614cric_eng.pdf [Last access: 07/2017.].

The new CRIC was established by the National Authority for Scientific Research and Innovation (ANCSI) President's Decision no.9311 of August 5, 2016 with the mission to update the national roadmap for research infrastructure according to the guidelines of the National RDI Strategy (2014-2020).

In the second semester of 2016, CRIC developed the Strategy Report on Infrastructure in Romania, which was approved by ANCSI in December 2016, as a result of the debates and analyses carried out in order to prioritise public investments for research infrastructures:

<http://www.research.gov.ro/uploads/cric/skm-bizhubc16121415560-v2.pdf> [Last access: 07/2017.].

The report made strategic recommendations on the implementation of the roadmap, activity funded through the SIPOCA 27 project of the Operational Capacity Programme - Administrative Office (POCA), in progress. It also provided a timetable for the road map completion activities based on a working methodology by the end of 2017.

The main mission of the new CRIC is to establish the national priorities for research infrastructures and to draw up a report regarding the stages to be followed in their construction and operation (Roadmap). This report addresses as main issues: purpose, definitions, categories, priorities, special potential fields.

The Intermediate Report on research infrastructures from Romania is preface by a quotation from the minister of the new Ministry of Research and Innovation underlining "... that the interconnection of Romanian and European infrastructures will bring value to both Romania and the European Union as a whole, and our efforts will be an important impetus for the Romanian economy."

In establishing the priorities, the following categories of infrastructures have been considered:

- **National:**
 - Research facilities of national interest, such as the National Network for Education and Research (RoEduNet), high-complexity laboratories and equipment
 - Large scientific and documentary databases for research, developed in Romania or for which it is necessary to purchase access licences (ISI databases, libraries);
- **International:**
 - Infrastructures constructed or operated under international co-operation on the basis of agreements or within organizations and projects where Romania participates, like
 1. ESA, CERN, ITER, IUCN Dubna;
 2. projects from the list of pan-European research infrastructures established by ESFRI;
 - Other infrastructures developed under national and / or international partnership.

According to the SIPOCA 27 Report on the Research Infrastructures in Romania, September 2017 (<http://sipoca27.ro/wp-content/uploads/2017/11/RAPORT-FINAL-ROADMAP.pdf> [Last access: 07/2017.]) the methodology to identify research infrastructures took into account the implementa-

tion and use of good practices to ensure excellence in research (excellence, transparency, equal and fair treatment) and to respond to the smart specialisation priorities addressed by the SNCDI 2014-2020 and other Regional Strategies, as well as to address the major societal challenges and to correlate with the ESFRI Roadmap:

1. Energy, Environment and Climate Change (SNCDI Smart Field of Specialisation)
 - correlated with ESFRI's "Energy" and "Environment" domains)
2. Bioeconomics (field of specialisation SNCDI related to the field ESFRI 'Health and Nutrition');
3. Eco-nano-technologies and advanced materials (intelligent field of specialisation SNCDI, correlated with ESFRI's "Physics and Engineering" field);
4. Information and Communication Technology, Space and Security (domain of intelligent SNCDI specialisation, correlated with ESFRI's "E-Infrastructures");
5. Health (domain of public interest in the current SNCDI strategic cycle, correlated with the Health and Nutrition field of the Road map ESFRI);
6. Social and Cultural Patrimony (domain of public interest in the current SNCDI strategic cycle, correlated with ESFRI's "Social and Cultural Innovation" domain);
7. New and Emerging Technologies (domain of public interest in the current SNCDI strategic cycle, correlated with ESFRI's "Physics and Engineering" field).

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

MCI will approve, beginning of 2018, the final Research Infrastructure Report (National Roadmap) on the basis of the proposal submitted by CRIC and based on the following criteria:

- be included in the ESFRI European Roadmap;
- be included in the National RDI Strategy;
- promote the development and implementation of excellence in science;
- avoid unnecessary duplication of equipment - uniquely designed research facilities with high operational costs;
- ensure a high degree of openness (use and free, but controlled access) to interested users;
- Ensure a balanced distribution of the thematic domains of SNCDI 2014-2020 at institutional and regional level.

2.2. Eligibility conditions

The projects that will be included in the roadmap are characterized by:

- Very high costs (at least, Euro 600000).
- Long period of development that requires expertise and a stable sustainable institutional framework.

Additionally, these projects should present the following characteristics:

- Providing socioeconomic benefits at national level.
- Being harmonized with the common interests of the national scientific community.
- Having a strategic impact in top scientific fields.
- Being interoperable and competitive at international level.
- Being used at full capacity on a multi-disciplinary basis and of free access for all interested researchers.
- Valorising the expertise existing in the field, in a co-operative manner.
- Having long term impact on the quality of people's life.
- Stimulating the interest of young people and attract them in the research career.
- Having a determinant role in training new generations of researchers.
- Stimulating the transfer of knowledge and technology.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

To substantiate the priorities regarding the investment projects for developing research infrastructures of national interest, the Romanian Committee for Research Infrastructures (CRIC) has used the following criteria and sub-criteria of assessment:

1. Relevance

- 1.1. Interest that the project represents at a national, regional level (SNCDI 2014-2020)
- 1.2. Concordance with the international projects in the field, external compatibility (e.g. ESFRI)
- 1.3. Orientation towards leading edge research (PN III, H2020)

2. Potential of use

- 2.1. Existence of a critical mass of potential users / beneficiaries
- 2.2. Potential of increasing the number of users / beneficiaries (connection with the national system of training of the human resources)

1. Proportionality of the investment in relation with:

- a. Relevance of infrastructure
- b. Potential of its use

2. Coordination of the achievement, use and future development of the infrastructure

- a. The solution of co-ordination: ERIC (European Research Infrastructure Consortium) Research Institution/ Initiative Group, Consortium of institutions/ Professional Association / Organism of co-ordination at national level
- b. Ensuring the long-term vision: scientific, technical (administration, specialized human resource), financial

3. Quality of the implementation environment

- a. Valorisation of the expertise in the field
- b. Existence of the conditions of implementation: logistics, utilities, administration staff, financial support for the following period (min. 3 years)
- c. Availability of data regarding the infrastructure's use

4. Access to infrastructure

- a. Type of access: local, distributed, virtual
- b. Existence of a policy and associated technical solutions for granting access priorities for the mass of users

5. Interoperability

- a. Logical / functional connection with other research infrastructure components. Technical compatibility with similar infrastructures on an international plan

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

Until the approval of a new procedure in the competition related to the investment of projects for the development of public research infrastructures, the Romanian Committee for Research Infrastructures – CRIC, which is consisted of 5 representatives of the scientific community and 4 representatives of financing agencies (ministries involved in research financing), is part of the competition's Selection Committee involved in the following tasks:

- o Approval of the preliminary report of evaluation
- o Appointment of the Commission for Claims
- o Delimitation of the projects that got the same scoring
- o Implementation of selection-specific rules
- o Drawing up the final assessment report and the list with proposals selected for financing and their submitting for approval to the MCI's minister.

The evaluation of the projects proposals will be made by well recognised scientists.

2.5. Proposals evaluated and selected (available statistics)

Pages 15-19 at: <http://sipoca27.ro/wp-content/uploads/2017/11/RAPORT-FINAL-ROADMAP.pdf> and <https://erris.gov.ro/index.php> [Last access: 07/2017.].

3. Update / Monitoring and ex-post Evaluation of RI Roadmap	
3.1. Objective of the monitoring of the RI national roadmap as a whole	
CRIC recommends revising the national roadmap every three years by doing a complete analysis of existing and new RI by:	
a) Keep in the roadmap those RIs that show real progress;	
b) repositioning in the roadmap according to the fulfilling of the indicators of the operational plan;	
c) Exclusion from the roadmap of those RI that do not show progress (according to the operational plan) or do not prove viability.	
3.2 Periodicity of the RI national roadmap monitoring actions (if applicable)	
CRIC recommends revising the national roadmap every three years. In 2020 a monitoring action should be envisaged.	
3.3 Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap	
Not applicable.	
3.4 Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap	
Not applicable.	
3.5 Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented	
Not applicable.	

