e-SAFE

DELIVERABLE REPORT

WP6 BM, Financial schemes, exploitation & technology transfer

D6.2 BUSINESS MODELS AND FINANCIAL SCHEMES: IDENTIFICATION AND DEVELOPMENT

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TYPE

- ☒ R - Report
- ☐ DEM - Demonstrator
- ☐ DEC Websites, patents filling, videos, etc.
- ☐ OTHER
- ☐ ETHICS – Ethics requirement
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EXECUTIVE SUMMARY

The purpose of the present report is to describe the business models and financial schemes that will be employed to commercialise the **e-**SAFE solutions. After setting out the context, by providing an overview of **e-**SAFE's mission and purpose, this report sets out the core **e-**SAFE actors' (namely **e-**IPR and **e-**FOUNDATION) business models, utilising the business model canvas methodology.

e-IPR will be the entity managing the relationships with **e-**SAFE's target market and business partners and receive all revenue emanating from such relationships. As a result, **e-**IPR will be the core **e-**SAFE trading company, in charge of holding and developing **e-**SAFE assets and trading profits.

e-FOUNDATION is supposed to act as the enabling, funding/financing, and advocacy vehicle of **e-**SAFE, aiming to make **e-**SAFE affordable to its target customer segments. To this end, it may pursue a one-stop-shop experience for its customers (through other one-stop shops and through its own platform) and develop an array of financial/funding tools/schemes to be matched with the various target customer segments. Further, it may play an advocacy role, engaging with stakeholders to promote deep seismic and energy renovation more generally.

This report also sets out the financial/funding schemes/tools that **e-**FOUNDATION may have in store for its potential customers, i.e., a dedicated crowdfunding platform (**e-**CROWD) incorporating a peer-to-peer lending platform, direct financing options, financial and fiscal incentives etc. Deliverable D6.3 "White Paper for policy engagement" complements this exercise by proposing flexible financial and fiscal incentives that can be used by local government authorities to encourage deep energy and seismic renovation [1]. The establishment of **e-**FOUNDATION will be considered by the **e-**SAFE consortium and/or **e-**IPR by the end of the project.

In the context of Task 6.2 "Business models and financial schemes: identification and development", this report constitutes the second out of three versions of Deliverable D6.2, in which the final business models of the two **e-**SAFE actors are presented. Version 3 of Deliverable D6.2 will include details as to logistics, operations, and governance, in terms of the **e-**SAFE actors, and their relationships with key business partners. Task 6.4 will build upon Task 6.2, to elaborate **e-**SAFE's exploitation plan for after the project's lifetime.

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GLOSSARY OF TERMS

ACRONYM	DESCRIPTION
GA	General Assembly
BMC	Business Model Canvas
CLT	Criss Laminated Timber
DSO	Distribution System Operator
DSS	Decision Support System
EBRD	European Bank for Reconstruction and Development
EIA	Energy Investment Allowance
EIB	European Investment Bank
EPC	Energy Performance Contracting
EU	European Union
GEFF	Green Economy Financing Facility
IP	Intellectual Property
JV	Joint Venture
OSS	One-Stop Shop
P2G	Peer-to-grid
P2P	Peer-to-peer
RC	Reinforced Concrete
R&D	Research and Development
USA	United States of America

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1 INTRODUCTION

1.1 Purpose

The present report emanates from the activities of Task 6.2 in WP6, which is the stage at which the **e-**NABLE group (see below), carries out the analysis of the various potential business models and financial schemes that will be employed to commercialise the **e-**SAFE solutions. The purpose of this Task is to plan how **e-**SAFE will be rolled-out in a strategic way to maximize its market potential, thus making it an affordable solution to any socio-economic context while also ensuring its business model is effective.

e-NABLE is the actor responsible for creating and updating the **e-**SAFE exploitation plan during the project lifetime. Thereafter, its activities will be subsumed by **e-**IPR and **e-**FOUNDATION (see section 2.2), which will be established by **e-**SAFE partners in the last phase of the project. The present task leads up to the creation of the **e-**SAFE exploitation plan (Task 6.4) which will consider both the commercial and non-commercial exploitation of **e-**SAFE results beyond the project's lifetime. The present report is the second step of a three-layer analysis updated twice during the project's lifetime (in M33 and M42). More specifically:

Version 1 of D6.2 (April 2022): The first version set out the scene and context as to the purpose/functions of **e-**FOUNDATION and **e-**IPR, based on acceptable methods for spin offs/spin outs of R&I projects like H2020 (i.e., business model canvas -BMC), thereby indicating the potential business models and financial schemes that **e-**SAFE may employ. Moreover, it formed the basis for a series of discussion meetings among the members of the **e-**NABLE group and the Advisory Board in the months that followed.

Version 2 of D6.2 (due M30, postponed to M33): Version 1 was revised based on what had been agreed between the **e-**NABLE group members and taking into consideration the input received through consultations during M18-M33. As a result, certain options included in Version 1 were ruled out and new ones were added, resulting to a consensus for moving forward. Consideration was also given to logistics, operational and governance matters relating to the two **e-**SAFE actors mentioned above.

Version 3 of D6.2 (due M42): This will reflect how the plan set out in Version 2 will be implemented in practice, e.g., which partnerships will be formed with other entities, and will explore relevant regulations in place to decide the extent to which each proposal in Version 2 can be implemented. As a result, Version 3 will aim to include a final plan with respect to logistics, operations, and governance.

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1.2 Overview

After setting out the context, by providing an overview of **e-**SAFE's mission and purpose, this report elaborates on **e-**IPR and **e-**FOUNDATION's business models, utilizing the BMC methodology.

The report then explores the use of the following potential financial/funding schemes/tools that may be employed by **e-**FOUNDATION: crowdfunding, peer-to-peer lending, green bonds, energy trading via smart contracts, fiscal and other financial incentives provided by governments and direct funding or financing with flexible repayment terms.

By the end of Task 6.2 (Version 3), the schemes/tools will be matched, in terms of relevance and effectiveness, with the various target market segments. Furthermore, details as to the logistics, operations and governance procedures will be set out, as relevant to the **e-**SAFE actors (including the relationship between them) and to **e-**SAFE actors' business partners.

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2 e-SAFE PROJECT

2.1 Mission & Purpose

e-SAFE's mission is the development of a market-ready decarbonising multi-purpose deep renovation system for buildings, encompassing technological, functional, aesthetic, financial and economic aspects, aiming to overcome the most significant barriers faced by deep renovation in EU today.

e-SAFE aims at combining energy and structural performances. In earthquake-prone countries more particularly, **e-**SAFE integrates energy and seismic upgrades through innovative and combined technological solutions (namely **e-**PANEL, **e-**CLT, **e-**DAMPER and **e-**EXOS), applicable to non-historic buildings (i.e., built after 1950) and easily adaptable to specific climatic conditions, seismic levels, and other boundary conditions. Hence, **e-**SAFE will contribute to the decarbonisation of the EU building stock, reducing the occurrence of natural hazards related to climate changes and, at the same time, to the improvement of the social resilience against earthquakes.

The development of the **e-**SAFE system is also accompanied by the training of a wide variety of actors of the deep renovation market, with a focus on professionals and builders, with the aim of enhancing their capacity to address complex energy and seismic design issues in a timely and costly manner.

e-SAFE's key purpose is to combine energy efficiency with seismic safety in deep renovation, to ensure the sustainability of energy retrofitting, addressing a major gap in the market. Moreover, **e-**SAFE aims to offer ongoing technological and methodological innovations through a systematic engagement of stakeholders in co-design and mutual learning, contributing to the need for extensive social acceptance of retrofitting activities and for the development of reliable innovative business models and financial tools catering for various socio-economic statuses (including vulnerable groups), to make retrofitting more financially accessible.

2.2 e-SAFE Actors

2.2.1 **e-**IPR

For the purposes of appropriate management and protection of the IPRs and know-how (and/or trade secrets) arising from Research and Development (R&D) activities, **e-**SAFE partners will establish a new entity, **e-**IPR, that will own and manage the **e-**SAFE intellectual property rights portfolio (**e-**SAFE IP Portfolio) comprising, inter alia, the trademarks of **e-**SAFE systems, any business/trade names, possible registered patents, copyrights, know-how, domain-names and any upstream and downstream protection related agreements pertaining thereto, in all target countries.

The **e-**SAFE IP Portfolio will be determined according to the business plan and the R&D mission of **e-**SAFE partners, and the economic value of each IP, through a General Assembly (GA). The GA will also define and manage, for the duration of the project, an official Intellectual Property Rights Strategy (IPRs Strategy) and/or a Management of Intellectual Property Rights Strategy (Management of IPRs Strategy). The same strategy/ies will also be used and updated by **e-**IPR after the project completion. This/ese will be included in the IPR protection plan (Deliverable D1.6). The IPRs Strategy/ies will define **e-**SAFE current and future strategic business targets and the R&D direction.

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Furthermore, **e-**IPR will be the entity managing the relationships with **e-**SAFE's target market and business partners and receive all franchise/license/royalty etc. revenue emanating from such relationships, exploiting the **e-**SAFE IPR. Section 3.1.2 elaborates on this role in more detail.

2.2.2 **e-**FOUNDATION

In accordance with the applicable legislation in its country of establishment, the expected roles of **e-**FOUNDATION are as follows:

A. Enabling role

A.1. In its role as an enabling actor, **e**-FOUNDATION can design and make available to its customers (or a certain category of these) innovative financial tool(s) to support e-SAFE implementation.

A.2. Furthermore, **e-**FOUNDATION can partner with existing OSSs in target markets, to enable market uptake, aiming to ensure there is local guidance for interested customers, with respect to the available financing options and incentives, as well as practical matters. Moreover, a digital e-SAFE OSSs could be set up to facilitate brand awareness and the customer journey.

