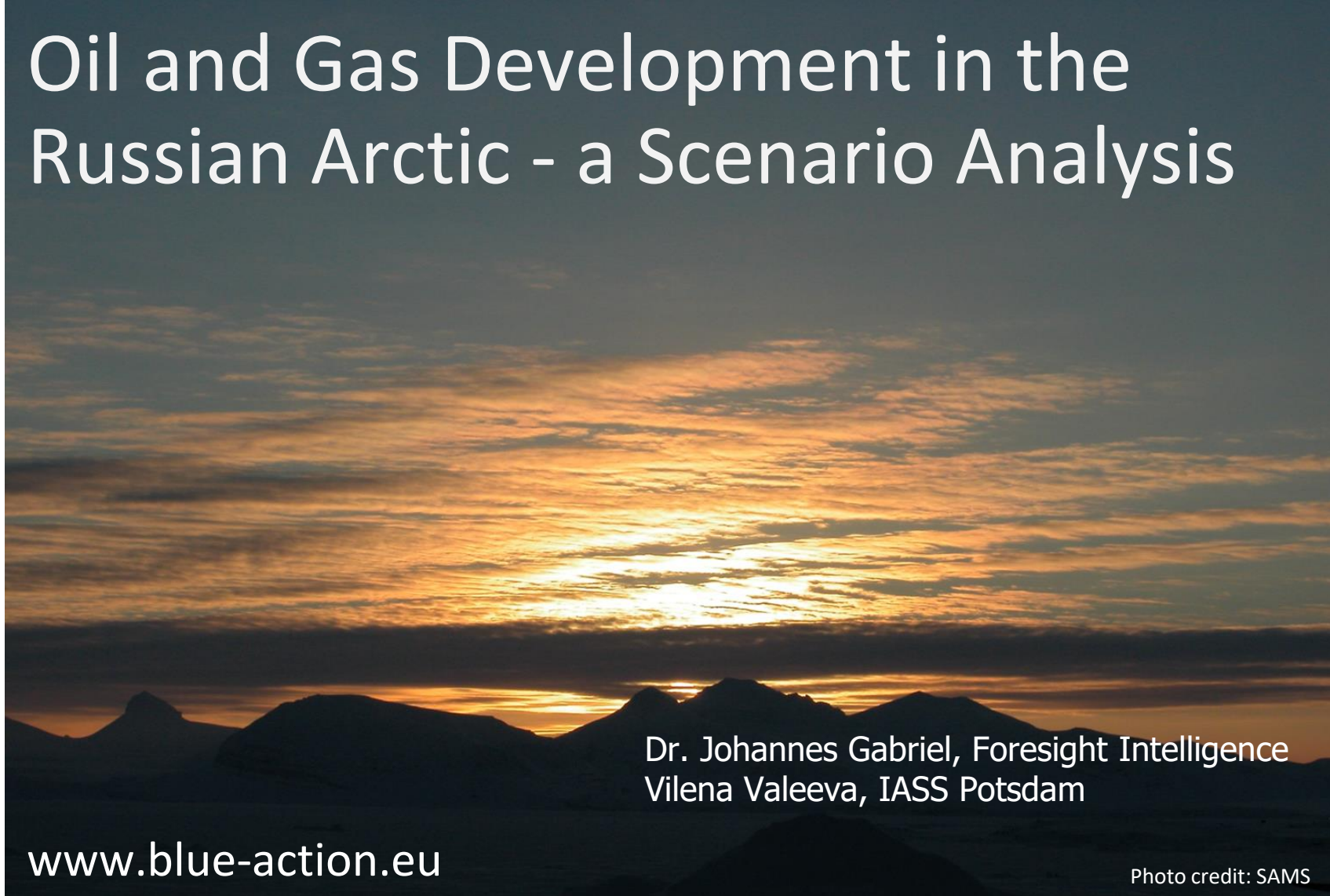


# Oil and Gas Development in the Russian Arctic - a Scenario Analysis



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Photo credit: SAMS



## Agenda

1. Overview of the overall case
2. First deliverable: stakeholder map
3. Scenario workshops: methodology
4. Results from the first workshop
5. Outlook to two further workshops
6. Dissemination activities

## 1. Overview

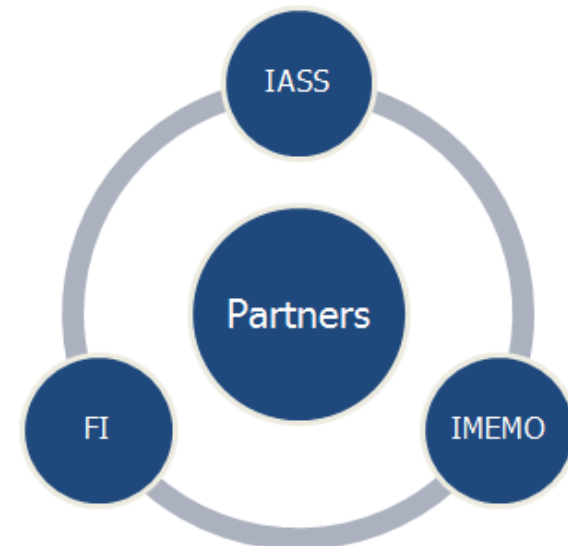
### Case study 5: Oil and Gas Development in the Russian Arctic

#### Case study focus

- Potential social, economic and environmental impacts of changes in opportunities and risks of energy resource development in the Russian Arctic
- How these changes are induced through interdependencies between stakeholders based in the Arctic and elsewhere (especially in Europe)

#### Goals:

- Build, use and assess scenarios of resource extraction in the Russian Arctic in collaboration with stakeholders
- Develop greater capacity among stakeholders to use climate information in their decision making



## 1. Overview

### Case study 5: Oil and Gas Development in the Russian Arctic

#### Tasks

1. Map of stakeholders' views concerning resource development, climate change, and sustainable development
2. Analysis of the likelihood, extent, and consequences of energy resource development using projections of climate change; international market conditions; legal, regulatory, and political situation, and expectations of stakeholders
3. Scenarios for decision-making outlining scientifically plausible climate, environmental, social, economic and health impacts of changes in the Arctic on local Arctic stakeholdersà using inputs from all WPs