Annex Romania Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	x
Categorisation of RI	
Access to RI	
Organisation within national procedure	x
<p>According to the latest SIPOCA 27 Report, Research Infrastructures are as follows (according to the CRIC's Strategic Report - December 2016, complying with the EU Regulation No. 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application, of Articles 107 and 108 of the Treaty, published in the Official Journal of the European Union no. L 187 of 26 June 2014): "Research Infrastructure means facilities, resources and related services used by the scientific community to conduct research activities but also to offer services on a commercial basis and include the main equipment or sets of scientific tools, knowledge resources such as collections, archives or structured scientific information, generic infrastructures based on information and communication technology such as networks, information material, communication tools, as well as any other means necessary for conducting research activities. Such infrastructures can be "located" in a single site or "distributed" (an organised resource structure). "</p>	

2. RI players in the national R&I system
<p>The RI players in the national R&I system is closed related to its structure. The RDI system is structured as follow:</p> <ul style="list-style-type: none"> • accredited universities: 56 public; 35 private • 47 national R&D institutes (technological research) • 65 research institutes and centres of the Romanian Academy (socio-economic & humanistic) • More then 1000 private companies performing R&D (ANCSI statistics) • The network for technology transfer and innovation (ReNITT): 50 specific organizations (technology transfer centres, technology info centres, technology and business incubators) • Clusters – Romanian Clusters Association (www.clustero.ro [Last access: 07/2017.] <p>National relevance of RI</p> <p>Scientific Research Infrastructures are one of the most important tools for generating knowledge. In the last years, Romania has managed to be an important partner in a distributed ESFRI RI and to coordinate an important pan-European and international infrastructure, proving professional excellence and abnegation, scientists and managers who believed in the work they are doing. For Romania, RIs should act as a motor of economic development and, as other project based results, researchers should look on the impact on the society and the results should contribute to the transfer technology and innovation with the scope to support growth and prosperity. The National Roadmap respond to a national Strategy for R&I and to smart innovation. The SIPOCA 27 Report on research infrastructures in Romania is an imported tool for medium and long-term planning.</p> <p>Embedding of RI in the national R&I system</p> <p>In the frame of the EU project PODCA – Efficient monitoring system of R&I Electronic Data the project ERRIS Platform it was developed the ERRIS Platform to support the public / private research infrastructure coordinators in Romania and those who want to benefit from the services provided by these infrastructures, stimulating collaboration and participation in national, pan-European and international networks of the Romanian scientific community - www.erris.gov.ro [Last access: 07/2017.]. ERRIS is the Registry of Romanian Research Infrastructures, the booking gate for research infrastructures, research & technological services.</p>

3. RI in the National R&I System

The Romanian R&I system is centralised. According to the Governmental Decision No.13/2017, the Ministry of Research and Innovation (MCI), among others, has the role to coordinate the implementation of the SNCDI 2014-2020. In the frame of the SNCDI 2014-2020, the chapter 4.2.5 – “Infrastructures” (<http://www.research.gov.ro/uploads/sistemul-de-cercetare/legislatie-organizare-si-functionare/legislatia-sistemului-de-cercetare/hg-929-2014.pdf> [Last access: 07/2017.]) highlights the importance of the RIs, the synergies with the ESIF, the strategic role of the National Roadmap and the role of the Registry of Romanian Research Infrastructures.

4. Major national strategies for international cooperation in R&I and strategic integration of RI

Not applicable.

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- Radu Gheorghiu, Liviu Andreescu, Jana Zifciakova: RIO country report 2015: ROMANIA.
- Adrian Curaj(2015): Stairway to Excellence Country Report: Romania.
- Information included in the InRoad Consultation (survey sent on 02/05/2017).
- Romanian Committee for Research Infrastructures (2007). Report Regarding Research Infrastructures of Romania [online].
<http://www.research.gov.ro/uploads/imported/1242293614cric_eng.pdf>. [Last access: 09/2017].

Further links

- National roadmap of Romania <<http://www.research.gov.ro/uploads/cric/roadmap-national-1-august-2017.pdf>> [Last access: 09/2017].

Annex Slovenia Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

The Roadmap for 2011-2020 identified priority international projects and indicated national priority areas in which it is necessary to develop the research infrastructure as a priority to further the attainment of scientific excellence in Slovenia in order to achieve critical mass in medium or large-scale research infrastructures. It was planned to assess and keep the selection of the national priority areas up to date in the process of Smart Specialisation, while the Roadmap implementation was to be monitored in the context of monitoring the Research and Innovation Strategy of Slovenia 2011-2020 (RISS) implementation and be updated in 2015 if necessary.

Then, National priority areas, where it is necessary from the aspect of achievement of critical mass and scientific excellence in Slovenia to preferentially develop research infrastructures, have been designed based on various studies and national strategic documents listed and described in the RISS and ESFRI. Thus, the Roadmap defines the following areas:

- Advanced materials
- Energy efficiency and sustainable construction
- Renewable energy sources and environmental technologies
- Biotechnology, biomedicine and biological sources
- High performance computing and networks
- Analytical capacities
- National resources (digital, geo-information)
- Social and humanistic research infrastructure
- Research infrastructure for space applications

Safe and healthy food

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Not applicable or no information presently available.

2.2. Eligibility conditions

Not applicable or no information presently available.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

Key criteria for the inclusion of a project in the Roadmap were:

- The scientific relevance
 - The achievement of the critical mass or involvement of key actors at the national level
 - The possibility of upgrading the existing research infrastructure
 - Its impact on regional cooperation, comparability at European and global level
 - Placement in the ERA.

However, the basic criteria for the inclusion of a new project on the list are:

- 1) A positive assessment of the situation at the national level.
- 2) The placement of the project on the list of the updated ESFRI Roadmap 2016, which confirms the scientific excellence and organisational and financial maturity of a project in an international context.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

Not applicable or no information presently available.

2.5. Proposals evaluated and selected (available statistics)
Not applicable or no information presently available.
3. Update / Monitoring and ex-post Evaluation of RI Roadmap
3.1. Objective of the monitoring of the RI national roadmap as a whole
Not applicable or no information presently available.
3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)
Not applicable or no information presently available.
3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap
Not applicable or no information presently available.
3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap
Not applicable or no information presently available.
3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented
Not applicable or no information presently available.

Annex Slovenia Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	
Access to RI	
Organisation within national procedure	
<p>Research infrastructures are facilities, resources or services that constitute larger sets of research equipment or instruments and represent or complement knowledge resources such as collections, archives and databases. Research infrastructures can be concentrated on a single spot, distributed or virtual (enabling services electronically). They often require a structured information system for data management and for enabling information and communications. In the wording of national Roadmap, these are centres or consortiums of public research organisations that have research infrastructure at their disposal, and enable access to unique capabilities and means and services that were identified by researchers as necessary for research in all the research fields, from social sciences to geology and astrophysics.</p>	

Source: Slovenian Roadmap for Research Infrastructures 2012

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 20.