B. Financing role

In its role as a financing actor, **e-**FOUNDATION can create a fund/cash pool by pairing the capital received by **e-**IPR with a variety of other potential financial sources, such as green bonds and subsidies. In turn, a variety of financial instruments will be used by **e-**FOUNDATION to finance/fund building owners under preferential terms.

C. Public engagement role

Lastly, **e-**FOUNDATION can play an advocacy and public engagement role whereby it will interact with and support initiatives that promote the deep seismic and energy renovation, especially of those that are most in need.

The establishment of **e-**FOUNDATION will be considered by the **e-**SAFE consortium and/or **e-**IPR by the end of the project.

Section 3.2.2 presents **e-**FOUNDATION's envisaged roles in more detail.

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3 BUSINESS MODELS

The development of the business models for **e-**IPR and **e-**FOUNDATION entails identifying the problem(s) and needs that the innovative solutions are addressing, the target customers and users of the solutions, the value proposition differentiating the solutions from the existing ones, the channels through which the value proposition will be delivered, as well as the resources, activities and partnerships that are required for the successful exploitation and commercialization of the proposed solutions.

The Business Model Canvas (BMC) is a tool that can help in conducting these activities. BMC is a strategic management tool widely used for developing new business models or documenting existing ones. It is indeed a great tool to represent linear aspects of businesses, however it may have drawbacks in capturing models where different players are involved and there are different customer journeys, depending on their needs, motivation to join, involvement in the value creation process, etc. [2]. Nevertheless, **e-**IPR and **e-**FOUNDATION's business models are designed using the BMC, at this stage, by identifying the nine building blocks involved, for simplicity and clarity.

3.1 Business model of e-IPR

This section seeks to concisely set out the preliminary idea of how **e-**IPR will work in practice, as well as the relevant considerations that need to be further deliberated upon.

3.1.1 Set-up

3.1.1.1 Purpose

e-IPR will be the entity owning and managing foreground (and any further developed) IPR to ensure a fair, sound, and sustainable commercial development of the **e-**SAFE brand. In addition, **e-**IPR will be the primary entity (supported by **e-**FOUNDATION) to design and manage the customer relationships with **e-**SAFE's target market, thereby receiving income arising from such relationships.

3.1.1.2 Ownership

It is currently envisaged that the **e-**SAFE Partners will retain the legal ownership of the foreground IPR they (co)invented but will license the exclusive right to exploit the said IPR to **e-**IPR (legal entity). Hence, **e-**IPR will have the economic ownership of the IPR. The terms of such a licence may be set out in a joint-venture (JV) agreement or another informal document to be drawn between the Partners, such that once **e-**IPR is established, the agreed-upon licence agreement is immediately put in place. Various ownership structures were considered, as follows:

Option 1: Direct ownership of e-IPR by e-SAFE Partners

Under this Option, the **e-**SAFE Partners willing to participate in **e-**IPR would directly own shares in **e-**IPR. In certain cases, as in the case of UNICT and UNIBO, participation will take place through university spin-offs (companies owned by relevant university personnel). This Option has been selected as the most preferable one, given the drawbacks of the other Options referred to below. Therefore, the main issue for consideration under this Option is how the profit, voting and capital rights would be determined and allocated among the Partners.

After discussion among the Partners, it was decided that, at least at a first stage, each Partner's ownership share would correspond to the project time allocated to each Partner, according to the Grant Agreement. A possibility for future consideration is to set up specific classes of shares that would correspond to key **e-**SAFE technology/innovation and would be owned by the Partners which directly contributed to each asset, so that they may benefit, in priority, from its exploitation.

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Option 2: Holding company owns e-IPR (and e-FOUNDATION)

Under this Option, another (third) company would hold both **e-**IPR and **e-**FOUNDATION's shares, while the **e-**SAFE Partners would hold shares in this third company (thus owning **e-**IPR indirectly). This Option could be considered once both **e-**IPR and **e-**FOUNDATION are set up and become operational. Commercial, tax and legal implications could lead to the conclusion that a holding company to own both entities (and any other branches/entities to emerge in the future) would a be desirable option.

Option 3: e-FOUNDATION owns e-IPR

Under this Option, **e-**IPR would be owned by **e-**FOUNDATION and the **e-**SAFE Partners would hold shares in **e-**FOUNDATION (thus owning **e-**IPR indirectly). This Option would address the concerns connected with Option 1, that arise in respect of **e-**FOUNDATION's ownership (see section 3.2.1.2). Having **e-**FOUNDATION own **e-**IPR (rather than the opposite), it could help to ensure that **e-**FOUNDATION's not-for-profit purpose is less easily altered, given that a for-profit shareholder may theoretically seek to limit **e-**FOUNDATION's not-for-profit activities/role.

However, if **e-**FOUNDATION will be structured as a social enterprise or a non-for-profit entity, there may be limitations as to the level of dividends it can receive and pay out to its shareholders (**e-**SAFE Partners). Therefore, for practical reasons, i.e., to allow for more flexibility and to enhance **e-**IPR's prospects to attract outside investment, this Option will not be followed, at least initially.

Option 4: Combination of Option 1 and Option 3

Under this Option, **e**-IPR would be partially owned by e-FOUNDATION and partially by the e-SAFE Partners. The percentages would be set in a way so that e-FOUNDATION receives adequate dividends to be viable and the e-SAFE Partners also receive a satisfactory return (based on projected financial figures). In case the dividend distributions are not sufficient for e-FOUNDATION, then another form of financial support could be provided by e-IPR.

However, no dividends can be paid out for as long as e-IPR does not have retained earnings (accumulated profits), which is expected to be the case for at least a few years. Hence, this Option is not to be followed, at least initially, either.

3.1.1.3 Legal Form

It is foreseen that **e-**IPR will be a limited liability company. As mentioned above, it is considered that, at some point, **e-**IPR could have a variety of share classes, each corresponding to the various IPR to be owned by **e-**IPR, such that any profit distributions to be made to the Partners will be linked, to a certain extent, to their inventions/contribution.

3.1.1.4 Incorporation

The place of **e-**IPR's incorporation will be determined by all Partners after examining various options proposed by the **e-**NABLE group.

In proposing and selecting the place of incorporation/operation, the following considerations will be taken into account:

1) Financial and fiscal incentives with respect to ip-related revenues (e.g., IP box regimes).
2) Legal framework surrounding **e-**IPR's operations.
3) Practicality/efficiency of management.

In terms of consideration (1), a detailed comparison exercise was carried out with respect to key incentives that are available in Italy and Cyprus (see APPENDIX 3: Comparison Table). It should be

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emphasised that the place of legal incorporation does not coincide with the place of tax residency and therefore the available tax/financial incentives. Moreover, the legal seat (place of incorporation) as well as the tax-residency can be changed at a later stage if deemed necessary for any reason.

3.1.2 Business Model Canvas

3.1.2.1 Customer segments

The key target segments can be categorized in the following groups:

A. Contractors/engineers

These are the building professionals that are directly involved in energy efficiency/seismic safety retrofitting and are expected to be the main customers of **e-**IPR and **e-**SAFE more generally. They will be contracting directly with **e-**IPR, through one of the potential means set out in section 3.1.2.4 below. As a result, and depending on the contractual relationship, they will be paying franchise/license/royalty/training fees to **e-**IPR for the use of **e-**SAFE IPR.

B. Architects/designers

These building professionals are also directly involved in energy efficiency/seismic safety retrofitting but are not expected to be key customers of **e-**SAFE. It is expected that revenues in relation to this customer group will be derived predominantly from training and potentially licensing of **e-**SAFE methodology (to the extent this covers architectural/design issues).

C. Real estate agents/developers

This group comprises of real estate intermediaries which are not directly involved in the details of energy efficient/seismic safety retrofitting. However, as apparent from the indicative results of the market survey undertaken under Task 6.1, this group considered that their customers are generally interested in anti-seismic and energy efficient properties while they, themselves, are also generally very interested in developing/promoting anti-seismic and energy-efficient properties in the future. Therefore, the formation of business partnerships with this group is expected to have potential.

D. Consultants/ESCOs

This group refers to energy-efficiency consultancies which may refer end-customers to various energy renovation solutions, such as **e-**SAFE. As a result, business partnerships (predominantly in the form of franchising/licensing) with this group also appear promising.

The above segments should be combined with building typology (e.g., public buildings, block of flats) and geographical parameters (i.e., specific location to reflect seismic activity, presence of incentives, etc.), to form complete potential/actual target markets, as per the market segmentation strategy set out in D6.1.

In Version 1 of D6.2, building owners were a potential target segment. However, it was subsequently decided by the **e-**NABLE group that at least the initial model to be followed by **e-**IPR will be Business-to-Business (B2B) and hence this segment is excluded from further consideration.