## 2. First deliverable: stakeholder map

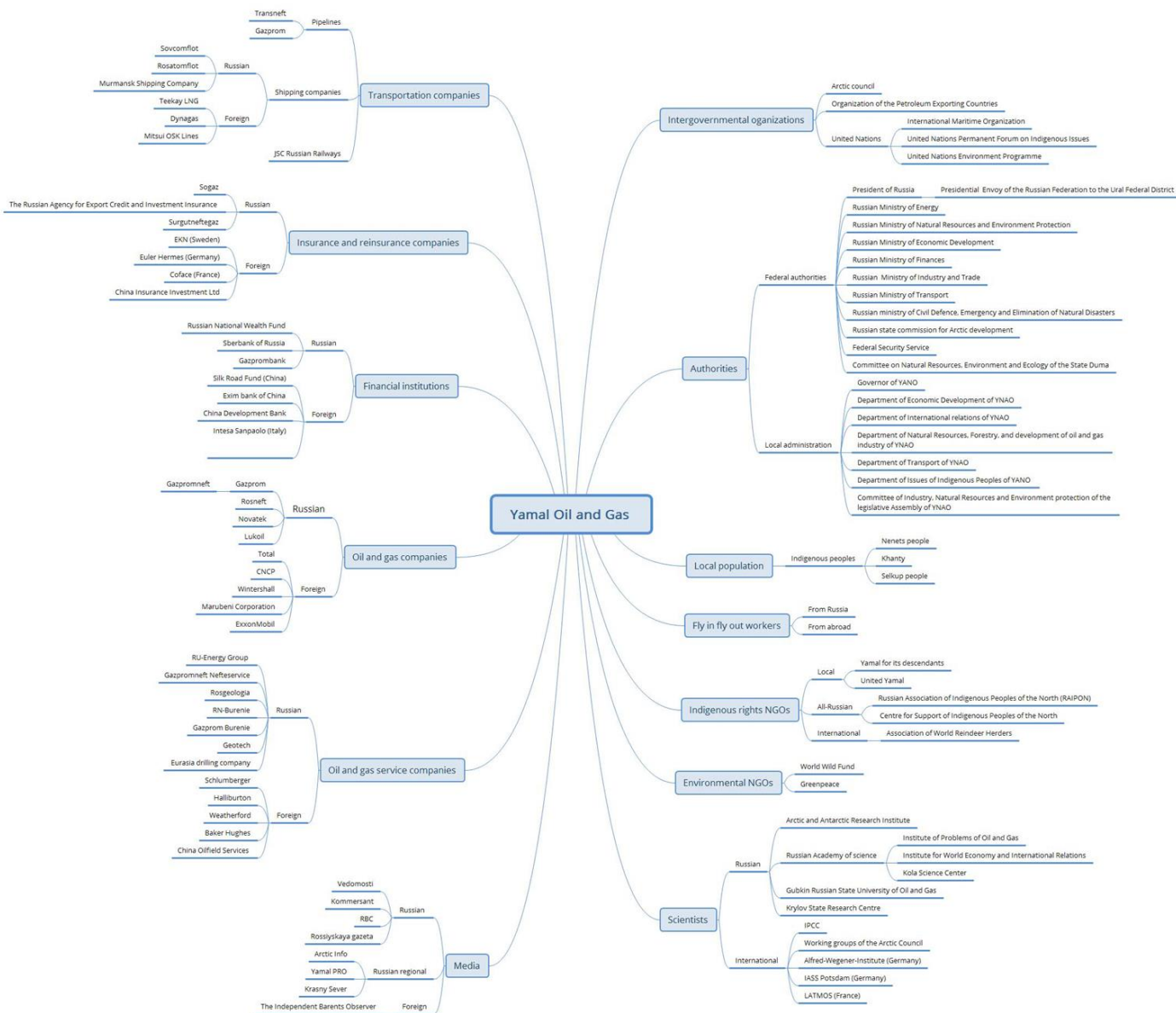
### Oil and gas development in Yamal-Nenets Autonomous Okrug (YNAO)

- YNAO is at the core of petroleum development in Arctic Russia
- YNAO produces more than 80% of Russia's natural gas
- 36 of 56 priority resource extraction projects in the Russian Arctic are developed or planned to be developed in YNAO
- Hydrocarbons of the YNAO are exported to 21 countries of the European Union. Plans to export to export to Asia.



## 2. First deliverable: stakeholder map

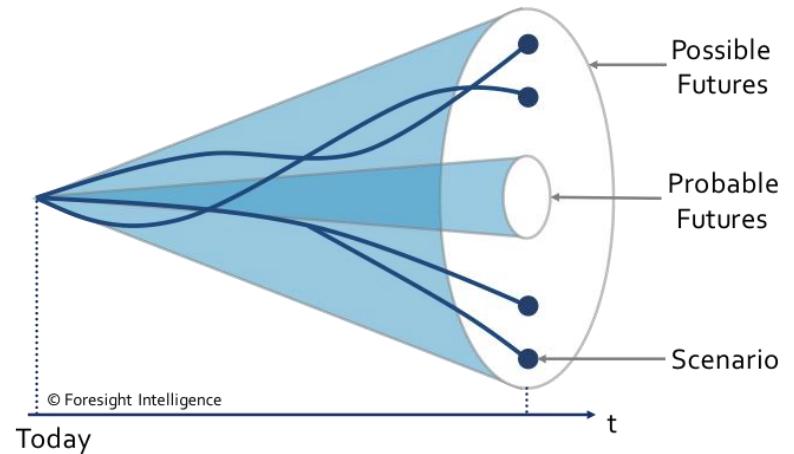
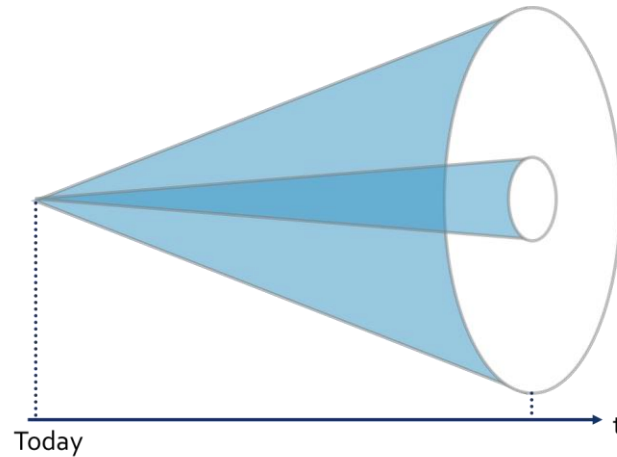
### Stakeholder groups engaged in YNAO oil and gas development