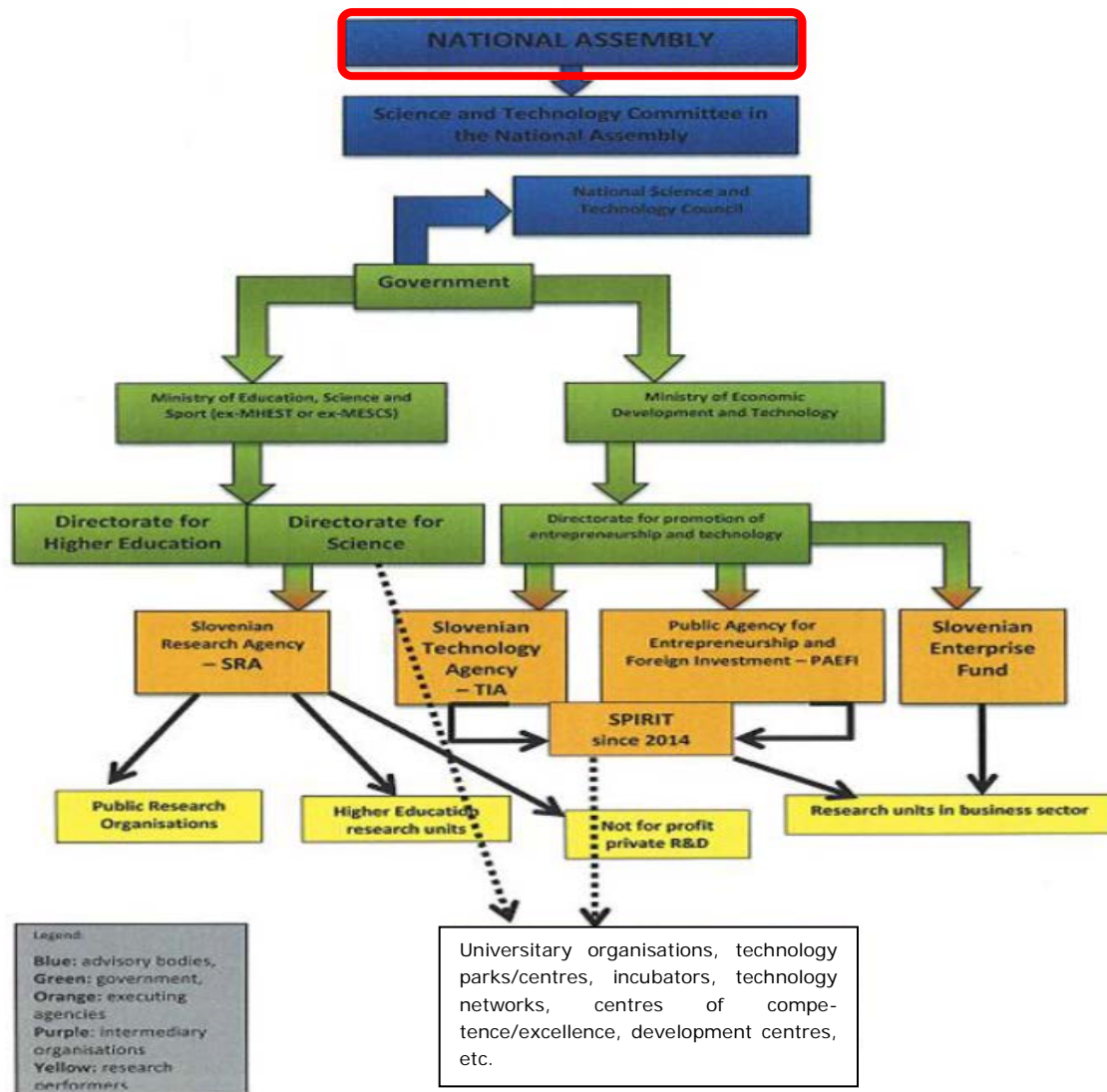


Figure 1 Organisation structure of the Slovenian RDI system

Figure 20: Organisational chart of the R&I system of Slovenia (Udovic, Bucar, Hristov, 2015, p. 15). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

The primary objective of the Roadmap is to set-up and present priorities of the Republic of Slovenia in the area of research infrastructure. Regarding its content, it complements the Research and Innovation Strategy of Slovenia 2011–2020, and presents the area implementation document. An important function of the document, serving as a guide and a point of reference for the state administration bodies and bearers of public authority in this area, is the integration of their activities, the enabling of more synergy and the avoidance of duplication, and thereby more effective distribution of public funds. At the same time, the document enables a certain level of predictability and understanding of plans of the state, and monitoring of implementation of public policy and goals in the RI area. Speed and scope of achieving the goals depend in particular on year to year capacity of the budget and public financial circumstances in the state, respectively. The document is not legally binding, and it is inadmissible that any of its parts should be understood in a sense other than the one that is stated. (InRoad Consultation on RI, 2017)

Embedding of RI in the national R&I system

Several instruments have been put in place in Slovenian RDI system to promote knowledge transfer, including the establishment of special institutional set-up, like centres of excellence and competence centres, where cooperation between public sector research organisations and business sector could flourish. Yet most of them are no longer receiving any financial support from the government.

The Centres of Excellence is a measure within the framework of the scientific and technology policy of Slovenia aimed at promoting the concentration of knowledge at priority technological areas and horizontal linking along the entire chain of knowledge development, which is realised on the basis of strategic partnerships between the private sector and academia (Udovic, Bucar, Hristov, 2016, p. 69).

3. RI in the National R&I System

Slovenian Research, Development and Innovation (RDI) system is quite complex, with two major characteristics: it is centralised and its financing is executed mostly on a competitive-basis. The most important players in the field are two ministries (Ministry of Education, Science and Sport – MESS; and Ministry of Economic Development and Technology – MEDT), entitled to promulgate relevant documents and policy measures, but also to co-finance projects, mostly indirectly (MEDT through SPIRIT, MESS through SRA). The main RDI funders are the business and government sector – where the business funds play an increasingly more important role in the last eight years. (Udovic, Bucar, Hristov, 2016, p. 16)

4. Major national strategies for international cooperation in R&I and strategic integration of RI

In May 2011 the Slovenian National Assembly adopted a long-term strategic document of research and innovation (covering RDI in an integrated manner), named Research and Innovation Strategy of Slovenia (RISS) 2011–2020, which reflects the main EU priorities in the field of RDI. RISS defined the R&D priorities for the next decade (2011–2020) summarised as follows:

- a) Better integration of research and innovation;
- b) Publicly funded sciences and scientists shall contribute to economic and social restructuring;
- c) Enhancing/ensuring closer cooperation between PROs and the business sector;
- d) Increasing scientific excellence, partly by increasing competitiveness within S&T stakeholders and partly by providing necessary resources, both human and financial. (Udovic, Bucar, Hristov, 2016, p. 16)

References

- Government of the Republic of Slovenia (2011). Research Infrastructure Roadmap 2011 – 2020: Revision 2016 [online]. <http://www.mizs.gov.si/fileadmin/mizs.gov.si/pageuploads/zakonodaja/predlogi/znanost/NRRI_2016_ENG.pdf>. [Last access: 09/2017].
- Udovič, B., Bučar, M. and Hristov, H. (2016), RIO Country Report Slovenia 2015. <<https://rio.jrc.ec.europa.eu/en/library/rio-country-report-slovenia-2015>> [Last access: 09/2017].

Annex Spain Part 1: Evaluation and monitoring procedure (international RI)

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

By the moment the use of ESIF is very limited, but in this project the ex-ante impact assessment is necessary and aligned with the RIS3 of the Regional Governments.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Aligned with the ESFRI Roadmapping calendar, the procedure is variable, and it is done case by case and at the demand of the interested ICTS, RPO, Universities, or research communities.

2.2. Eligibility conditions

Conditions required to join the RI roadmap are:

- Objectives should be aligned to the objectives of the Spanish Strategy for Science and European RI strategies, such as ESFRI, CERN, ESO, etc.
- On the basis of excellence and Uniqueness of the RI proposed.
- Investment: There are proof of availability of funds, or possibility for cofunding from the Promoters of the initiatives, in general RPO, Regional Governments, or Universities.
- Even presented by individual group of researchers the proposal counts with institutional support.
- Appropriate management frameworks.
- Enough and skilled personnel.
- Strategic plan periodically revised.
- Production and performance in consonance with investments and size of the RI.
- Adequate and sustainable schemes of funding.
- Open to users based on competitive access.
- Enough and skilled personnel.
- Strategic plan periodically revised.
- Production and performance in consonance with investments and size of the RI.
- Adequate and sustainable schemes of funding.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

The evaluation will be done according to high-quality criteria and will be an indispensable requirement to be included in the roadmap. To do so, all RI proposals will be required to provide information for the scientific-technical evaluation, including:

- General information
- Economic figures
- Catalogue of facilities/equipment and services
- Accesses, projects and results
- Technology transfer
- National and international collaboration
- Training and dissemination
- Foreseen actions and investments

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

In line with ESFRI, and approach based on review by expert panels together with international peer review is implemented.

Before their inclusion in the roadmap, RI projects are independently evaluated by an expert panel/group formed by reputed scientists, technologists and managers with in-depth knowledge on RIs and involved in R&I practices and processes in a variety of scientific-technical areas.

Furthermore, RI strategic plans will be developed in English in order to be evaluated by a set of international experts (peer review).

2.5. Proposals evaluated and selected (available statistics)

The last version of the Spanish roadmap (2010) is composed of around 100 RI including the Research OOI, and RI Programmes

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

To assure the success of the investment.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

Continuous.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Not applicable or no information presently available.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

Not applicable or no information presently available.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex Spain Part 2: National Embedment (international RI)

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	
Access to RI	
Organisation within national procedure	

2. RI in the National R&I System
<p>RDI policy making is decentralised in Spain. The Spanish national and regional administrative entities are both legitimated to stimulate R&I. The Spanish government sets the RI policy framework and develops the national strategies, including the involvement and cooperation mechanisms between the key stakeholders. Due to great financial autonomy of the Spanish regions with regard to R&I funding, they also play a major role in R&I administration and the political decision-making process. Furthermore, they are responsible for university funding. The funding of construction, running costs, new equipment and other type of investments for RI is mainly coming from the Ministry of Economy, Industry and Competitiveness (Mineco) in coordination with other administration bodies and a co-financing of the autonomous regions.</p>