3.1.2.2 Value propositions

e-IPR's value propositions can be expressed in two different ways:

A. The value offered to the end-consumer (i.e., the building owner)

In this respect, **e-**IPR's value proposition is reflected in the **e-**SAFE brand's value propositions, given that e-IPR will be the key **e-**SAFE trading entity. **e-**SAFE is essentially, an affordable seismic and

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energy retrofitting method causing low disturbance to building occupants. Its constituent components/technical solutions are the following:

- **e-**PANEL consists in adding to the outer walls customizable, prefabricated, multifunctional panels with low environmental impact, made of a timber structure combined with local insulating biomaterials and the desired finishing.
- **e-**CLT consists in adding to the outer walls cross-laminated timber (CLT) panels, connected to the existing reinforced concrete (RC) frame via seismic energy dissipation devices (dampers).
- **e-**EXOS consists in strengthening the existing RC-framed structure with a metal exoskeleton, made of bi-dimensional bracings equipped with seismic dampers and connected to the existing RC frame.
- **e-**THERM consists of centralized thermal systems with high-efficiency and low-GWP heat pumps fed by PV modules, where storage tanks and suitable control logic will help maximising the PV self-consumption rate.
- **e-**TANK consists in innovative thin and easily integrable decentralized hot water tanks that include a plug-and-play hydraulic unit.
- **e-**BEMS: to ensure an effective monitoring and management of the technical systems, a specific open-source Building Energy Management System, namely **e-**BEMS, is being developed. **e-**BEMS will measure indoor temperature, CO2 concentration, indoor humidity and electricity consumption in real-time to collect information about performance of the **e-**SAFE system.
- **e-**DSS is a Decision Support System that will assist technicians (e.g., architects, designers, contractors, engineers, energy consultancies) during the co-design stage of a renovation project, providing information about efficiency, costs, and suitability of the different **e-**SAFE solutions.
- **e-**DAMPER is a seismic dissipation device which has been conceived to dissipate seismic energy by friction, thus reducing the amplitude of the oscillation of the structure caused by an earthquake.
- **e-**TRAINING consists of accredited training packages (**e-**TRAINING) whose goal is engaging design professionals (building contractors, architects, engineers, structural and energy consultants) and the building industry (developers, construction companies, manufacturers of building components), with the purpose of enhancing their competencies on deep renovation.

Generally, the **e-**SAFE apparatus of solutions mentioned above is potentially relevant to all customer segments mentioned in section 3.1.2.1 above, to the extent these are involved in the exploitation process. The **e-**EXOS solution is mostly relevant to customers present in seismic countries though.

e-IPR will be offering a set of accessible, effective, flexible, and aesthetically attractive retrofitting solutions (mentioned above). Compared to the various competitors in the market, **e-**SAFE, offered through **e-**IPR, may be unique in how well-rounded a solution it is, in catering for all or most of its customers' retrofitting needs.

In summary, the following points are **e-**IPR's key features and strengths, which add value to the service offering towards the customer segments identified above:

- Integrated seismic and energy retrofitting package system
- Co-design process and stakeholder engagement offering customised solutions
- Modular solutions, flexibility
- Prefabricated solutions, low disruption to occupants
- Innovative elements (including software tools)
- Cost and risk reduction leading to accessibility

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B. The value offered to customers (building professionals)

The following can be considered as key components of **e-**IPR's value proposition in terms of its target customers:

- **e-**IPR will be the only entity having the complete know-how of how the **e-**SAFE methodology can be implemented effectively. Therefore, **e-**IPR will be the only provider of quality and in-depth training on **e-**SAFE implementation.
- **e-**IPR will offer ongoing support and guidance to customers, following a tailored-made approach.
- According to its strategy, **e-**IPR will be open to a variety of customer relationships (e.g., franchise/licence model, joint venture etc.) which would create a win-win situation for customers.
- **e-**IPR may license patented technologies (e.g., **e-**DAMPER).
- Through the **e-**SAFE digital OSS, it will help connect potential end-users to its customers, thus facilitating its customers' business development.

3.1.2.3 Channels

Considering that channels are the avenues through which customers encounter **e-**SAFE and become part of the sales cycle, it is anticipated that **e-**IPR will be reached by potential customers and offering services through:

- Existing OSSs to partner with **e-**FOUNDATION and e-SAFE's own digital OSS, through which the **e-**SAFE system will be marketed and presented.
- The **e-**SAFE platform where training material and delivery will be made available.
- Physical/virtual training workshops where **e-**SAFE solutions will be presented and analysed.
- Influencers may also play a key role in connecting **e-**SAFE with potential customers [3].
- Offline advertising through exhibitions or fairs.
- Other existing platforms, affiliates (e.g., business partners), associations of professionals, energy agencies, targeted blogs for professionals.

3.1.2.4 Customer relationships

It is contemplated that a business model co-creation approach should be adopted by **e-**IPR, where value and the value chain are co-created with customers, tailoring the offering and the relationship to their needs and circumstances. This approach has been suggested by a recent thorough review of various business models in the context of sustainable building renovation [4].

To this end, **e-**IPR should have an array of options developed, analysed and ready, to choose from. These options could be ranked by preference, depending on each customer segment/context. The ranking exercise would be a result of careful research on a target market location level and experience gained through operations. At the end though, **e-**IPR should be open to customer's suggestions even if these are outside the boundaries of the considered options and be flexible in the negotiation process with each customer.

Options:

A. Licensing: Through a licensing agreement, the licensor (property owner) gives permission to another party (licensee) to use their brand, patent, or trademark. The agreement contains details on the type of licensing agreement, the terms of usage, and the compensation to the licensor. Contract types vary based on what is being licensed. Licensing agreements also alleviate any disputes related to sales, issues of quality, and royalties [5]. This option could be offered to any of the customer segments to the extent they would use the **e-**SAFE methodology, IPR & brand to carry out a project.

B. Franchising: A franchise is a type of license that grants a franchisee access to a franchisor's proprietary business knowledge, processes, and trademarks, allowing the franchisee to sell a

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product or service under the franchisor's business name. In exchange for acquiring a franchise, the franchisee usually pays the franchisor an initial start-up fee and annual licensing fees [6]. ESCOs or construction companies could obtain an **e-**SAFE franchise such that they would only/mainly implement **e-**SAFE methodology in their operations. This option is expected to be the most widely used relationship to be entered into by **e-**IPR.

C. **Partnership:** A partnership is an official arrangement by two or more parties to manage and operate a business and share its profits [7]. **e-**IPR could partner with a main contractor [8] with exposure to risks and profits/losses being proportionate to each party's partnership interest (to be negotiated in each case).

D. **Joint venture:** A joint venture (JV) is a business arrangement in which two or more parties agree to combine their resources and join forces to accomplish a specific task, which can be a new project or any other business activity [9], **e-**IPR could partner with a main contractor [10], co-sharing risks and profits/losses (50-50).

E. **Consulting/training:** **e-**SAFE specialists provide training and consulting services to all customer segments, according to their type of involvement in **e-**SAFE project implementation.

   This type of relationship could be standalone or embedded in any of the above relationships (e.g., within a franchise arrangement). More specifically, high-level trainings may be made available to potentially interested customers at a low cost (as teasers) while in-depth training/supervision/consulting would be offered when an entity enters into a long-term business relationship with e-IPR (e.g., under a franchise/license arrangement).

Details concerning the above options (e.g., timing, pricing) may be considered in Version 3 of D6.2 and in Version 1 and/or Version 2 of D6.4, after deliberations within the **e-**NABLE group.

Subcontracting was examined in Version 1 of D6.2. Subcontracting is the practice of assigning, or outsourcing, part of the obligations and tasks under a contract to another party known as a subcontractor [11]. Under this option, **e-**IPR would be the main contracting party with the end-customer and would thus sub-contract the implementation of the project to all building professionals required. As a result, **e-**IPR would be the only one to enjoy profits and bear potential losses/risks/liability exposure on contracts with customers. However, since it was decided that **e-**IPR will follow a B2B model, at least at the outset, this relationship type is no longer relevant for further examination.

3.1.2.5 Key activities

The key **e-**IPR activities will be the following:

- Exploit **e-**SAFE IPR by developing and managing customer relationships according to the exploitation strategy.
- Maintenance of an IPR protection plan. The foundations of this plan will be laid by T1.6.
- Maintain and protect all **e-**SAFE IPR.
- Perform continuous market research to keep the market segmentation and market strategies evolving and updating the exploitation strategy. This should be done by taking lessons learned from previous activities, tracking new opportunities, exploring, and working on weaknesses and strengths (as per D6.1).
- Perform R&D to enhance the foreground IPR and/or produce new related IPR.

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3.1.2.6 Key partnerships

Key partnerships will include:

- **e-**FOUNDATION which can act as a channel for **e-**IPR and can be financed by **e-**IPR through a variety of potential options, e.g., loans, non-refundable contributions, equity capital, convertible loans.
- Continuous collaboration with the Technical Partners for IP development/maintenance.
- Working closely with IP Lawyers specializing in each target market's legal framework, to maintain and/or enhance IP protection.
- Wider ecosystem actors, acting as awareness channels, such as local authorities, energy agencies, non-governmental organisations (NGOs) acting within this sphere etc.
- Key institutions managing public/commercial buildings (e.g., IACP)

3.1.2.7 Key resources

e-IPR's key resources will consist of:

- Intellectual property, such as the foreground IPR developed in the context of **e-**SAFE project.
- Human resources such as the trainers/consultants who will be involved in the delivery of the trainings/seminars and other advisory sessions, as well other experts (e.g., legal advisers, market analysts, marketing experts), project managers, and support staff.
- Financial resources to cover the cost of collaborators/subcontractors for example legal / financial advisors (if outsourced).

3.1.2.8 Cost structure

The cost structure of **e-**IPR is value-driven, as it is focused more on the value created for the customers rather than minimising the costs of developing its innovative solutions. Key costs to be incurred by **e-**IPR may include:

- **Payroll/ Salaries**
- **Operating Expenses (OPEX):** subcontracting costs, subscriptions/licenses to technical databases, legal fees (e.g., IPR consulting and protection, negotiation and contracting with customers, etc.)
- **Administration Expenses** (e.g., professional fees)
- Marketing Expenses
- **Capital Expenditures (CAPEX):** R&D costs for IP development, payroll cost incurred for the development of the solutions, etc.
- **Loans/capital injections** to **e-**FOUNDATION

3.1.2.9 Revenue streams

Each of the following revenue streams relates to one of the customer relationship types listed in section 3.1.2.4 above and corresponds to the value propositions mentioned in section 3.1.2.2 above. In some cases, revenue streams can be linked with specific customer segments (section 3.1.2.1) but in other cases this is not feasible, at least at the current stage.