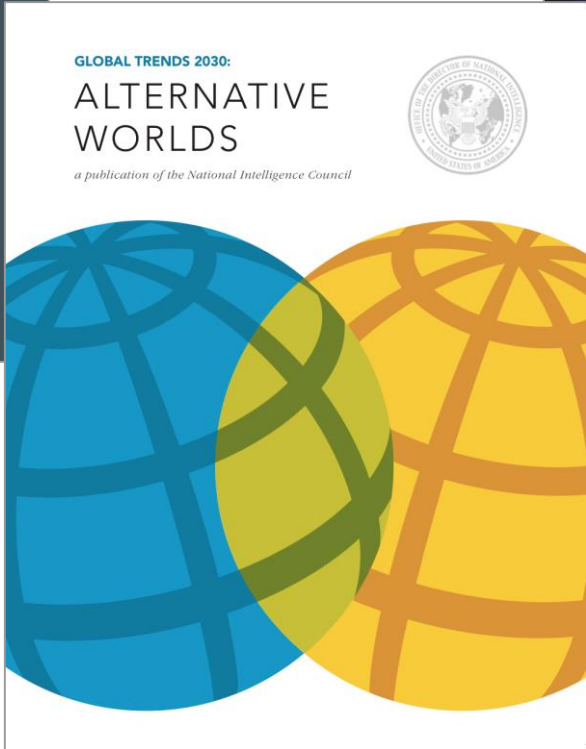
### 3. Scenario methodology

#### On Foresight, Strategic Foresight, and Scenarios

- Foresight is systematic thinking about uncertain futures.
- Strategic foresight is action-oriented foresight.
- Scenarios are (strategic) foresight tools.
- A scenario is a comprehensive description of
  - a possible future situation, composed of consistent parts.
  - a plausible trajectory that leads to a certain situation.



### 3. Scenario methodology Examples





### 3. Scenario methodology

#### On scenario construction as communication platform

	Forecasts	Scenarios
Epistemology	Predicting, explaining a future state	Thought experiments about future developments
Lense	Focused	Broader environment, comprehensive picture
Criteria	Probability	Plausibility
Change	Incremental	Structural/fundamental
Goal	Rather: Foreknowing the future, creating knowledge about the future	Better understanding of complex environments, making sense of an uncertain futures, avoiding surprise
Approach	Context independent information gathering	<b>Structured group process</b>

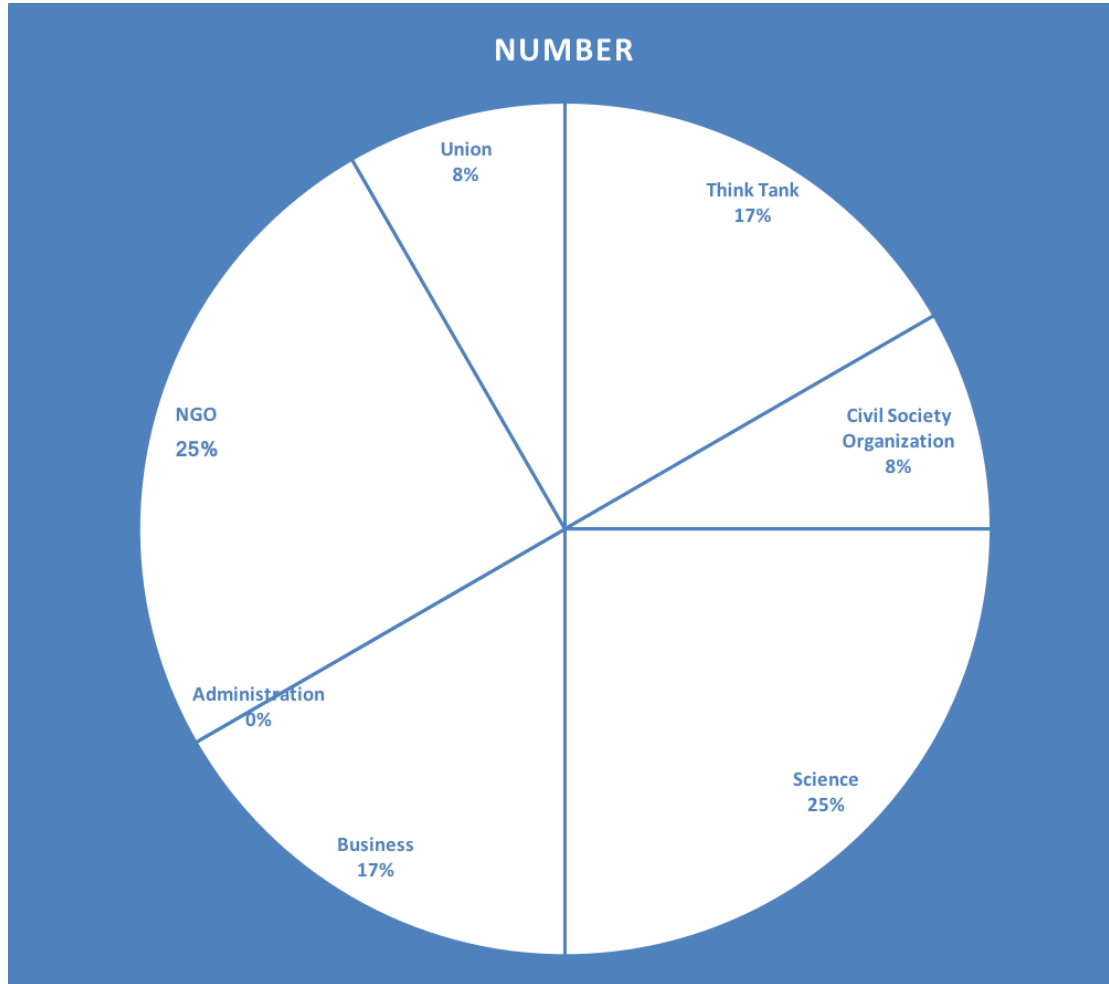
The scenario process provides a communication platform for diverse groups