3. Major national strategies for international cooperation in R&I and strategic integration of RI
<p>In 2011, the Law of Science, Technology and Innovation (LCTI) was adapted. It has the objective to improve coordination with regional and European authorities, improve research careers and to support the transition to an economy founding on knowledge and innovation. The newly established Spanish Research Agency was one of the major results of the LCTI together with the decision to develop a Spanish Strategy for Science, Technology and Innovation. (Fernández-Zubieta & Zacharewicz, 2016, p. 108)</p>
<p>In 2013, this strategy, known under the short form EECTI, was adapted and determines the principles, objectives, priorities and impact indicators for the Spanish R&I policy until 2020.</p>
<p>The Spanish strategy EECTI is implemented through the Spanish State Plan of Scientific and Technical Research and Innovation PECTI (2013-2016), which is a multiannual plan, describing programmes, coordination mechanisms, costs and sources of funding. One of the aims of PECTI is to foster access to research infrastructures and scientific equipment, especially focusing on large-scale facilities at the national and international level.</p>

Annex Spain Part 1: Evaluation and monitoring procedure (ICT)

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

- An inventory of existing RI which are unique at national level, to facilitate the access of users from the public and private sector, optimizing their use by means of public competitive and transparent access protocols.
- A tool supporting and monitoring the implementation of RI
- A tool to avoid redundancies and improve the coordination of different RI working in the same field of application through the idea of distributed RI and/or network of RI.
- To foster innovation, technology transfer and participation of the private sector in RI.
- To ensure the scientific and technological competitiveness of the Spanish RI in the international context
- A guide with strategic RI priorities for setting research policy priorities
- An input for funding decisions on RI between institutional, regional and national stakeholders.
- A list to achieve agreement on the RI with institutional, regional and national stakeholders
- A list of strategic priorities, which are foreseen for funding, mainly to improve the use of ERDF funds dedicated to RI.
- A planning instrument to prepare for the negotiations at European (ESFRI) and international levels

2.2. Eligibility conditions

Conditions required to join the RI roadmap are:

- Infrastructures with public ownership (100%), meaning that they belong to or are managed by public entities, whether they are under the authority of the Spanish Central Administration and/or the Autonomous Communities.
- The RI candidates must be proposed for the inclusion in the ICTS Roadmap by the public administration (AGE or Regional Community) they depend on, through their corresponding representatives at the Executive Commission of the CPCTI, as a result of their own R+D+I priority considerations. The consideration of "priority" by both national and regional governments, which will also support together with RI owners all valuable proposals by ensuring their performance, competitive open access policy and funding for developing their strategic plans, for instance through FEDER [2].
- Acceptation to be submitted to a scientific and technological evaluation

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

All RI proposals will be evaluated to ensure they meet several criteria before their inclusion in the Spanish roadmap, such as:

- Distinctive and strategic profile in the sense of being unique at least at national level
- Concrete objectives aligned to Spanish R&I policies and other international programmes like H2020, ESFRI, JPI, etc.
- High investment derived from their construction, update and improvement (from 10 million € of cumulative investment in technological assets), maintenance and exploitation.
- Competitive open access policy for the scientific, technological and industrial communities, as well as for administration.
- Existence of a Scientific-technical Advisory Committee.
- Appropriate management frameworks, especially in regard to the infrastructure and services competitively offered, as well as the support given to users.
- Enough and skilled personnel.
- Strategic plan periodically revised.
- Production and performance in consonance with investments and size of the RI.

- Adequate and sustainable schemes of funding.

To evaluate the requirements described above, all RI proposals will be required to provide information for their evaluation, including:

- General information
- Economic figures
- Catalog of facilities/equipment and services
- Accesses, projects and results
- Technology transfer
- National and international collaboration
- Training and dissemination

Foreseen actions and investments

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

An approach based on review by independent expert panels together with peer review is implemented. Before their inclusion in the roadmap, RI candidates are independently evaluated by the *Comité Asesor de Instalaciones Singulares (CAIS)*, an expert panel/group formed by 15 reputed scientists, technologists and managers with in-depth knowledge on RI and involved in R&I practices and processes in a variety of scientific-technical areas.

The CAIS is supported by the independent evaluation of the ANEP committee (through the Spanish State Research Agency) as well as by other Departments at MINECO (such as the Deputy Directorate for the Scientific and Technological Infrastructures)

2.5. Proposals evaluated and selected (available statistics)

The last version of the Spanish roadmap (2016) is composed of 29 ICTS that bring together a total of 59 facilities. Currently, the ICTS roadmap is being evaluated for the 2017-2020 period. Around 70 RI are candidates under evaluation

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

Every four years the Spanish ICTS Roadmap is updated. The first Roadmap was approved in 2007, the roadmap in force was approved in 2014, and currently, it is being updated once again. An Internal exercise at MINECO, with the support of CAIS, is done, based on the comparison of the procedure followed previously, in order to improve it as much as possible.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

Ex-post evaluation is done every four years, although RI contained in the ICTS Spanish Roadmap must update their R&D indicators yearly (through the *ICTSData* application)

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Every four years, in order to improve the competitiveness of the ICTS Roadmap, the procedure is monitored taking special effort to the number and type of RI contained, application fields involved, coordination of RI through the idea of distributed RI, or networks of RI, etc.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

RI contained in the ICTS Data will be ex-post monitored every 4 years. They must maintain a register of the following R&D indicators, yearly: projects and number of access/users performed, publications (articles, books, and technical reports), technology transfer actions (patents, etc.), collaboration with other entities and RI, etc.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

See previous sections

Annex Spain Part 2: National Embedment (ICT)

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	x
Access to RI	x
Organisation within national procedure	x
<p>The term Unique Scientific and Technical Infrastructure (ICTS) refers to facilities, resources, or services for the development of top-quality cutting-edge research, as well as the communication, exchange, and preservation of knowledge, the transfer of technology, and promotion of innovation. They are unique or exceptional in their fields, with a high cost of investment, maintenance, and operation, and are of a strategic importance that justifies their availability to all actors in the field of R&D. The ICTS share three fundamental characteristics; they are infrastructures with public ownership, unique and open to competitive access.</p> <p>The ICTS share three fundamental characteristics:</p> <ul style="list-style-type: none"> • They are infrastructures with public ownership, meaning that they belong to or are managed by public entities, whether they are under the authority of the Spanish Central Administration and/or the Autonomous Communities. In any case, they are mainly financed by public funds. • They are unique, meaning that they are the only one of their kind, including: <ul style="list-style-type: none"> ○ Large pieces of equipment that allow the observation, analysis, or interpretation of phenomena of interest. ○ Complex experimental RI designed to create, reproduce, and study physical, chemical, or biological phenomena of interest. ○ Large experimental RI for the engineering and development of new technologies for application in a variety of fields. ○ Infrastructures necessary for facilitating access for scientists to natural environments that provide and exhibit unique conditions for research. ○ Advanced technology that provides horizontal and fundamental support to any field of science and technology • They are open to competitive access by users in the entire research community, from the public as well as the private sector. <p>In general, although not exclusively, the ICTS are the basis for Spain's participation in the international RI contained in the ESFRI Roadmap.</p>	

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 21.