A. Licensing income: applied on the right to use the **e-**SAFE methodology and assets (e.g., set-up fee, fixed fee per year). It is envisaged that this revenue stream could relate to all customer segments (depending on the licensed product/solution).

B. Royalty (or equivalent) income: applied on the sale of **e-**SAFE components and the **e-**SAFE methodology (usage-based) by customers to end-users. For example, each time an **e-**CLT or **e-**DAMPER is produced and sold, a fixed royalty (or equivalent) fee would apply. Additionally, a fixed fee could apply based on the value of the contract to be entered into by **e-**SAFE customers,

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implementing **e-**SAFE methodology. We expect this revenue stream to mostly relate to contractors and engineers.

C. **Franchise income:** received from any entities carrying the **e-**SAFE franchise. This would generally apply to consultancies/ESCOs seeking to offer the **e-**SAFE solutions to clients. As a result, this revenue stream is not directly connected with any of the **e-**SAFE solutions but rather with the right to become an **e-**SAFE partner.

D. **Partnership income:** received in the context of any partnership formed with a building professional/intermediary/consultancy. This stream would comprise of profits arising from an **e-**SAFE renovation project where **e-**IPR would cooperate with another project partner to share risks and opportunities based on agreed-upon proportions.

E. **Joint venture income:** received in the context of any joint venture formed with a building professional/intermediary/consultancy. As above, this stream would consist of profits arising from an **e-**SAFE renovation project where **e-**IPR would cooperate with another project partner to share risks and opportunities equally.

F. **Consulting/training fees:** received for any consulting/training services offered to any of the customer segments mentioned in section 3.1.2.1

Further details regarding each potential revenue stream (e.g., percentages, pricing, terms etc.) will be explored in Version 3 of D6.2 and in Version 1 and/or Version 2 of D6.4, after deliberation within the **e-**NABLE group.

3.2 Business model of e-FOUNDATION

This section seeks to concisely set out the business model of **e-**FOUNDATION, as well as any considerations that need to be further deliberated upon.

It should be noted that **e**-FOUNDATION's core activities may be taken up by **e**-IPR up until the time **e**-FOUNDATION will be incorporated or if it will not be incorporated.

3.2.1 Set-up

3.2.1.1 Purpose

e-FOUNDATION will be a (predominantly) non-profit entity with three key roles:

A. Enabling

A.1. In its role as an enabling actor, **e**-FOUNDATION can design and make available to its customers (or a certain category of these) innovative financial tool(s). More details on this can be found in sections 4.1 & 4.2.

A.2. Furthermore, **e-**FOUNDATION can partner with existing OSSs in target markets, to enable market uptake, by ensuring there is local guidance for interested customers, with respect to the available financing options and incentives, as well as with respect to practical implementation. A digital **e-**SAFE OSS may also be created to guide potential customers/end-users through the **e-**SAFE customer journey, provide contact details of relevant actors (e.g., **e-**SAFE franchisees, local OSSs) and information on the **e-**SAFE value proposition.

B. Financing

In its role as a financing actor, **e-**FOUNDATION can create a fund/cash pool by pairing the capital (arising from profits) received by **e-**IPR with a variety of other potential financial sources, such as

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green bonds and subsidies. In turn, a variety of financial instruments will be used by **e-**FOUNDATION to finance/fund building owners under preferential terms, according to any applicable regulations.

With respect to the roles A.1 and B above, the key mission of **e-**FOUNDATION would be to ensure that a financing option or a financial/fiscal incentive is available for each key potential **e-**SAFE end-user. In this respect, **e-**FOUNDATION will match the potential financial schemes it may employ with each customer segment, according to their socioeconomic context (see Section 4).

C. Public engagement

Lastly, it is envisaged that **e-**FOUNDATION can play an advocacy and public engagement role whereby it will interact with and support initiatives that promote deep seismic and energy renovation, especially of those that are mostly in need. In this respect, a portion from **e-**IPR and/or **e-**FOUNDATION's profits can be diverted towards such non-profit services and initiatives. Examples of such projects/initiatives may include research/pilot projects, advocacy of a particular incentive, or a community engagement/education project around the need for renovation. Details will be defined in the entity's articles of association/bylaws upon establishment.

In a survey conducted among the **e-**SAFE Partners, it transpired that the below functions are the key functions that **e-**FOUNDATION is expected to undertake:

- Research into financial tools and incentives (voted upon by the overwhelming majority)
- Fundraising
- Provision of donations/grants to end-users
- Facilitation of third-party financing
- Coordination with OSSs

As a result, **e-**FOUNDATION should be a research-intensive institution, aiming to design new incentives that could be advocated for which would also help fulfil its mission of ensuring there is a financial/fiscal tool available for every socio-economic class.

3.2.1.2 Ownership

e-FOUNDATION will be (directly/indirectly) owned collectively by **e-**SAFE Partners.

Three main options are analysed below:

Option 1: e-FOUNDATION is owned by e-IPR

Under this Option, **e-**IPR will be the 100% shareholder of **e-**FOUNDATION, while the **e-**SAFE Partners will be the shareholders of **e-**IPR (each with their own shareholding percentage). Decision making is expected to be more straightforward and thus faster under this Option, than under Options 2 and 3. This is because **e-**FOUNDATION's shareholder will be a single entity (vs under the other Options).

However, **e-**SAFE Partners' control over **e-**FOUNDATION's strategy will only be indirect since they will only indirectly own **e-**FOUNDATION through **e-**IPR. When shareholder decisions need to be taken, **e-**IPR's board of directors will have the decision-making power and its position may or may not be fully aligned with the **e-**SAFE Partners' position. This implies that there is a risk that **e-**FOUNDATION's non-profit roles may be diluted by its for-profit parent. Nonetheless, the **e-**SAFE Partners can dismiss and replace **e-**IPR's board of directors so indirect influence may be exercised.

Another consideration is that **e-**IPR will be able to make capital injections into **e-**FOUNDATION with no further implications (as opposed to the other Options).

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Option 2: e-FOUNDATION is owned by the e-SAFE Partners

Under this Option, **e-**SAFE Partners will own **e-**FOUNDATION in the same manner as they would own **e-**IPR. As mentioned in section 3.1.1.2, UNICT and UNIBO are expected to participate through a spin-off company. Decision making is expected to be potentially slower and more complicated than under Option 1 since more shareholders will participate in decisions requiring shareholder involvement. However, this Option will allow **e-**SAFE Partners to maintain direct control over **e-**FOUNDATION's strategic decisions (as opposed to under Option 1).

Any capital injections to be made by **e-**IPR though would turn the shareholding structure to that set out under Option 3. The option of non-refundable contributions (not equity) could be explored, however.

Option 3: Combination of Option 1 and Option 2

Under this Option, both **e-**IPR and all **e-**SAFE Partners to participate in **e-**FOUNDATION would own interests in **e-**FOUNDATION. Hence, decision making is expected to be the most complex and slowest under this Option. Up until the point **e-**IPR owns a minority interest (i.e., less than 50%), **e-**SAFE Partners will be able to maintain direct influence/control over **e-**FOUNDATION's strategic decisions. If **e-**IPR keeps on contributing capital to **e-**IPR however, it may become the majority shareholder, whereby the scenario would be more akin to that set out under Option 1. In all three cases, the tax and legal consequences could have a bearing on the final structure.

3.2.1.3 Legal Form

e-FOUNDATION can be originally incorporated as a limited liability company but there are three options considered regarding its eventual classification:

A. Non-for-profit organisation

Not-for-profit organizations use their surplus revenue to help pursue the organization's objectives and purpose. This type of organizations does not aim at earning money for their owners and their income is not distributed to the group's members, directors, or officers [10].

B. Foundation

Private foundations are considered non-for-profit entities in some countries (e.g. Italy) while in others they are established under a separate legal framework (e.g. Cyprus). While the definition of a foundation differs from country to country, typically they involve the management of funds and assets dedicated to a specific purpose. They are usually created and maintained through funds received from an individual, a family, or a business [12].

C. Social enterprise

As defined by the European Commission, a social enterprise is an operator in the social economy aiming at having a social impact rather than make a profit for its owners or shareholders [11]. The profits of a social enterprise are mainly reinvested to achieve its social objective. Nevertheless, a social enterprise should be financially sustainable and achieve its long-term viability as an independent entity.

To decide which form **e-**FOUNDATION may eventually take, the following aspects will be taken under consideration:

- Availability of grants/subsidies/other financial incentives
- Availability of fiscal incentives
- Ability to produce profits to be fully/predominantly reinvested
- Restrictions as to the ability to undertake financing or financing-related activities

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A high-level comparison exercise was undertaken to compare the consequences of setting up a non-profit organisation versus a foundation, versus a social enterprise, in terms of the above aspects. See APPENDIX 3: Comparison Table for more details on the above. No final decision has been arrived at, to date. Further deliberations may take place at a later stage by **e-**NABLE.

3.2.1.4 Incorporation

The location of **e-**FOUNDATION's incorporation and operation will be determined by all Partners after examining various options proposed by the **e-**NABLE group. In proposing and selecting the place of incorporation/operation, consideration will be given to:

- Financial and fiscal incentives available
- Regulatory framework surrounding **e-**FOUNDATION's operations
- Practicality/efficiency of management

A comparison exercise was undertaken to compare the consequences of setting up **e-**FOUNDATION in Italy versus Cyprus, in terms of mainly the first aspect (financial and fiscal incentives).