### 3. Scenario methodology

Creating scenarios is a structured group process



### 3. Scenario methodology Participants taking center-stage



RNEI
Alfred-Wegener-Institut
Gecon
WWF Russia
GERICS
KPMG
Association of World Reindeer Herders
IMEMO
Greenpeace
GEOMAR Helmholtz Centre for Ocean Research; A. M. Obukhov Institute of Atmospheric Physics Russian Academy of Sciences
Center for support of the indigenous peoples of the North
IASS Potsdam

### 3. Scenario methodology

#### Purposes and goals of our scenario process

##### Purposes

- Learn (from each other and from climate scientists) about complex environments, make sense of uncertain futures
- Enable stakeholders to proactively prepare for alternative and uncertain futures of the Yamal-Nenets Autonomous Okrug

##### Goals

- Create scenarios for “Yamal 2040”
- Identify strategic options for various stakeholders/actors

### 3. Scenario methodology

#### Purposes of scenario process from a Blue Action perspective

Our case study helps to achieve two of the expected project results (see Alberto Zocchi's presentation):

- improve the capacity to respond to the impact of CC, (short- and long-term)
- improve stakeholders capacity to adapt (in face of uncertain impacts)

### 3. Scenario methodology

#### Methodological steps

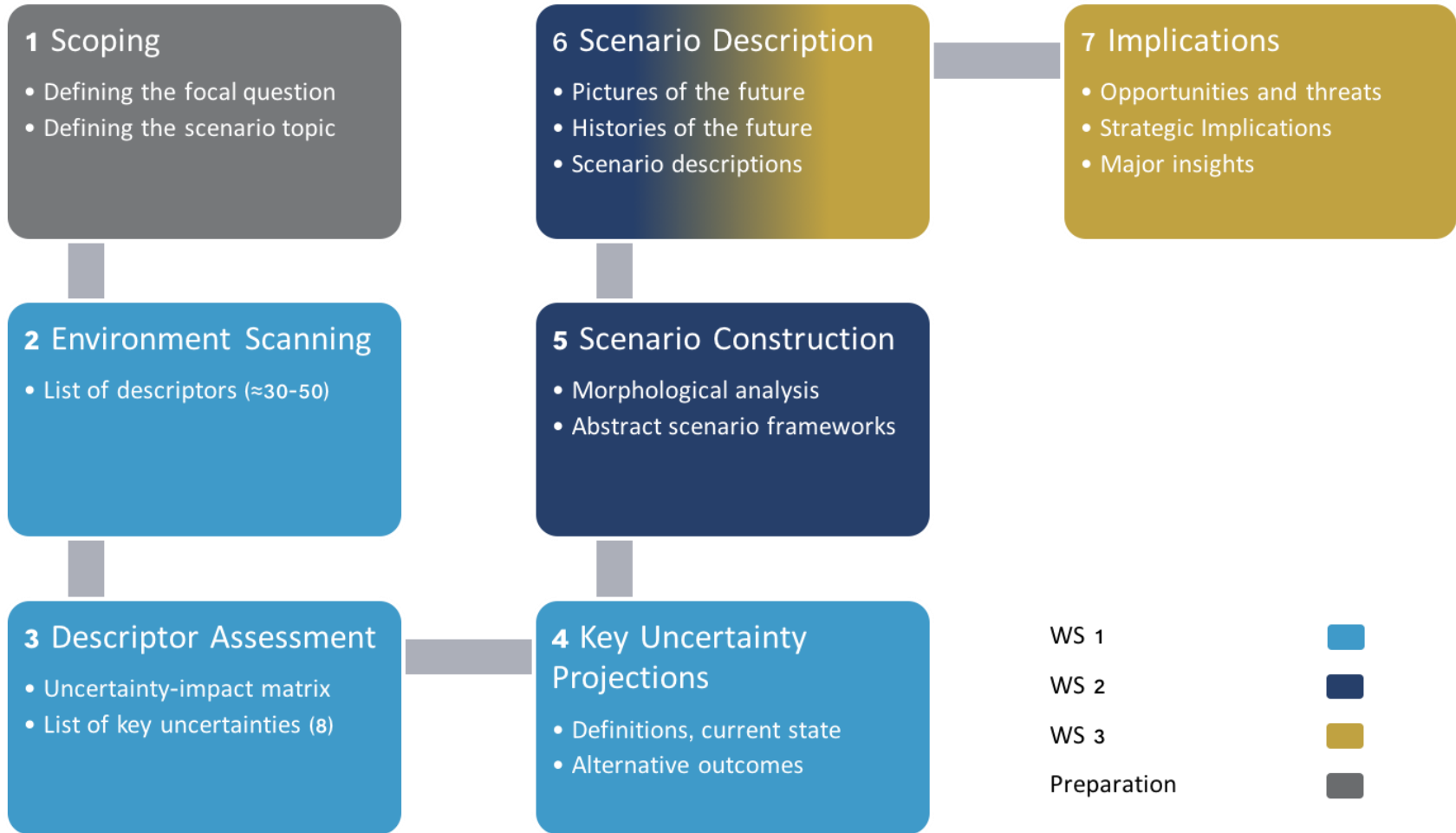


Illustration by Johannes Gabriel

## 4. Results from the first workshop

### Influential factors

- Global oil and gas prices
- Global energy transition
- Development of (un)conventional oil and gas production outside Yamal
- Quality of oil and gas
- International partnerships in Yamal oil and gas projects
- Productivity of on- and offshore oil and gas wells
- License system of oil and gas
- Owners of transport infrastructure
- Global economic crisis
- Production costs of oil and gas
- Reputation of oil and gas companies
- Interests and actions of non-Arctic actors
- Sanctions and counter sanctions
- Geopolitical situation
- Innovation in emissions reduction technologies
- Technology innovation in production of oil and gas
- Tax system (taxation and distribution)