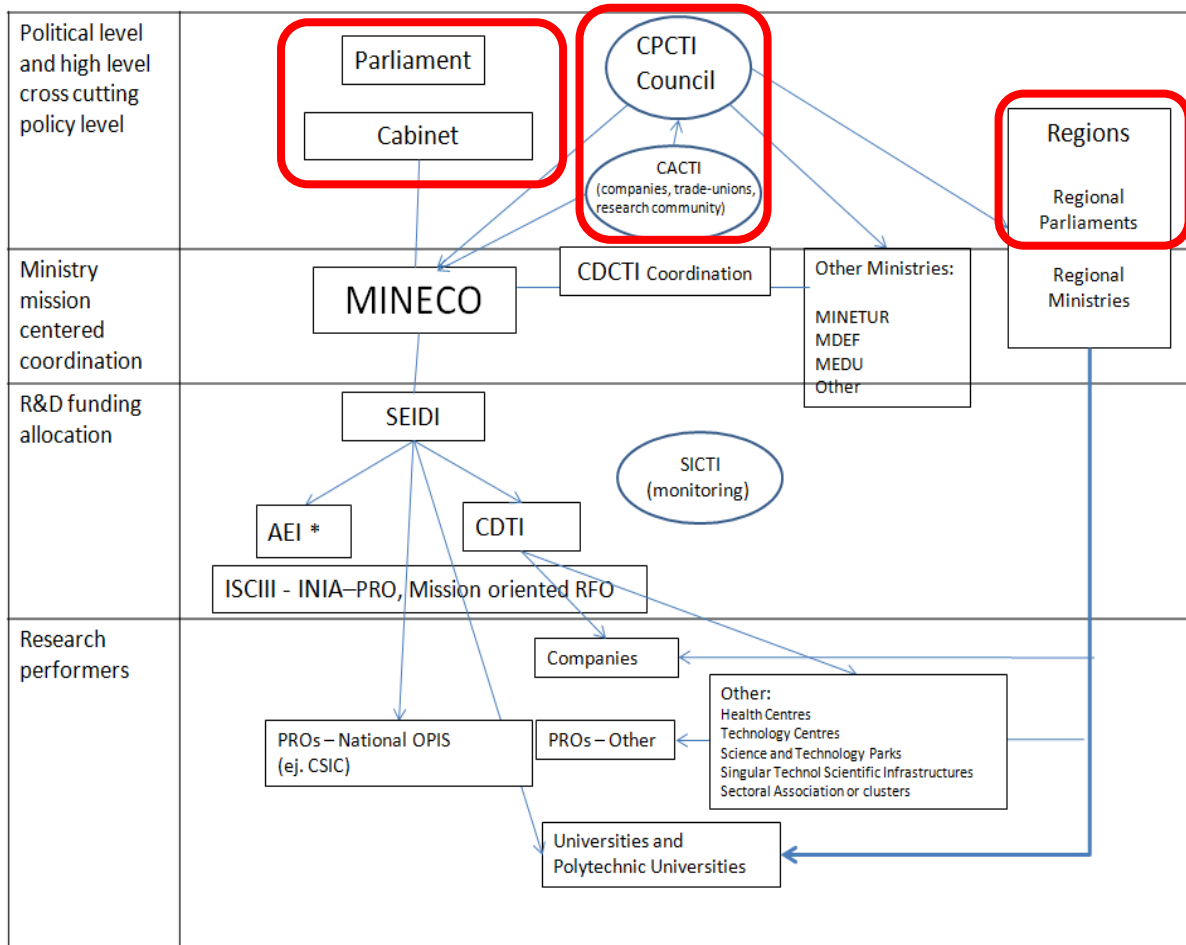


Figure 21: Organisational chart of the R&I system of Spain (Fernández-Zubieta and Zacharewicz 2016, p. 17). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

Article 149.1.15 of the Spanish Constitution lists the promotion and general coordination of scientific and technological research as one of the sole responsibilities of the State. In this context, and under Law 14/2011 regarding Science, Technology, and Innovation, the Spanish Central Administration created the “Spanish Strategy for Science and Technology and Innovation” in the year 2012. Additionally, it took into account the participation of social agents and an extensive group of independent experts belonging to the scientific, technological, and business communities. This Strategy regards R&D activities from a general perspective for the period from 2013 to 2020, and considers that the use of the “Map of Unique Scientific and Technical Infrastructures (ICTS)” as key to the development of the Spanish Science, Technology, and Innovation System, as well as its integration into the European Research Area.

Embedding of RI in the national R&I system

MINECO divides its responsibilities with regard to RI in two working units which are inter-linked with each other: In international and national initiatives.

The **international** part is integrated in the unit “Internationalisation of Science and Innovation”. This one is responsible for the participation of Spain in International Organisations and infrastruc-

tures (ESFRI Roadmap).

National activities are included in the Deputy Directorate General for the Scientific and Technological Infrastructures. This department is responsible for the maintenance and monitoring of the national ICTS Map. When referring to relevant national Research Infrastructures, the term Unique Scientific and Technical Infrastructure (ICTS) is used in Spain.

3. RI in the National R&I System

RDI policy making is decentralised in Spain. The Spanish **national and regional administrative entities are both legitimated to stimulate R&I.** The **Spanish government sets the RI policy framework and develops the national strategies**, including the involvement and cooperation mechanisms between the key stakeholders. Due to **great financial autonomy of the Spanish regions with regard to R&I funding** (Spanish regions comprised 60% of the GBAORD in 2012), they also play a **major role in R&I administration and the political decision-making process.** Furthermore, they are responsible for RI that belong to universities and other regional entities. The funding of construction, running costs, new equipment and other type of investments for RI is mainly coming from the Ministry of Economy, Industry and Competitiveness (MINECO) in coordination with other administration bodies autonomous regions.

4. Major national strategies for international cooperation in R&I and strategic integration of RI

In 2011, the **Law of Science, Technology and Innovation (LCTI)** was adapted. It has the objective to improve coordination with regional and European authorities, improve research careers and to support the transition to an economy founding on knowledge and innovation. The newly established **Spanish Research Agency** was one of the major results of the LCTI together with the decision to develop a Spanish Strategy for Science, Technology and Innovation. (Fernández-Zubieta & Zacharewicz 2016, p. 108)

In 2013, this strategy, known under the short form EECTI, was adapted and determines the principles, objectives, priorities and impact indicators for the Spanish R&I policy until 2020. It also includes the updates on the **"Map of Unique Scientific and Technical Infrastructures (ICTS)"** and emphasizes the strategic importance of RI for the development of the Spanish STI system. The ICTS contains a prioritization of existing infrastructures, efforts to be undertaken regarding the maintenance and a process of renewing the ICTS map.

The Spanish strategy EECTI is implemented through the **Spanish State Plan of Scientific and Technical Research and Innovation PECTI (2013-2016)**, which is a multiannual plan, describing programmes, coordination mechanisms, costs and sources of funding. One of the aims of PECTI is to foster access to research infrastructures and scientific equipment, especially focusing on large-scale facilities at the national and international level. This information is outlined in the paragraph "State Subprogramme for Scientific and Technological Infrastructure and Equipment" (Fernández-Zubieta&Zacharewicz 2016, p. 108); (Map of Unique Scientific and Technical Infrastructures. (ICTS), NN, p. 13)

The update of the ICTS was used among others to better involve regional policy-makers and improve the coordination between the different regional and national authorities. Furthermore, the role of ex ante evaluation was reinforced as prerequisite to apply for funding through the European Regional Development Fund (ERDF). This measurement enabled the ICTS to receive co-financing from the ERDF over the Programming Period 2014-2020. Besides, ICTS are coordinated with ESFRI and other international plans on specific applications, as for example the agendas of the European technological Platforms (ERAC Peer Review of the Spanish Research and Innovation System, 2014 p. 19; Map of Unique Scientific and Technical Infrastructures (ICTS), NN, p. 13f.).

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Annex Sweden Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

As mentioned above, a biannual inventory of RI needs is conducted since 2015. The idea is to identify RI needs. The process is broad and involves central stakeholders such as universities and research organization, researchers and research groups. The Infrastructure Council is responsible for both carrying through the process, evaluation and in the end decides what calls to open. Other stakeholders such as universities and scientific councils are also involved in the evaluation process.

The process covers both national and Swedish engagements in international RI.

2.2. Eligibility conditions

Scientific evaluation.

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

In evaluating research infrastructures, the Swedish Research Council (2012) considers:

- The *scientific quality* is the primary criterion.
- The *impact on development of society* (e.g. knowledge formation, internationalisation, and technical development)
- The *feasibility* (e.g. costs, technology, and organisational maturity)
- The *strategic research considerations* where relevant

Open access to infrastructures and to the data they produce is a key issue when it comes to assuring the best research quality and the best exchange of shared resources financed by public funds

2.3. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

Suggestion of RI is collected in the biannual inventory of RI and is evaluated of the Infrastructure Council in a process involving the stakeholders mentioned in 2.1.

4.5. Proposals evaluated and selected (available statistics)

In the current inventory (2017-18) the research council received 99 RI suggestions. Several of them points to the same type of RI, indicating that more coordination is needed before they can be included in a call. We expect that about 5 new RI will be included in the call in 2019.

5. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

The RI roadmap is continuously updated and hence evaluated.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

See again the biannual process!

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Again, the bi-annual process complemented with the strategic Infrastructure Guide (updated every fourth year).

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

Again, the bi-annual process complemented with the strategic Infrastructure Guide (updated every fourth year).

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex Sweden Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	x
Categorisation of RI	
Access to RI	
Organisation within national procedure	
<p>The Swedish Research Council applies the following definition of the term 'research infrastructures': RI constitute necessary tools for conducting research of the highest quality. RI include facilities, instruments, knowledge bases and services, and are intended for use by researchers or research groups within basic or applied research within all research areas.</p> <p>RI can be centralised, distributed or virtual, and the infrastructure is made available based on academic assessment criteria.</p> <p>RI may have different characteristics within different areas. They can, for example, be large research facilities for studies within materials science or physics, or distributed databases for research within the humanities, social sciences or medicine. The general rule for all infrastructures receiving support from the Swedish Research Council is that they must be generally accessible to Swedish researchers, and that access is regulated based on academic excellence. They may be national or international, but since 2008, they must be of national interest and fulfill the following general criteria, in full or in part. They must:</p> <ul style="list-style-type: none"> • provide the conditions for world class research, • be of a broad national interest, • be used by several research teams or users with highly advanced research projects, • be so extensive that individual teams cannot run them on their own, • have a long term plan for scientific goals, funding and utilisation, • be open and easily accessible to researchers, industry and other stakeholders, • have a plan for accessibility (in terms of using the infrastructure, access to collected data and presentation of results), • in relevant cases, introduce new cutting-edge technology. <p>As part of the work with 2018 Strategic Infrastructure Guide, the definition will be revised.</p>	

2. RI players in the national R&I system

The RI players within the R&I system are displayed in figure 22.