As mentioned already above, APPENDIX 3: Comparison Table is available for more details. It is noted that the place of legal incorporation does not coincide with the place of tax residency and therefore the available tax/financial incentives. Moreover, the legal seat (place of incorporation) as well as the tax-residency can be changed at a later stage if deemed necessary for any reason.

3.2.2 Business Model Canvas

3.2.2.1 Customer segments

The main target segments can be categorized in the following groups:

A. Low-income/energy poor individuals

This customer segment entails individuals that are energy-poor at the time they seek to proceed with **e-**SAFE renovation or are foreseen to be so during the renovation works.

According to the Commission Recommendations (EU) 2020/1563 on energy poverty, energy poverty is a 'situation in which households are unable to access essential energy services', which include heat, cooling lighting and energy-powered appliances. Energy poverty in Europe is now widely understood as stemming from and an intersection between (i) low income; (ii) high energy expenditures; (iii) energy inefficient buildings. As a result, the EU is seeking to address it through ambitious and integrated measures, bridging the gap between energy, climate, and social policies. Energy poverty has been further identified as a key challenge to achieving the just transition to a climate-neutral Union in both the EU Green Deal and the Recovery and Resilience Plan (RRP). The Renovation Wave acts as a central tool to target the social, environmental, and economic challenges of energy poverty through accelerating the renovation of private and public buildings, reducing materials-related greenhouse gas emissions, and improving energy efficiency of buildings enabling a reduction of energy bills.

Furthermore, this segment includes both owners of private condominiums (including building managers) and tenants seeking to organize with other tenants in order for the landlords to proceed with renovation or tenants' associations.

Fuel or energy poverty can be illustrated in three situations [13]:

1) Residents are not able to keep their homes warm sufficiently
2) Dwellings with bad or dangerous construction issues such as leaking roof, rot windows and damp walls/ ceilings
3) Inability to pay utility bills

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According to BPIE's Energy Poverty Handbook, "energy poverty is a growing phenomenon everywhere in the EU since 2008. It is caused by an alarming mix of poorly insulated homes, rise in energy prices paid by the final consumers, and the stagnation of disposable income due to the general economic situation" **Error! Reference source not found.**.

B. Middle-class individuals

These are individuals that are above the energy-poor threshold, either at the time they seek to proceed with **e-**SAFE renovation or during the renovation works but are nonetheless not willing to proceed with conventional financing.

As above, this segment includes both owners of private condominiums (including building managers) and tenants seeking to organize with other tenants for the landlords to proceed with renovation or tenants' associations.

C. Private bodies

This category may include any private institutions, which are generally profit-making. For instance, these would include private social housing corporations, real estate (e.g., block of flats) owners, commercial building owners, private schools etc.

D. Public/non-for-profit bodies

This segment refers to non-for-profit institutions, whether these are governmental, semi-governmental or civil society organisations.

For example, these could be public school owners, public building owners, public housing providers etc.

3.2.2.2 Value propositions

The key **e-**FOUNDATION value propositions essentially constitute the following:

- Provision of OSS experience where procedural, financial, engagement, and organising support will be provided, free**-**of-charge to potential **e-**SAFE customers. Therefore, the model of the **e-**SAFE digital OSS could be focused on facilitation, offering services such as [15]:
  → Raising awareness on energy retrofit benefits, especially with the **e-**SAFE methodology
  → Promotion of related services offered by local authorities, suppliers, and other stakeholders
  → Promotion of the services offered by physical OSS partnering with **e-**FOUNDATION
  → Recommendations on relevant energy saving measures, technologies, and materials
  → Provision of a list of authorised **e-**SAFE representatives/licensees & contact details
  → Offering of general advice on available financing options

  This value proposition corresponds to all customer segments mentioned above as the need for a practical and convenient retrofitting planning process is held by all potential customer segments.

- Affordability of the **e-**SAFE renovation package through the provision of a variety of financial schemes/tools, catering for a variety of socio-economic contexts. Again, this value proposition corresponds to all customer segments mentioned above but particularly to segment A for which obtaining of financing is the hardest.

3.2.2.3 Channels

Considering that channels are the avenues through which customers encounter **e-**SAFE financing tools and become part of the sales cycle, it is anticipated that **e-**FOUNDATION may be reached by potential customers and offering services through:

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- OSSs through which **e-**FOUNDATION will be interacting with potential customers and offering its services (see more details in section 3.2.2.4. below).
- The **e-**SAFE digital OSS where the **e-**FOUNDATION will be marketed and presented.
- Physical workshops where **e-**SAFE financing tools may be presented.
- Influencers may also play a key role in connecting **e-**SAFE with potential customers, through the **e-**FOUNDATION [2].
- Offline advertising through exhibitions or fairs.

3.2.2.4 Customer relationships

As to its enabling/financing role, **e**-FOUNDATION can predominantly have an indirect relationship with its customers (being end-users of the **e-**SAFE solution). This can be established through:

- The existing OSSs with which **e-**FOUNDATION will partner with, whereby the relationship cultivated by these OSSs will determine the indirect relationship that **e-**FOUNDATION can have with the customers served by these OSSs.
- The digital **e-**SAFE OSS through which **e-**FOUNDATION will describe the available financial schemes/tools for proceeding with **e-**SAFE implementation as well as allow for negotiation as to the provision of any direct financing/funding.

In its advocacy/public engagement role, **e-**FOUNDATION may pursue the following types of customer relationships:

- Reach out to vulnerable communities (e.g., through existing programs, NGOs, energy agencies, public bodies) to invite them to visit the collaborating OSSs and explore available options to help them proceed with **e-**SAFE renovation.
- Engage in public engagement activities to help educate the public about the pressing need of energy and seismic retrofitting.
- Advocate for public intervention where common utility issues interfere with **e-**SAFE implementation.
- Help organise tenants to request from their landlords to proceed with renovation.

3.2.2.5 Key activities

e-FOUNDATION's key activities can consist of:

- Provision of financing/funding tools and schemes (see sections 4.1 & 4.2).
- Partnership with existing OSSs (e.g., forming relationships, setting out the method of collaboration, monitoring the collaboration etc.) and running the digital **e-**SAFE OSS (see sections 3.2.2.8 and 3.2.2.2 respectively).
- R&D activities with respect to financial/fiscal incentives (see section 3.2.1.1). Supporting this activity is Task 6.3 which entails the design of a White Paper, including innovative adaptable fiscal and financial incentives, to be used by **e-**NABLE and **e-**FOUNDATION for their advocacy activities.
- Negotiation with potential customers as to the possibility of providing financing/funding.
- Advocacy and policy engagement (see section 3.2.1.1).

3.2.2.6 Key resources

The resources which are necessary for the successful operation of the **e-**FOUNDATION consist of:

- Digital **e-**SAFE OSS (the organisational and operational structure of which will be further considered at Version of 3 of D6.2).
- Internal staff costs (e.g., support staff, project managers, financial advisors, researchers).
- External legal advisors for the negotiation and conclusion of financing agreements.

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- Capital provided by **e-**IPR through equity or loan financing.
- External funds provided by national and supranational bodies/schemes. Potential schemes could be the EEA & Norway Grants and the Life Operating Grants (the call will open in 2024).
- Volunteers (to help with policy/public engagement activities).

3.2.2.7 Revenue streams

e-FOUNDATION's main revenue streams are envisaged to consist of the following:

- Interest income accrued on direct financing activities. As direct financing may be provided only where no other options exist, it is envisaged that this source of income will be mainly derived from customer segment A which is the segment least likely to have other financing options available to them.
- Facilitation income earned on arranging for third-party financing, through financial tools. This may be derived from any of the customer segments identified in section 3.2.2.1.

Details regarding the above revenue streams will be explored in the context of Version 3 of D6.2 and/or D6.4.

It is considered that certain **e-**FOUNDATION's activities will not generate revenue, for example:

- Financial support to low-income/energy poor individuals.
- Advocacy/public engagement activities.

3.2.2.8 Key partnerships

Key partnerships will include:

- Financing relationship with **e-**IPR, which will provide capital for **e-**FOUNDATION's operations. It is envisaged that part of this capital will be non-refundable, e.g., equity capital or non-refundable contributions.
- National energy agencies/bodies/other stakeholders.
- Organisations representing the OSSs to partner with **e-**FOUNDATION, whether these are governmental, semi-governmental, civil, or private organisations.
  Focusing on the seismic Mediterranean countries, a few OSS were identified in Italy, Romania and Spain with which **e-**FOUNDATION could potentially collaborate (see table below). No directly relevant OSS were identified in Cyprus and Greece.

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Table 1: Active OSS Examples

OSS NAME	COUNTRY	DESCRIPTION
PadovaFIT Expanded Project Padova OSS		"PadovaFIT Expanded" aims at creating and piloting a OSS dedicated to home renovation services in the city of Padova (Italy) and to expand the process to the city of Timişoara (Romania) and to the cities of Smolyan and Vidin in Bulgaria. The Padova OSS offers information and technical consultancy service on how to reduce energy consumption in homes, which technologies to choose for energy efficiency solutions and how to benefit from existing finance options.
PadovaFIT Expanded Project Timisoara OSS		In Timisora, the OSS is part of the Citizens Information and Counseling Service of Municipality and offers information to the citizens on the existing legislation on energy efficiency and rehabilitation of buildings, financial and fiscal incentives and funding opportunities.
Opengela		Opengela is a project driven by the Basque Government which looks to improve the quality of life in cities through urban regeneration. It consists of the creation of neighbourhood offices which, as a kind of OSS, will provide advice and support to the community through the whole process of renovation of their apartment buildings.