- Diversification of Russian energy exports
- GDP growth and composition
- Russian federation development strategy
- Russian Arctic development strategy/policy
- National carbon regulations/targets
- interregional cooperation in Russia
- Sea ice reduction on NSR and Northeast Passage
- Natural disasters
- Permafrost thawing and consequences
- Negative external effects of oil and gas/energy sector on the environment
- Air and water quality
- Threat of abrupt climate change
- Arctic oil and gas accidents
- Damage to oil and gas infrastructure
- Infrastructure for Yamal oil and gas exports
- physical and digital infrastructure in Yamal
- Involvement of Indigenous Peoples in decision-making processes
- Environmental regulations based on local culture
- Development of civil society and connection to international communities
- National and international regulations on pollution
- Administrative structure
- Alternative economic developments in Yamal
- Investment climate in general
- Socio-economic indicators
- Public health
- Migration
- Human potential
- Preparedness for adaptation
- Implementation of Paris Agreement on a global scale

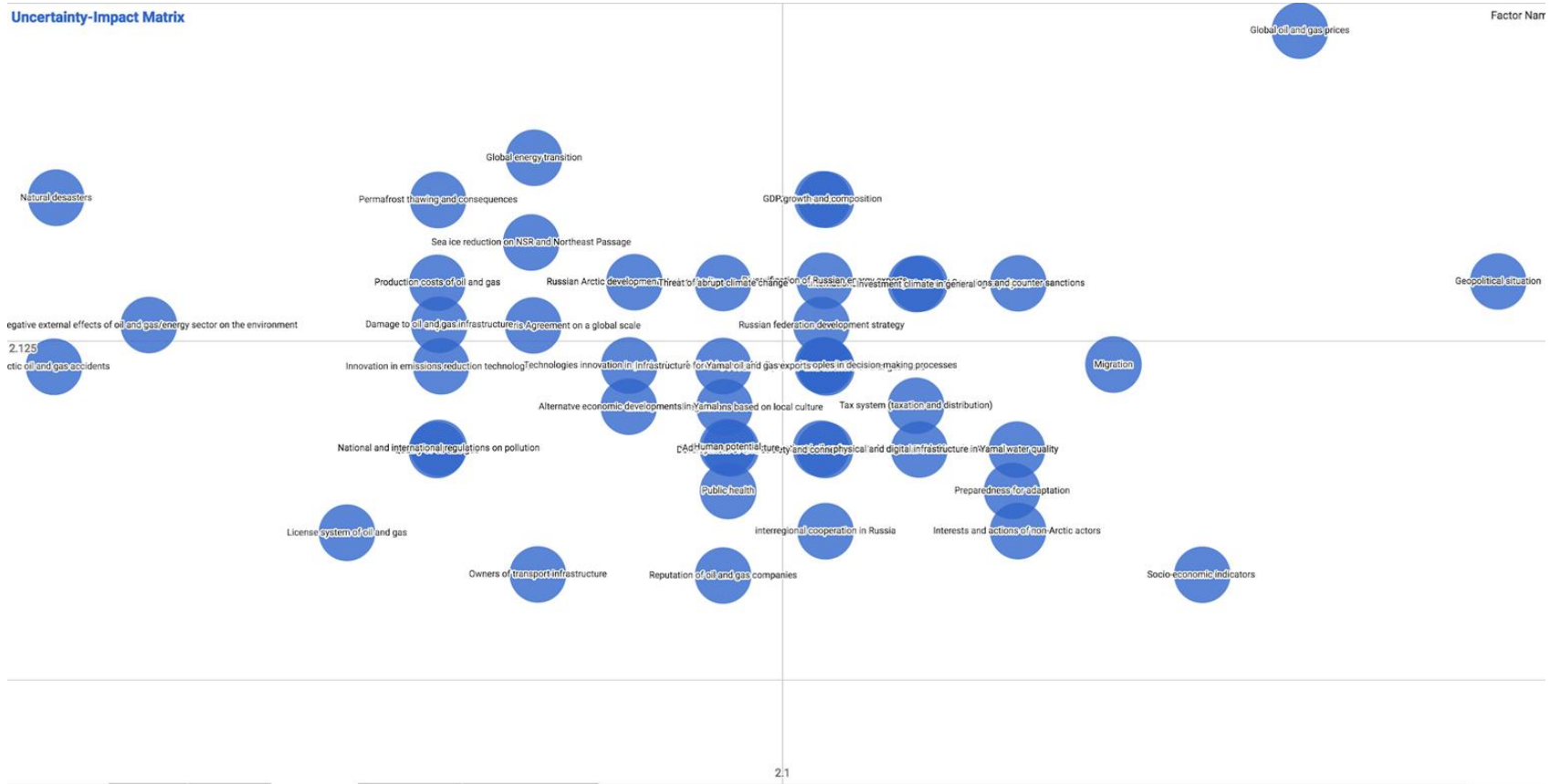
46 influential factors from various systems/fields:

Economy, geopolitics, technology and innovation, economic policy, environment and CC, infrastructure, civil society, local administration, social development and health

# 4. Results from the first workshop

## Uncertainty-impact assessment to identify factors relevant for scenario construction

Uncertainty-Impact Matrix





## 4. Results from the first workshop

### Key uncertainties

1. Oil and gas prices
2. Russia's economic development
3. Investment climate
4. Indigenous peoples and civil society
5. Impact of climate change
6. Global energy transition
7. Environmental damages from oil and gas industries

## 4. Results from the first workshop

### Alternative assumptions for key uncertainties in 2040

**Factor's Title:** *Inclusion of indigenous peoples and civil society in decision-making*

Please, write legibly. Keep it short and precise.