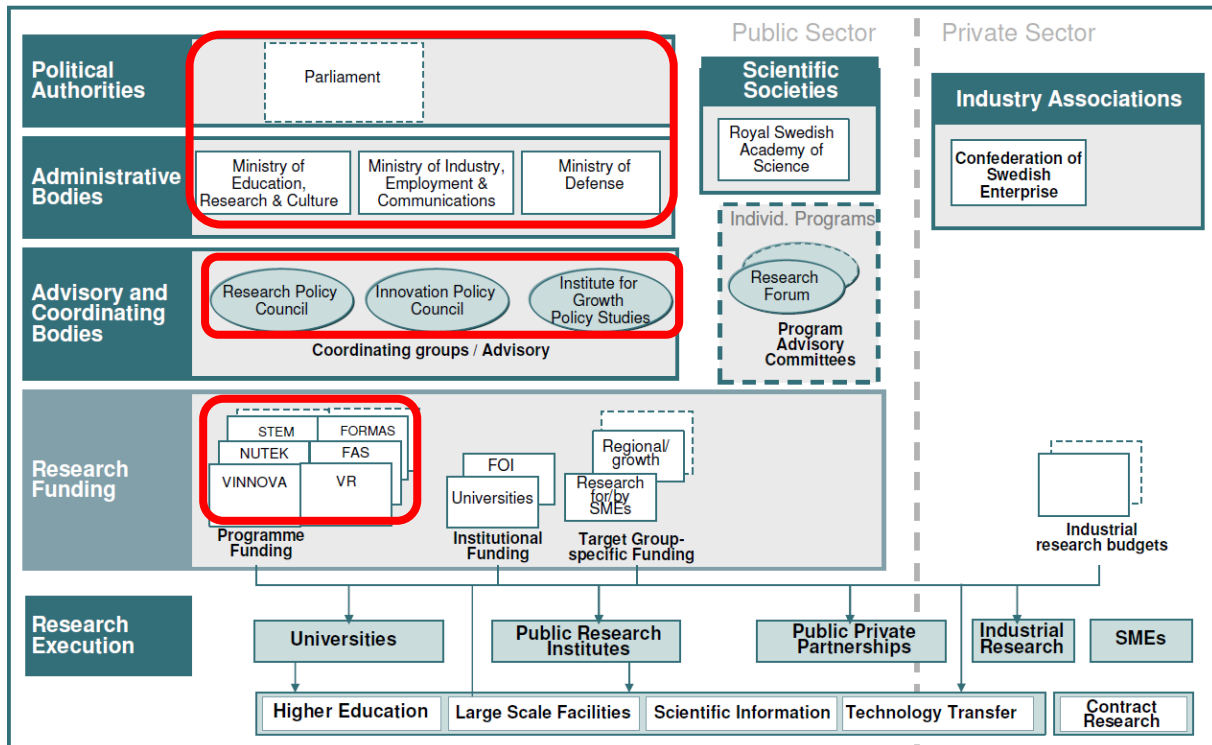


Figure 22: Organisational chart of the R&I system of Sweden (Private Sector Interaction in the Decision-Making Processes of Public Research Policies. Country Profile: Sweden, p. 1). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

Since 2014, the Research Infrastructure Council has a close dialogue with Swedish higher education institutions on the review of the processes involved in the prioritisation, financing and organisation of national research infrastructures aimed at creating more sustainability and financial stability. In the appendix, there is also a description of the background to the model for prioritisation and financing of research infrastructure, how the assessment of the proposals of needs has gone about and the future management of the call in 2017 and the forthcoming strategic guide, The Swedish Research Council's Guide to Infrastructures.

A new system for funding and prioritising RI is now in place. The Infrastructure Council finances only RI of national interest. RI that is specific to a particular research group or a university but is not developed for national purposes has to rely on alternative funding.

Embedding of RI in the national R&I system

The Swedish R&I system is characterised by high diversity in its funding arrangements and low diversity in terms of the categories of research performing organisations in the system. Firms account for at least two thirds of the research funded. The public-sector research effort is divided among three main types of research performers: (1) universities and university colleges, (2) research institutes, and (3) public authorities that perform in house research. The university and university college system is the largest part of the public research performing sector. Almost two thirds of publicly financed research in Sweden is done at 36 universities and university colleges. In reality the main share, almost 90%, of public funding goes to the ten biggest universities. Industrial research institutes are not part of the higher education sector but are classified as knowledge intensive firms and are organised under one umbrella organisation (RISE) which is a publicly owned company. There are a number of small public research institutes that are special purpose organisations such as the Swedish Institute of Advanced Studies, but these are not of direct relevance to R&I policy. Large scale research infrastructure in Sweden is incorporated in universities so there is no national lab system. (Jacob et al. 2016, p. 13)

3. RI in the National R&I System

The Swedish approach to R&I governance is predominantly decentralised. For this reason, it makes little sense to attempt to point to a particular actor as the main policy making body. A more useful approach would be to focus on where the main policy directives emanate from. This point is the Research Bill and the Innovation Strategy. The expert public agencies such as VINNOVA, the Swedish Energy Agency and the Swedish Research Council are key actors in the policy system. VINNOVA is the central coordinating actor for innovation issues while the Swedish Research Council is the principal actor for providing advice on the research system to the government. The Infrastructure council, part of the Swedish Research Council, has the main responsibility for RI strategy and investments. These actors have key policy implementation roles and are also main sources of advice and expertise to the Ministries. For this reason, it would also be remiss to maintain that policies are made at the Ministry level and then implemented at the Agency level. Instead, there is a complex backward and forward interaction between the Ministries and the Agencies which they govern on the one hand, and the Ministries and Parliament on the other. For R&I policy as in other policy areas, this process of upward and downward consultation is iterative and includes input from stakeholders either filtered through the Agencies or directly. In 2014, the new government added another actor to this constellation, and this is the Innovation Council. The status of this entity is advisory and the Prime Minister and the Minister of Finance are members as well as the Minister of Enterprise and Innovation and the Minister of Research and Higher Education. (Jacob et al. 2016, p. 14)

4. Major national strategies for international cooperation in R&I and strategic integration of RI

In order to face the challenges of tomorrow, and meet the needs of Swedish researchers for necessary research tools, a transparent prioritisation process is required, along with preparedness for long-term solutions that also allows for dynamics and renewal. The ambition is to counteract fragmentation by forming coordinating infrastructures within broad disciplines. The entire research system needs to be involved in the complicated processes that are to yield good decisions. The new model for prioritisation and funding of research infrastructures has a clearer infrastructure landscape as the goal. The balancing of local, national and international infrastructures requires well-informed discussions within the research community to identify the most urgent investments at each level. Involvement in international research infrastructure is of particular value, as it enables international academic exchanges and a broad knowledge transfer. A good interaction between various stakeholders and levels needs to be developed, particularly as the type of advanced and long-term investments that RI constitute require both strategic political decisions and highly qualified academic expertise. In light of this, the Swedish Research Council is working to support, bring together and coordinate the stakeholders and resources that in various ways have proven to be key factors in the creation of a beneficial Swedish research landscape. An important part of this process is to align the internal Swedish RM process, including both the RI need inventory and the strategic Guide (i.e., roadmap) to the ESFRI process.

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Annex Switzerland Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

Not applicable or no information presently available.

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Not applicable or no information presently available.