3.2.2.9 Cost structure

Key costs to be incurred by **e-**FOUNDATION can include:

- **Payroll/ Salaries:** covering the staff expenses necessary for the operations.
- **Operating Expenses (OPEX):** subcontracting costs, platforms maintenance, legal fees (e.g., consulting, contracting with customers, etc.
- **Administration Expenses** (e.g., professional fees).
- **Capital Expenditures (CAPEX):** payroll cost incurred for the development of the **e-**SAFE digital platform and **e-**CROWD platform.
- **Interest payable** on any loans received from **e-**IPR.
- **Loans/funding** provided to customers.

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4 FINANCIAL SCHEMES

The present section explores certain financial schemes or tools that **e-**FOUNDATION may offer or present to potential customers.

4.1 Crowdfunding

4.1.1 Definition

Crowdfunding is a way of raising money to finance projects or businesses by collecting money from many people via crowdfunding platforms which are expected to provide a secure and easy service.

The key types of crowdfunding relevant to **e-**FOUNDATION's potential customers are:

- Donation-based crowdfunding, involving the provision of financial support without the expectation of a financial or material return. Individuals offer small amounts to meet a larger funding target which typically relates to a charitable purpose [4].
- Rewards-based crowdfunding involving the provision of financial support in return for a (non-financial) material reward, prize or gift, at a later stage of their contribution [4].
- Generation-based crowdfunding, a type of rewards-based crowdfunding in which the return consists in the supply of electricity or a discount on electricity rates.
- Profit-sharing/revenue-sharing, involving financial support for sharing future profits or revenues with the crowd later [4].
- Peer-to-peer lending which is explored in a Section 4.2 below.

4.1.2 Relevant market segment(s)

Citizen financing (another term for crowdfunding) is generally mostly applicable for owners of rented and owned residential buildings rather than public or corporate buildings [16]. Hence, crowdfunding is expected to meet the needs of customer segments A (low-income/energy poor individuals) and B (middle**-**class individuals).

It is expected that donation-based crowdfunding would be more suitable to customer segment A (low-income/energy poor individuals) which may be considered a vulnerable group, since this type of crowdfunding is mostly applicable to charitable purposes.

Rewards-based crowdfunding could be more appropriate to customer segment B (middle-class individuals) since this segment is not considered a vulnerable group and hence supporting this segment would generally coincide with an expectation of return.

It may be envisaged that customer segments C and D (owners of corporate or public buildings) could benefit from profit-sharing/revenue-sharing crowdfunding insofar as the owners are engaged in commercialising renovated properties (e.g., through deriving rental income). In addition, they could be engaged in generation-based crowdfunding insofar as they expect to derive material energy savings from retrofitting (applicable to energy-intensive/major building complexes) that they could share with the funding crowd.

4.1.3 Existing crowdfunding platforms

Examples of existing crowdfunding platforms are the following:

Abundance investments is a UK-based online platform allowing investors the opportunity to invest in green and social projects that contribute towards a clean, sustainable infrastructure. This platform is accessible to virtually everyone with investments starting from as little as 5 GPB [17].

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Econeers is a crowdfunding platform running in Germany since 2013. It offers the opportunity to invest funds in pr**e-**selected projects starting from 250 EURO with attractive return options. This gives investors the opportunity to invest in projects undertaking renewable energy efficiency and sustainable energy production while receiving returns from the profits of sustainable projects [18].

CitizenEnergy has been used EU-wide since 2014 and is funded by the Intelligent Energy Europe Programme of the European Union. It is based in Portugal and has funded projects in Portugal, Italy, Spain, Greece, Belgium, and France, among others. It works as a portal that brings individuals interested in the energy transition in contact with energy efficiency projects looking for funders. This allows funders to acquire equity, issue a loan, or purchase a bond (as well as some projects with traditional crowdfunding 'rewards' for more charitable endeavours) specifically for sustainable energy projects across Europe [19].

4.1.4 **e-**CROWD

It is foreseen that **e-**SAFE renovation projects could be funded both through existing platforms focusing on environmental sustainability (as above), and a new dedicated platform called **e-**CROWD.

e-CROWD would specifically host projects that implement the **e-**SAFE methodology. As potential projects would be subject to broad due diligence for their potential to implement **e-**SAFE, what will be a tried and-tested methodology, potential investors are expected to be more comfortable in proceeding with investment through such a dedicated platform. In addition, **e-**SAFE projects would conserve their branding by being hosted on an **e-**SAFE branded platform, increasing their market appeal and sense of **e-**SAFE community.

The platform may allow for various types of crowdfunding mentioned above (section 4.1.1) through private or institutional investors who would finance the implementation of the **e-**SAFE system in specific projects. Investors making a donation-based contribution would have a lower minimum contribution threshold than those making a rewards/generation-based contribution or have a revenue/profit-sharing arrangement.

It is envisaged that **e-**CROWD could host rewards-based crowdfunding whereby carbon offsets would be provided as a reward for raising of funds. Such carbon offsets would arise from implementation of the **e-**SAFE methodology and would need to be certified by a relevant certifying body. Whether implementation of the **e-**SAFE methodology can validly give rise to tradeable carbon offsets is currently under examination with the Technical Partners and relevant organisations.

As regards the potential of hosting generation-based crowdfunding, the platform could agree with energy suppliers on a discount to the investor's electricity bill, paid for either via a monetary payment or in exchange for excess energy produced by the various building-owners through the application of the **e-**SAFE methodology.

Further details about the scope and logistics of the **e-**CROWD platform will be explored in Version 3 of D6.2 and/or D6.4. Considerations to be made include the following:

- Set-up costs of a new platform
- Potential to use a white label platform
- Potential to partner with an existing platform
- Regulatory framework of crowdfunding platforms in specific locations
- Marketing plan
- Follow-up work after project funding
- Due diligence processes [20]

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In terms of the potential to partner with an existing platform, Crowdbase Ltd expressed their willingness to partner with the **e-**SAFE Consortium and accommodate **e-**CROWD on their crowdfunding platform as a separate section. However, **e-**CROWD currently only offers regulated activities, i.e.:

- Equity or investment-based crowdfunding
- Debt or lending-based crowdfunding (the equivalent of peer-to-peer lending)

e-CROWD does not offer rewards-based or donation-based crowdfunding services currently, as these are not regulated activities.

The ideal structure of organising **e-**SAFE crowdfunding as a financial tool was explored together with Crowdbase Ltd, in various meetings. It was agreed that if **e-**SAFE's entities carried out the crowdfunding campaigns, rather than the interested end-users, the enhanced credibility would decrease the interest rates that would have to be borne. Moreover, only legal entities can launch a crowdfunding campaign with Crowdbase Ltd. Therefore, the option of raising funds through crowdfunding and then dissipating the funds to interested end-users was examined. It transpired that only listed companies can undertake equity crowdfunding per Regulation (EU) 2020/1503 on European Crowdfunding Service Providers for Business (the "ECSP Regulation"). Moreover, debt crowdfunding would require market-rate interest payments to be made and it was considered that this is not something that could be undertaken by any of the **e-**SAFE entities, at least at their early stages.

Another entity that was approached is Infotropic Ltd, a Web3 development agency specializing in Blockchain technologies, Privacy Engineering and Protocol Design. This entity proposed that **e-**SAFE builds a blockchain crowdfunding platform where carbon offsets could be provided as a capital/interest rebate. Given that this platform could operate on the basis of smart contracts, it could be much more efficient and secure than a regular crowdfunding platform. However, given that such type of crowdfunding would involve the raising of funds through crypto/digital currencies, it could be the case that acceptable currencies would be limited to Central Bank Digital Currencies (CBDCs) such as the Digital Euro (expected to be available for end users in the next few years) to avoid the risks associated with unregulated cryptocurrencies. Further meetings will be held with Crowdbase Ltd and/or Infotropic Ltd to assess the way forward.

4.2 Peer-to-peer lending

4.2.1 Definition

Peer-to-peer lending is a type of crowdfunding and is an alternative to a bank loan. The matching of lenders with borrowers is made via an online platform which performs financial due diligence on the borrowers. Some of the key features of peer-to-peer lending are the greater flexibility of interest rates, the loan is repaid through direct debits to the platform and disclosure requirements are the same as those of a bank, but they are made public to all crowd-lenders [21].

4.2.2 Relevant market segment(s)

It is expected that peer-to-peer lending is mostly applicable to customer segment B (middle-class owners of residential buildings) but also to customer segment C (private bodies), small/medium sized entities most probably. This is so because customer segment D (public bodies) may be expected to seek raising funding through other more preferential means which do not feature borrowing risks, while customer segment A is not expected to be able or willing to take out a loan, even though a peer-to-peer lending platform.

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4.2.3 Existing peer-to-peer lending platforms

Examples of existing crowdfunding platforms that incorporate peer-to-peer-lending are the following:

In Germany, a crowdfunding platform named **Bettervest** has been used to raise capital for energy efficiency and renewable energy projects since 2013. Bettervest only finances projects that are ecologically sound and able to achieve high savings in both costs and energy. The investors receive back part of their investment and a fixed interest rate annually throughout the contract period [22].

Operating in the Netherlands since 2012 is **Oneplanetcrowd**, a platform that finances sustainable innovation and energy projects (among others). In respect of energy projects, flexible crowd-based financing options can range from 200.000 Euro to more than 10 million Euro, with interest rates ranging from 4-7% and a duration of 1-15 years [23].

Another crowdfunding platform is **Fundeen** operating in Spain since 2017, allowing citizens to invest in environmentally sustainable projects and receive benefits from their investments. The projects financed thus far have been solar PV projects (not like **e-**SAFE). Individuals can invest as little as 500 Euro with annual returns of over 7% [24].

Future Bricks offers corporate and institutional lenders the opportunity to fund UK's residential-led property development projects [25].