**FI** Foresight Intelligence

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**Definition**

**Is:**

Decision making re oil/gas dev  
Prod. Nat. Res.

**Is not:**

social policy

**Historical development & current state**

90s

2000

work

**Today:**

Involvement and impact of ind p. and civ. Soc. on decs- is weak, is weak enough

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Plausible outcomes in the year 2040 (2-4; mutually exclusive, collectively exhaustive)

Projection D

Projection A

Projection C

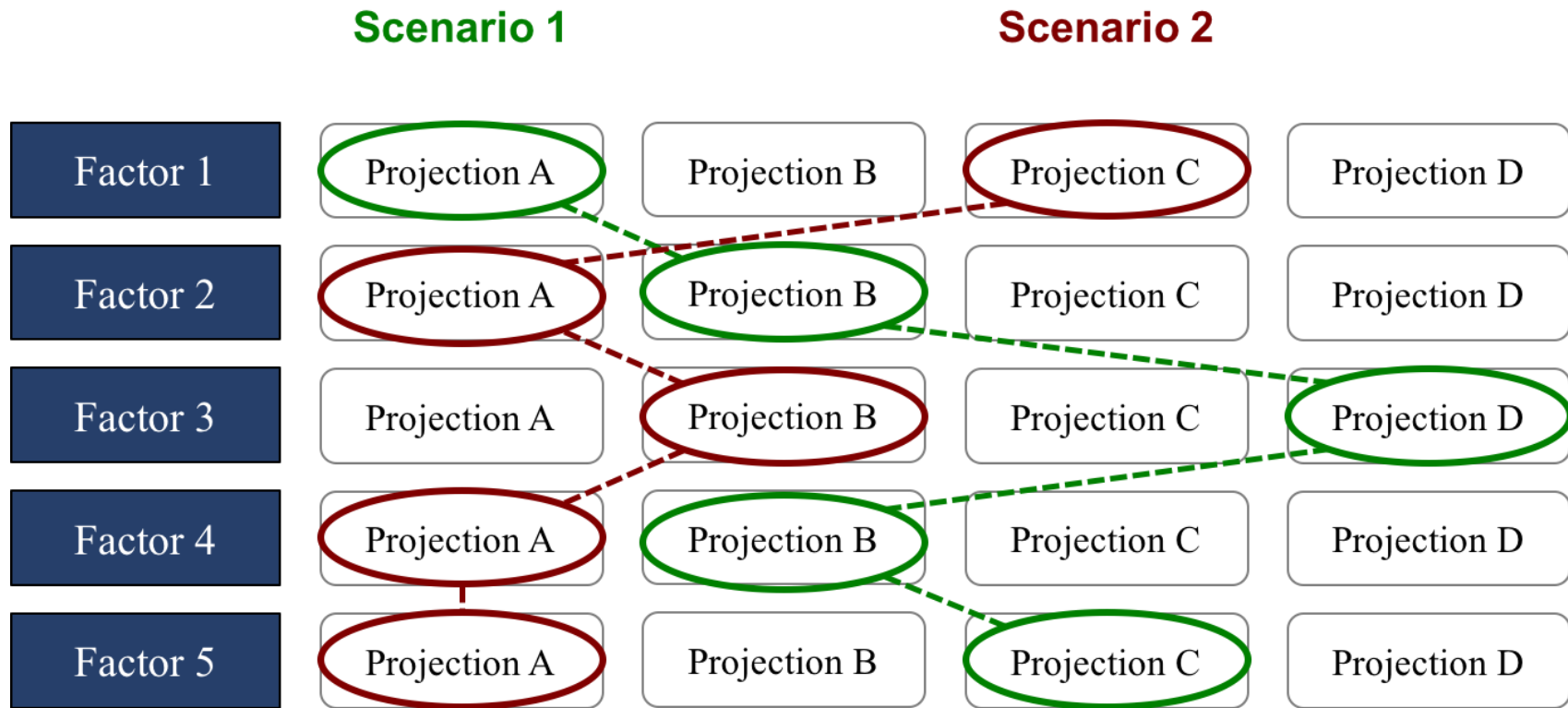
Projection B

Blue Action

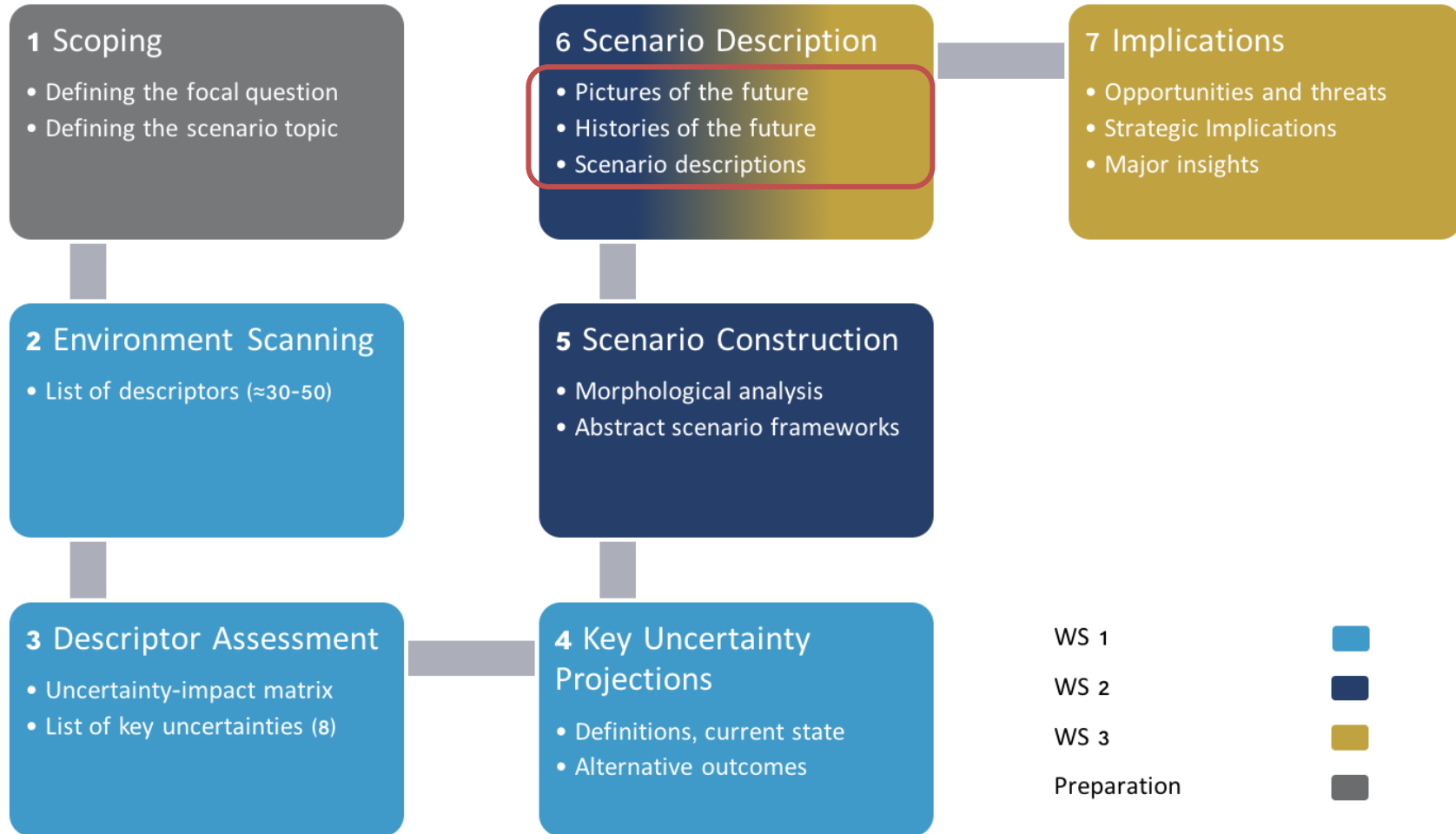
## 4. Results from the first workshop ... to create a morphological field (solution space)

Factor 1	Projection A	Projection B	Projection C	Projection D
Factor 2	Projection A	Projection B	Projection C	Projection D
Factor 3	Projection A	Projection B	Projection C	Projection D
Factor 4	Projection A	Projection B	Projection C	Projection D
Factor 5	Projection A	Projection B	Projection C	Projection D