2.2. Eligibility conditions

The preconditions for being included in the roadmap are:

- The national importance of the RI
- Its broad use by the research community
- Its accessibility
- A central governance structures
- A written letter of commitment from the university administrations involved
- No minimum financial amount is defined for RI

In addition, to be part of the national roadmap, the RI (according to the European definition can include instruments – large devices and others–, information and service infrastructures and technical infrastructures) must meet the following three conditions:

- 1) Novel or major upgrades: RI included in the roadmap should support international competitiveness for a period of ten years or improve research performance.
- 2) Level of maturity: RI will have well-advanced planning. These criteria exclude the *pilot* or *design* studies of eligibility for the National road. This limitation does not apply to international RI
- 3) Minimum cost: the total cost of the RI (investment and operation costs) will be justified and will amount at least 5 million francs. This limitation does not apply to international RI (ESFRI projects)

2.3. Evaluation criteria for the selection of the RI to be included in the RI national roadmap

The following criteria are relevant in selecting the proposals:

- a) Relevance of the new RI for national and international research, either from a specialized or interdisciplinary point of view
- b) Potential for the development of national and international collaboration
- c) Overall feasibility and state-of-the-art

Integration of the new RI in the Swiss research landscape

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RI to be included in the RI national roadmap

The roadmap overseen by the State Secretariat for Education, Research and Innovation (SERI) is a five-step process, according to the call for applications.

1. In the first, existing and already funded RI are inventoried, and the need for new RI of national importance to Swiss research ascertained.
2. Once established, researchers from Swiss higher education and research institutions, in a second step, can submit the corresponding proposal to SERI. The Swiss National Science Foundation (SNSF) then evaluates and classifies the proposals submitted for new RI.
3. In a third step, the SNSF prioritizes the proposals based on so-called “foresight” activities.
4. The roadmap process calls for the SNSF’s recommendations to flow into consul-

tations with the most important stakeholders, a process SERI initiates. This phase is meant as a way to assign individual RI funding to institutions likely to support and fund it.

5. Based on the multi-year planning of the respective institutions, the Federal Department of Economic Affairs, Education and Research (EAER) makes the funding decisions in the context of the next ERI Dispatch, and presents this to parliament for discussion and approval.

The evaluation procedure conducted in the third step follows standard peer review focused on project proposals.

2.5. Proposals evaluated and selected (available statistics)

Not applicable or no information presently available.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

Not applicable or no information presently available.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

Not applicable or no information presently available.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Not applicable or no information presently available.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

Not applicable or no information presently available.

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex Switzerland Part 2: National Embedment

1. RI definition	
In which points does the National Roadmap deviate from the ESFRI Roadmap?	
Categories	National Roadmap
Funding	
Categorisation of RI	
Access to RI	
Organisation within national procedure	

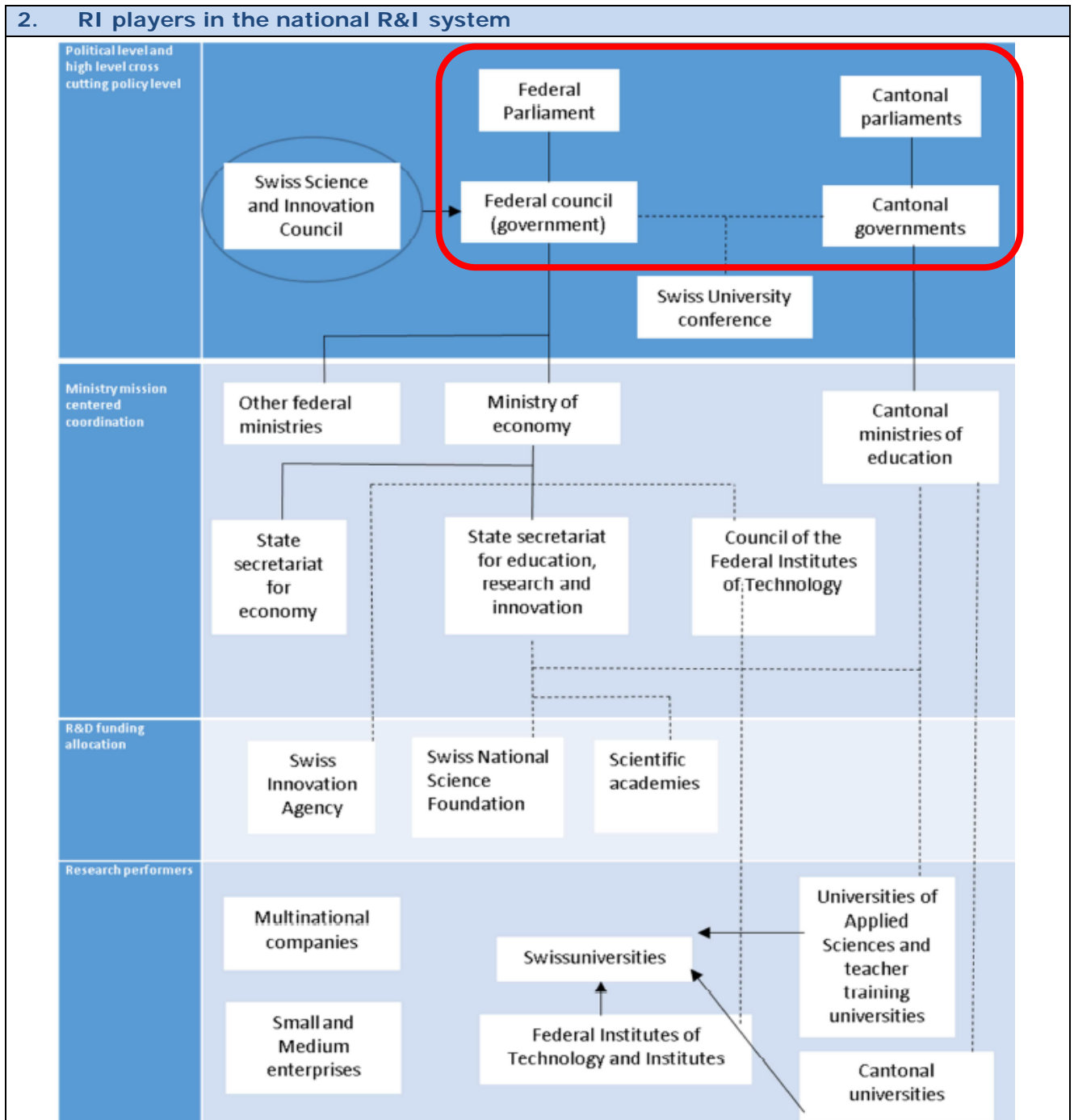


Figure 23: Organisational chart of the R&I system of Switzerland (Lepori, Ureta and Alberton: 2016, p. 16). Red colour indicates the bodies with the main decision power regarding RI.

National relevance of RI

Switzerland among the countries with the best developed R&D systems in the world and regularly ranking on the top of the global innovation index. This is due to its excellence research and education system as well as the large and stable public investments in research and innovation. Research Infrastructures were early realized to be of high priority to keep the leading position in R&D development. A targeted research funding policy has enabled Switzerland to establish outstanding RI, which are attracting the very best researchers worldwide to Switzerland. Although Switzerland is contributing to many international RI and research organisation, it is of high priority to the country to be able to offer its local research community access to top-notch infrastructure.

Embedding of RI in the national R&I system

The Swiss federal governments adopted a national strategy for the R&I system "the Education, Research and Innovation (ERI) dispatch", which is transmitted every four years, together with the request for budgetary credits for the following four years, to the federal parliament. The ERI dispatch provides a systematic analysis of the state of the Swiss R&I system and identifies strengths and weaknesses as well as emerging challenges. It defines the strategic priorities and the specific measures for each domain and actor, covering the entire research landscape. (Lepori, Ureta and Alberton, 2016, p.21)

The plan also includes specific measures for the support of RI.

3. RI in the National R&I System

"The Swiss R&I system can be characterized by a clear distinction of functions, structures and funding flows between the public and the private sector, following the traditional liberal orientation of the Swiss economic policy. The public sector is oriented towards basic research and dominated by higher education institutions (HEIs), some of them being among the top-rated international research universities, who are the main hosts of RI. Its organization is linked to the federal political organization of the country, where cantons have (almost) exclusive competences on policy domains like schooling, police, justice, and healthcare and raise their own taxes. Switzerland is a federal state and cantons remain a central policy actor in the Swiss State, while the repartition of tasks between cantons and the federal level is a sensible political issue". (Lepori, Ureta and Alberton, 2016, p. 14f)

4. Major national strategies for international cooperation in R&I and strategic integration of RI

International collaboration in research is high on the agenda of the Swiss national government, this is why Switzerland is involved in numerous international Research Organisations and research programmes.²⁶ Swiss participation in international projects to develop research infrastructures is essential in ensuring the integration and involvement of Swiss researchers.