4.2.4 **e-**SAFE peer-to-peer lending platform

It is envisaged that the **e-**CROWD platform may also incorporate a peer-to-peer lending function, exclusively hosting projects implementing **e-**SAFE, which would allow financiers to obtain mortgages over respective properties, making funding of larger-scale projects more feasible and faster.

However, for such a platform to operate, a very stringent risk assessment and management process would have to be followed in selecting projects to be onboarded onto the platform, including the following steps:

- Financial risk assessment (looking at profit margins, project and investor returns, business and contingency planning, historic and projected financials, financial ratios, comparable companies for benchmarking, etc.)
- Asset quality assessment (looking at whether it is subject to a first/second charge, encumbrances, its market strength, location and its current valuation)
- Independent due diligence (looking at title checks, ownership data, individual checks, independent valuation etc.)
- Borrower's track record (looking at background checks, credit checks, reference checks, historical experience, etc.) [25].

The same considerations that apply to the set-up of **e-**CROWD, mentioned in section 4.1.4, also apply to incorporating a peer-to-peer lending platform within **e-**CROWD.

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4.3 Green bonds

4.3.1 Definition

A green bond is a type of fixed-income instrument that is specifically earmarked to raise money for climate and environmental projects, and it works as any other corporate or government bond. Borrowers issue these securities to secure financing for projects that will have a positive environmental impact and investors who purchase these bonds can expect to make profit as the bond matures, and there are often tax benefits for investing in green bonds [26].

In 2017, green bonds scored a record high value, $161 billion worth of investment worldwide and the leaders of green bonds are the USA and the EU [25]. In 2020, Green bonds issued by supranational organizations totalled 10.17 billion U.S. dollars, while in the first half of 2021, the green bond issuance in the United States equalled 37.6 billion U.S. Dollars and in Germany equalled 29.1 billion U.S. dollars [27].

The European Green Deal of 11 December 2019 underlined the need to better direct financial and capital flows to green investments. Therefore, when the European Parliament and the Council agreed on the Commission's proposal for a European Green Bond Regulation, on February 28, 2023, an official green bond standard in the EU was established [28].

The European Green Bond Regulation essentially establishes an EU voluntary, high-quality standard for green bonds, which organizations seeking to obtain cash through capital markets can use to finance their sustainable investments. To qualify as an EUGBS, the instrument's issuer must ensure that at least 85% of the proceeds are invested in economic activities that align with the EU Taxonomy Regulation and its objectives concerning climate change mitigation, climate change adaptation, the sustainable use and protection of water and marine resources, the transition to a circular economy, recycling, waste prevention, pollution prevention and control, and the protection of healthy eco-systems [29].

Sustainability bonds are like green bonds, but their scope is wider, encompassing both environmental and social sustainability [30].

4.3.2 Relevant market segment(s)

Green bonds are generally mostly applicable to private and public bodies [31] as these require economies of scale to overcome the cost associated with raising them. Hence, customer segments C and D are expected to potentially benefit from the issuance of green bonds while projects associated with customer segments A and B are expected to be of too small a size for the issuance of green bonds, also providing no/little return to cover the green bond costs.

4.3.3 Examples

Examples of institutions that have raised green bonds and initiatives relating to green bonds are the following:

The "National Bank of Greece" became the first Banking Institution in the country to issue a green bond in 2020. It issued a six-year green bond and raised 500 million Euro to fund green economy projects such as hydropower, wind parks, and photovoltaic parks [32].

Another example is "TenneT", an electricity company that operates in the Netherlands and Germany that issued two bonds during 2020, raising over 1 billion Euro. Both were issued to finance projects on the interconnection of large-scale offshore wind turbines [33].

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The Malta Stock Exchange has introduced a new framework to encourage green finance in Malta, in the form of a Green Bond List. Potential issuers looking to obtain financing through the listing of qualifying securities may expect to benefit from a 50% reduction in listing fees and enhanced visibility to investors looking for green investments [34].

Another example is the Luxemburg Green Exchange (LGX) which was created in 2016 by Luxemburg Stock Exchange (LuxSE) and it is a platform for green, social and sustainable securities. It has an international footprint with 135 issuers from 32 countries, issuing securities in a total of 32 currencies [35].

Slovenia issued its first sustainability bond in 2021, becoming the second EU member state to proceed with sustainability bonds (Luxemburg was the first). The issue counted on €1 billion which can be considered as oversubscribed. The demand was over €8.4 billion among more than 200 investors [36].

Apple issued its first $1.5 billion green bond in February 2016 and its second $1 billion green bond in June 2017 to help develop programs aimed at mitigating the world's impact on climate change and inspiring others to do the same. These two green bonds have now been fully allocated. Apple issued its third green bond, and first in Europe, in November 2019, generating €2 billion (roughly $2.2 billion) in two tranches (the "2019 Green Bond"). The 2019 Green Bond was issued with the aim to support environmental efforts across the company, as well as Apple's ambitious goal to reach carbon neutrality across Apple's entire carbon footprint, including the full product life cycle, by 2030. On March 24th, Apple revealed that the aforementioned $4.7 billion in Green Bond investments had aided in the development of innovative low-carbon manufacturing and recycling technologies [37].

Through the issuance of the new "BTP Green" in early 2021, Italy also entered the market of sovereign bonds that finance sustainable development, expanding the country's commitment to the European Commission's framework for achieving climate neutrality by 2050 and the goals set out in the European Green Deal. The first Italian Sovereign Green Bond was issued to finance Italy's Green Transition strategy, which had previously begun [38].

On October 12th, 2021, the European Commission released the first NextGenerationEU green bond to raise funding for green and sustainable investments across the EU. The Commission raised €12 billion through this 15-year bond, making it the world's largest green bond transactions. Since then, the Commission has remained active in the market, introducing new lines and taps [39]. The most recent activity was the March 28th, 2023, with the issuance of €6 billion in NextGenerationEU green bonds. The single tranche transaction was executed via a tap of the green bond due on 4 February 2048. The deal was more than 12 times oversubscribed, indicating considerable investor interest. The Commission plans to fund 30% of its NextGenerationEU recovery programme by issuing NextGenerationEU green bonds. This will make the Commission the largest green bonds issuer in the world [40].

With a focus on Cyprus, the Public Debt Management Office, Ministry of Finance announced that on April 4th, 2023, the Republic of Cyprus issued its first Sustainable Bond with a ten-year maturity. The issue was very successful with the largest book of offerings in the history of the Republic (in excess of €12 billion [41].

Cyprus follows several smaller countries including Slovenia and Luxembourg opting for sustainable bonds as they often struggle to find enough projects to back standalone green bonds [42].

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4.3.4 **e-**SAFE green bonds

Green (or sustainability) bonds are relevant to **e-**SAFE in the following ways:

- If governments of target market locations issue green/sustainability bonds, they could use the funds raised to finance or subsidise **e-**FOUNDATION's operations, including the provision of financing to low-income/energy-poor individuals.
- **e-**FOUNDATION could raise green bonds in its own name to finance various customer projects. However, the regulatory and operational implications of issuing a green bond will be manifold and will differ from country to country. This may be an option for **e-** FOUNDATION to consider once it is mature. The green bond could be combined with another financial scheme/tool (e.g., subsidy, crowdfunding) to reduce the costs of issuing the bond. **e-**FOUNDATION may be able to raise a green bond in a customer's name (e.g., Private/public bodies) where such a customer is not able to or willing to raise the bond on its own. Additionally, **e-**FOUNDATION may raise a green bond on behalf of two or more customers where these would not be able to raise a green bond on a standalone basis.

4.4 Energy trading via smart contracts

4.4.1 Definition

Smart contracts are one application of blockchain technology that is arguably the most relevant for the energy application layer [43]. Smart contracts are effectively programs which are loaded into, and sit alongside traditional transactions within a blockchain, that can automatically execute pr**e-**definable code when called (for example, automatically executing the terms of a contract when trigger events occur). The important thing about smart contracts is that they reside in a decentralised system accessible to anyone, that doesn't require the involvement of an intermediary party [44].

As a result, smart contracts help automate and accelerate negotiations and contracting between the parties [45]. In turn, they can lead to self-organising energy communities or microgrids [4].

According to a recent systematic review of smart contracts used for energy applications specifically (based on 178 peer-reviewed articles) [46], smart contracting is developing rapidly and even though it is a dynamic revolutionary technology there are still open challenges surrounding its implementation, such as privacy concerns, security, risk of cyber-attacks (such as hacking), availability, scalability, low efficiency and the lack of energy required for computation and blockchain deployment of the contracts [47]. In the recent years research focused on addressing the limitations in smart contract applications in energy systems for optimization and accountability [20].

Smart contracts are used for energy trading by matching buyers with sellers (comparing the amount of energy and price of incoming bids and offers) and validating a trade as the bids come. Once the smart contract has validated a trade, which consists of a price, an amount of energy and a time of delivery, the smart contract for peer-to-peer (P2P) trading can then be used to analyse the monitoring of actual consumption and production coming from the smart metering infrastructure. In turn, this triggers the settlement within the smart contract, in order to distribute rewards and penalties according to the contract conditions. When P2P trades do not cover all the needs of consumers or the generation from producers, smart contracts can then facilitate transactions between the peers and the grid (P2G) [20].

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4.4.2 Relevant market segment(s)

Any customer implementing sustainable energy solutions is theoretically capable of participating in P2P or P2G trading through smart contracts, if the necessary infrastructure is in place, which at the time-being is nowhere established.

4.4.3 Examples

The pilot use of smart contracts has been prevalent in countries such as Australia, Italy, China, and the UK with more projects arising in Germany and the USA [20]. Examples of the application of smart contracts in energy trading are the following:

Grid singularity is a German start-up focused on a decentralised energy exchange platform for local communities. The energy exchange can be operated by a unique distribution system operator (DSO) or multiple agents, using smart contracts to define the energy trading and matching between the customers [48].