## 5. Outlook to two further workshops ... to create scenario frameworks (raw scenarios)

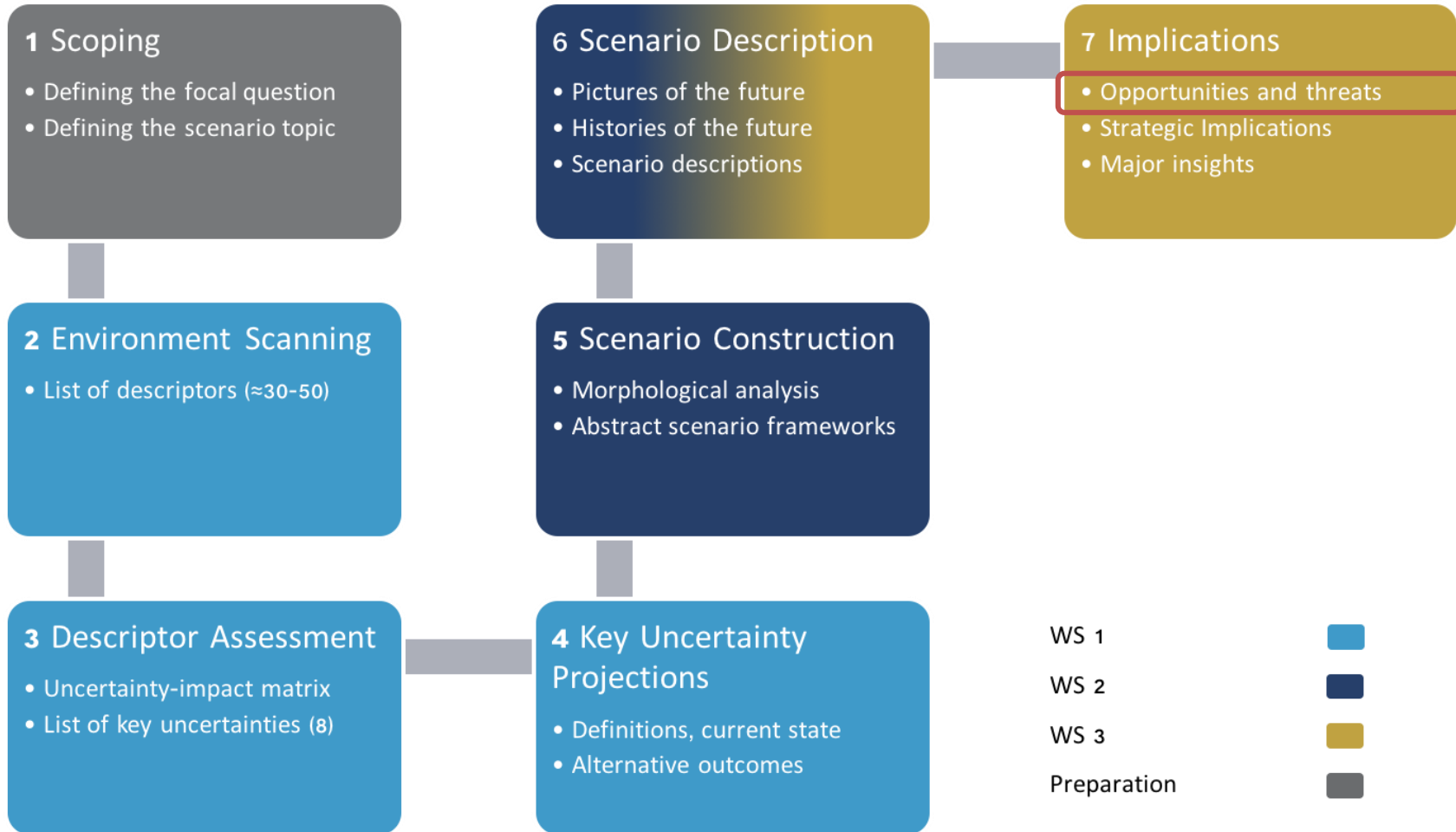


## 5. Outlook to two further workshops ... which are then further developed



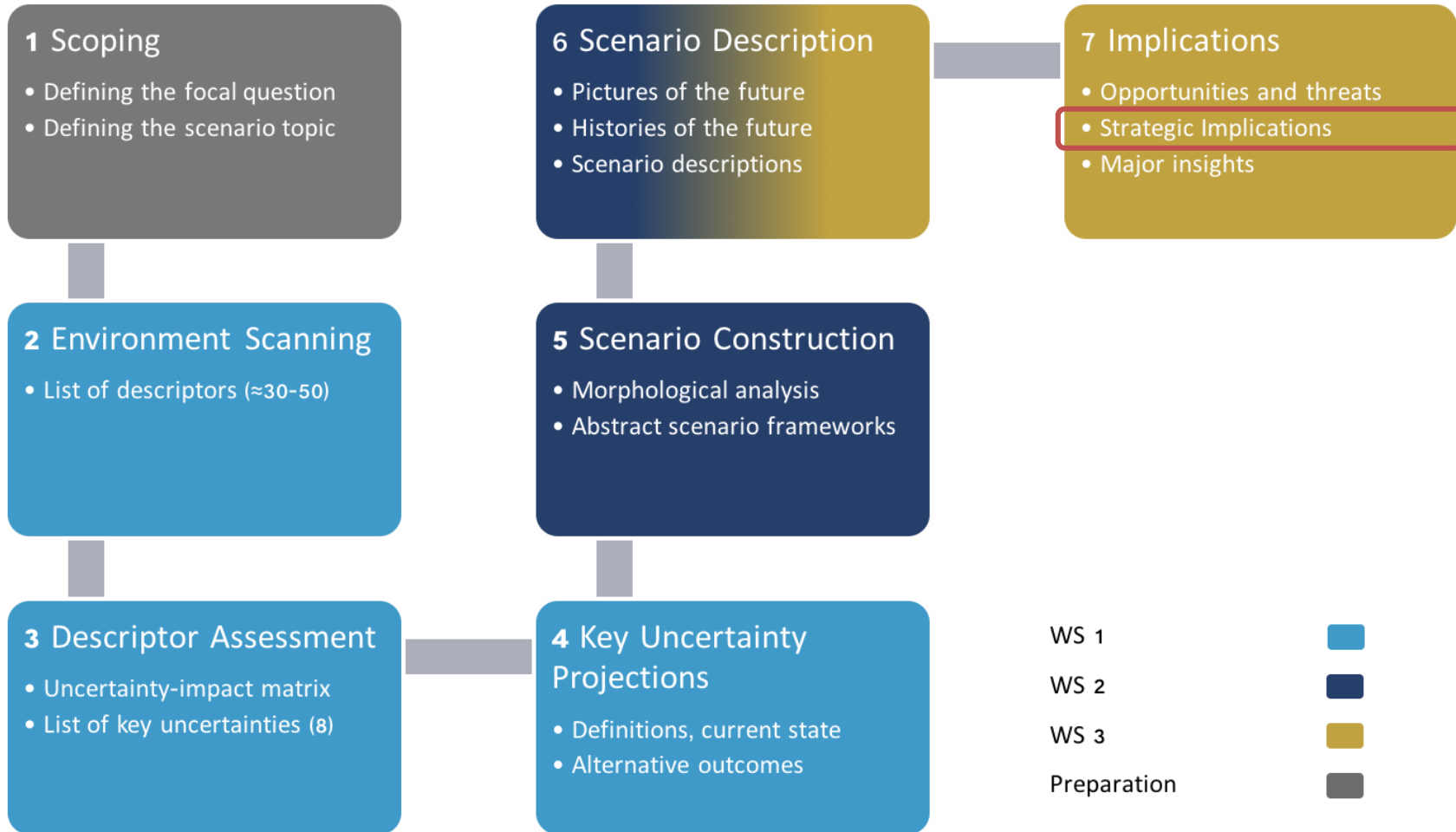
## 5. Outlook to two further workshops

### Before opportunities and threats of various scenarios can be identified



## 5. Outlook to two further workshops

... which in turn can be used as a basis for further strategic analysis



## 6. Dissemination activities

### Overview

- Organisation of a workshop: Scenario Planning Project “Yamal Oil and Gas 2040” – Workshop. Moscow, Russia, 7-8 December 2017
- News release: Istorii o budushem: kak pomoch ustoychevomu razvitiyu Arktiki/ Stories about the future: how to facilitate sustainable development in the Arctic. 17 August 2017, online-media “Plus One”

<http://plus-one.ru/blog/ecology/istorii-o-budushchem-kak-pomoch-ustoychivomu-razvitiyu-arktiki>

- Poster presentation at conference: “The 2017 International Conference on Arctic Science: Bringing Knowledge to Action”. 24-27 April 2017, Reston, USA
- Poster at conference: “Arctic Frontiers”. 24 January 2018, Tromsø, Norway





**THANK YOU!**

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