Furthermore, Switzerland promotes bilateral research cooperation with selected priority countries and cultivates a worldwide network of diplomatic scientific representations under the label swissnex. These international engagements are described in the "Switzerland's International Strategy for education, research and innovation", which was developed by SERI. "In order to reach the objectives, set forth in the present international ERI strategy, the required measures, incl. allocation of sufficient funding, will be set forth at four-year intervals in Federal Council Dispatches on the Promotion of Education, Research and Innovation as well as in other ERI dispatches." (SERI 2010, p. 21)

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Further links

- Organisation of Science and Research in Switzerland <<https://www.eda.admin.ch/aboutswitzerland/en/home/wissenschaft/ueberblick/die-organisation-von-wissen-und-forschung-in-der-schweiz.html>> [Last access: 06/2017].

Annex United Kingdom Part 1: Evaluation and monitoring procedure

1. Ex-ante Impact Assessment

1.1. Methodology and procedures conducted (if applicable)

The Committee on Science and Technology of the House of Lords recommended in 2013 (Science and Technology Committee - Second Report Scientific Infrastructure; [link](#) [Last access: 07/2017]), that all future funding of large and mid-range scientific infrastructures should include provision for an ongoing monitoring and evaluation mechanism to determine the impact and return on investment and provide an evidence base for future decision making. The monitoring and evaluation processes, as indicated by the Committee on Science and Technology, should be embedded from the point of investment and its outcomes should be published and clearly communicated to industry and policy makers.

Much progress has been made since 2013 and the new UK Roadmap is now currently in progress, to be published in spring 2019. The new Roadmap follows on from the above Science and Technology Second Report, the National Audit Office's Report on Cross-government funding of research and development (<https://www.nao.org.uk/wp-content/uploads/2017/11/Cross-government-funding-of-research-and-development.pdf> [Last access: 07/2017]) and creation of UKRI (<https://www.ukri.org/> [Last access: 07/2017]).

2. Procedure for selection of the research infrastructures to be included in the roadmap

2.1. Objectives of the evaluation

Roadmap update currently in progress, to be published in spring 2019.

2.2. Eligibility conditions

Roadmap update currently in progress, to be published in spring 2019.

2.3. Evaluation criteria for the selection of the RIs to be included in the RI national roadmap

Roadmap update currently in progress, to be published in spring 2019.

2.4. Evaluation method and procedures conducted (organisation in charge, timing, selection of reviewers, configuration of panels, indicators, etc.) for the selection of the RIs to be included in the RI national roadmap

Not applicable. Roadmap update currently in progress, to be published in spring 2019.

2.5. Proposals evaluated and selected (available statistics)

Not applicable or no information presently available.

3. Update / Monitoring and ex-post Evaluation of RI Roadmap

3.1. Objective of the monitoring of the RI national roadmap as a whole

To determine the impact and return on investment and provide an evidence base for future decision making.

The monitoring and evaluation processes (as already indicated), should be embedded from the point of investment and its outcomes and it should be published and clearly communicated to industry and policy makers.

3.2. Periodicity of the RI national roadmap monitoring actions (if applicable)

Not applicable or no information presently available.

3.3. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the RI national roadmap

Not applicable or no information presently available.

3.4. Methodology and procedures conducted (timing, approach, indicators, etc.) for monitoring the individual RI included in the RI national roadmap

- Main factors taken into account for the individual RI monitoring are the following:
- **Excellence** – scientific importance, timeliness, international relevance.
- **Strategic value and synergies** – which key science challenges does it address, alignment with programme and corporate strategies, coherence and synergies with other programmes including international subscriptions, importance to key stakeholders.
- **Leadership** – level of UK leadership and track record, leverage, policy influence.
- **Possible impacts of changing landscape** (e.g. community changes, major discoveries).
- **Boundary conditions** (e.g. international subscriptions).

Monitoring encompasses:

- **Performance measures** differ between infrastructures but typically include user satisfaction, down time, number of experiments, user days, and student training days.
- **Output measures** include publication numbers, bibliometric analyses, theses, IP, spin-off companies, and impact studies.

The monitoring results feed into future evaluations and strategic development.

The timelines and the periodicity of the evaluation/monitoring procedure depend on the area and scale of investment (they are between 2 and 5 years).

3.5. Methodology and procedures conducted in the case that an ex-post evaluation of the RI national roadmap is planned or has been implemented

Not applicable or no information presently available.

Annex United Kingdom Part 2: National Embedment

1. RI definition

In which points does the National Roadmap deviate from the ESFRI Roadmap?

Categories	National Roadmap
Funding	x
Categorisation of RI	
Access to RI	
Organisation within national procedure	

The types of facility that fall into this class are typically those that are large and very expensive; have long useful lifetimes, e.g. 10-20 years; have multiple users both national and international; are interdisciplinary; offer unique capabilities within the UK, or more widely; and are potentially jointly funded or suitable subjects for international collaboration, in some cases distributed across a number of different countries.

ESFRI-based: Research infrastructures are facilities, resources and services that a research community uses to conduct research and promote innovation in its field. Where relevant, the infrastructure can also be used for other purposes than research, for example education or public services. Among other things, it concerns important scientific equipment or collections of instruments; knowledge-based resources such as collections of natural specimens, archives and collections of scientific data; e-infrastructure such as (interlinked) data files and computer systems and communication networks and any other unique infrastructure that is critically important for achieving excellence in research and innovation. This could refer to infrastructures situated in a single location, or virtual or distributed infrastructures (in the UK or abroad).

Source: Data derived from InRoad Consultation on RI (2017).

2. RI players in the national R&I system

National relevance of RI

According to James Fothergill, Head of Education & Skills, Confederation of British Industries, the investment in research capital is essential to ensure that the UK has the best available resources to stimulate growth and support the wellbeing of the nation. Industry benefits greatly from capital investment through access to advanced facilities as well as access to world-leading scientific and technical expertise. Ensuring that such capital investment is maintained in order to fund new, cutting edge facilities and attract the best expertise to work with business and industry is vital to the future growth and competitiveness of UK business and Industry as well as to the UK as a whole (Research Councils UK, 2012, p. 4). This was reflected in the recently published UK Government Industrial Strategy in November 2017. ([link](#) [Last access: 07/2017])

Embedding of RI in the national R&I system

The UK is viewed as an example of good practice in terms of its policies towards the accessibility of RI. The UK Government is continuing to work through ESFRI and directly with the Commission to further realise the opportunities that could arise for the strategic planning and operation of such facilities, including access for non-national researchers, both within and outside Europe. In 2012, the UK Research Councils, as a leading institution in the RI system of the UK, published a capital investment framework. To build on this, the Government carried out a consultation with the research community and other stakeholders to identify priorities for investment to 2021. The consultation included both institutional and regional based infrastructures but also where the UK could collaborate on an international basis, either as a host or part funding a facility based elsewhere. (Cunningham 2016, p. 53)

The next national Roadmap is currently under preparation, to be published in spring 2019, and is wider in scope looking at RIs funded from sources other than RCUK.

3. RI in the National R&I System

The UK research system is largely centralised. The Devolved Administrations of Scotland, Wales and Northern Ireland have responsibility for aspects of health and education funding. Block funding for higher education institutes is provided by separate higher education funding councils (or similar bodies) in each country, although the bulk of research funding across the UK is provided via the Research Councils. The Research Councils UK (RCUK) is a Non-Departmental Public Body with

the responsibility to administer the cooperation between the seven individual research councils for coordination and funding of research in the arts, humanities, science and engineering. The councils are expected to work together more effectively to enhance the overall impact and effectiveness of their research, training and innovation. The governing bodies of the research councils are appointed by the Secretary for Innovation, Universities and Skills. The councils, therefore, receive public funds from the Department for Business, Energy and Industrial Strategy (BEIS). From April 2018, **UK Research and Innovation** will bring together the seven Research Councils, Innovate UK and a new organisation, Research England. Research England will work closely with its partner organisations in the devolved administrations.

The Department for Business, Innovation and Skills plays the lead executive role in research issues, and is the home of the Government Office for Science (GO-Science), headed by the Government's Chief Scientific Adviser (CSA). GO-Science plays the lead role in improving the quality of science in the UK. The CSA also chairs the principal high-level national policy making and coordination body, the Council for Science and Technology (CST), further, committees in the upper and lower houses of Parliament are integrated in the process. Besides the Research Council United Kingdom, Higher Education Funding Council, Innovate UK and academies, as the Royal Society receive funds from the DBIS.

At the regional level in England, responsibility for innovation support has been assumed by Innovate UK (formerly the Technology Strategy Board). At the local level in England, some innovation policy and related activities are coordinated by Local Economic Partnerships. (Cunningham 2016, p. 14)

4. Major national strategies for international cooperation in R&I and strategic integration of RI

The next national Roadmap is currently under preparation, to be published in spring 2019. The Roadmap will be wider in scope looking at RI funded from sources other than RCUK, and will cover areas of international cooperation.

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