Powerledger is an Australian company founded in 2016, which focused on peer-to-peer energy trading. The Power Ledger Ethereum-based platform allows the DSO or prosumers to manage a microgrid with a real-time energy market, traceable renewable energy certificates, manage energy peaks using ESS or choose the type and quality of the energy. Powerledger remain to this day very active in initiatives around smart contracts for energy trading. Their latest initiative involves partnering with Vietnam Electricity Central Power Corporation (EVNCPC) to launch Vietnam's first peer-to-peer (P2P) energy trading project [49].

Prosume.io founded in 2016, proposes a platform based on smart contracts, IoT devices and the Prosume token with multiple applications, including peer-to-peer energy trading, smart billing, grid balancing and trading processes optimisation for electricity and gas, according to local laws in each country.

LO3 energy [50] aims to improve the community-based local generation and energy exchange. The Brooklyn Microgrid [51] was developed by LO3 Energy as a proof-of-concept peer-to-peer energy trading using existing grid infrastructure. In December 2019, L03 Energy along with Green Mountain Power (GMP) deployed a pilot energy marketplace called Vermont Green as the first US authorised marketplace [52].

4.4.4 **e-**SAFE application

Energy trading via smart contracts may be applicable for **e-**SAFE in the following way:

Building owners adopting the **e-**SAFE methodology could sell excess energy produced to interested consumers (P2P trading) and energy suppliers/the grid (P2G trading). Any profits arising from such activity could be used in the following ways:

- To pay generation-based crowdfunding investors through selling energy trading to energy suppliers to secure a discount on the investors' energy bill (see section 4.1.4).
- To repay direct financing provided by **e-**FOUNDATION (see section 3.2.2.4).
- To help repay peer-to-peer lending obtained on the **e-**CROWD platform (see section 4.2.4).

However, the above will only be feasible for further analysis and implementation once the required technology becomes established in target markets. Any significant developments in this space will be considered in Version 3 of D6.2 and/or D6.4.

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4.5 Fiscal incentives

4.5.1 Definition

Fiscal incentives are characteristics of fiscal policy which can influence individuals and companies to take specific actions, by offer a financial reward for such actions. Types of fiscal incentives include tax credits, tax holidays, tax exemptions etc [53].

4.5.2 Relevant market segment(s)

It is considered that fiscal or tax incentives are mostly relevant to customer segments B and C. Customer segment A would not be expected to be induced by a fiscal incentive, in the face of (total) absence of funds to be invested in retrofitting. Customer segment D is not expected to be influenced by fiscal incentives given that such institutions are generally not subject to tax in their jurisdictions of operation.

4.5.3 Prevalent markets

Examples of relevant fiscal incentives in European countries are the following (updated as of 31/3/22):

In France, the "**Energy Transition Tax Credit**" supports owners, leaseholders, or dwelling occupiers for free (main residence) who pay tax in France in purchasing efficient materials and equipment to limit energy consumption and greenhouse gas emissions. Since 2015, 30% of the expenses on eligible renovation works can be claimed as a tax credit with a maximum subsidy of 8,000 Euro for a single person, 16,000 Euro for a couple and an additional 400 Euro for each minor child in the household. This allowance can be utilised once within a 5-year consecutive period. The scheme covers a range of renovation activities to increase energy efficiency and to improve heating systems in private dwellings, ranging from double glazing windows, wall insulation and the installation of heat pumps or different types of efficient boilers. In addition, the renovation work must be carried out by a registered builder to ensure a minimum standard for the quality of renovation work to be eligible to participate in the scheme. One of the success factors identified from this scheme was the outreach to hard-to-reach groups as cost limits for equipment were capped higher for low-income households, making funding more accessible to them [54].

In the Netherlands, "**The Energy Investment Allowance (EIA)**" is a fiscal measure that offers the possibility of an additional allowance on taxable profit. EIA applications can be made for the purchase of designated energy-efficient equipment. The Minister of Economic Affairs annually compiles an 'energy list' for that purpose in the EIA Implementing Regulation, which details the equipment that is eligible for an allowance [55].

In Flanders, Belgium, a property tax reduction of 50% or 100% is offered for 5 years for major renovations that reach certain energy performance standards, which are more ambitious than the minimum requirements. The requirements are getting stricter over the years, following the evolution of the minimum requirements.

In Italy, the Government has implemented strong incentives to encourage the restructuring of Italian buildings. The incentives granted are in the form of tax credits. To be eligible to benefit from this scheme, the restructuring must be aimed to increase the seismic safety (where **Sismabonus** applies) and/or increase the energy efficiency (where the **Ecobonus** applies).

Under the original regime, maximum expenditure covered by the Ecobonus was 40.000 Euro and by the Sismabonus 96.000 Euro, while both credits could be claimed at the same time, covering up to 85% of the relevant expenditure. The Sismabonus and Ecobonus tax credits could generally be

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purchased by entities performing relevant work (or who are linked to it), for example, construction/energy companies, material suppliers, subcontractors, etc [56].

The Superbonus scheme [57] made available in 2020 applies to individuals incurring expenses for interventions between 1 July 2020 and 30 June 2022. The scheme provides that certain 'leading' interventions, and other 'secondary' interventions when combined with the 'leading' ones, attract a tax credit of 110% of qualifying expenditure. Where 'secondary' interventions are performed on a standalone basis, the tax credits available range between 50%-65% of the qualifying expenditure. Examples of 'leading' interventions, attracting a 110% tax credit (90% in the case of single-family houses) (under conditions) are:

- Thermal insulation of the building envelope (on at least 25% of the overall surface).
- Replacement of the existing heating system with high-efficiency systems, such as condensing boilers and heat pumps.
- Seismic upgrading.

The tax credits can be transferred to other entities, including banks and insurance companies. When acquired, these can be offset against taxes due on a fixed basis over 4 years for Superbonus, 5 years for the Sismabonus and over 10 years for the Ecobonus and Ecobonus combined with Sismabonus, disregarding the annual thresholds normally provided for by the law [56, 57].

4.5.4 **e-**SAFE application

e-FOUNDATION, could provide information to potential customers about the availability of fiscal incentives, as well as the conditions and procedures to be followed in claiming them, through the OSS it will partner with and potentially through the **e-**SAFE digital OSS platform.

Ultimately, fiscal incentives will form an option within a pool of other options for potential customers that may be combined with other financial schemes/tools [58]. Additionally, adaptable fiscal incentives have been designed and included in the white paper formed as part of T6.3, i.e., Deliverable D6.3, for policy engagement purposes [1].

4.6 Financial incentives

4.6.1 Definition

A financial incentive is a monetary benefit offered to encourage behaviour or actions which otherwise would not occur without the monetary benefit. It is a policy instrument for the state, and it can be stand-alone or linked to financial instrument. Typically, financial incentives take the form of a loan with preferential terms or a grant/subsidy, that covers a percentage of the costs incurred for eligible projects.

4.6.2 Relevant market segment(s)

Financial incentives could apply to any of the **e-**FOUNDATION's customer segments. These are generally most often applicable to customer segment B (as middle**-**class homeowners) rather than customer segment A, as partial financing or subsidies/grants are not of interest to low-income individuals. Certain financial incentives may be applicable to corporate and public bodies for property retrofitting, but these are more rarely seen.

4.6.3 Prevalent markets

The following are examples of relevant financial incentives in European countries:

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In Portugal, the "**Edificios + Sustentáveis 2021**" programme supports efficiency investments by families towards rehabilitation, decarbonisation, energy efficiency, water efficiency, and overall contribution to the improvement of the energy and environmental performance of a building. Each candidate can secure a maximum total incentive of 7,500 Euro per single-family building or and 15,000 Euro in the private case of a multifamily building in total ownership. Approved expenditure includes application or replacement of thermal insulation in roofs, walls, or floors, installation of photovoltaic panels, and interventions for the incorporation of bioclimatic architecture solutions, involving the installation or adaptation of fixed elements of buildings such as shadings, greenhouses, and green roofs or facades, favouring natural-based solutions [59].

In Germany the scheme "**KfW Energy-efficient refurbishment Programme**" administered by the German state-owned Bank for Reconstruction manages two programmes to improve the energy efficiency of German residential buildings. These programmes include loans of a maximum of 15.000 Euro per residential unit and investment grants to promote energy-efficient refurbishment and support insulation, energy-efficient equipment installation as well as replacement of exterior walls, doors, ceilings and so on [54].

In France, the "**Zero-rated eco-loan**" allows landlords to obtain a loan to finance energy refurbishment works (insulation, heating or water heating using renewable energies) for their main residence. The maximum amount of this loan is 30.000 Euro, refundable for 10 years (up to 15 years in cases of heavy works or "3-action bunches"). It is granted by banks which have concluded specific agreement with the French State, under conditions fixed in the General Taxes Code. The tax-free loan is aimed at individual owner-occupiers or landlords to finance major renovation work [53].

The "**Casa Eficiente 2020**" ("Efficient House 2020") program is available in Portugal, which provides loans on favourable terms for improvement of environmental performance of private housing buildings by improving energy and water efficiency. Interventions may focus on the envelope of the building and its systems. The Programme is financed by the European Investment Bank (EIB) and participating Commercial Bank and has total funding of 200 million Euro for the period 2018-2021 [60].

Also, in Portugal, the "**IFRRU 2020**" programme is designed for urban renovation through special loans which are also backed by the EIB, but with longer maturities on specific urban areas. Any entity with a title that gives them the power to carry out an intervention which has buildings located in the territories defined by the municipality can benefit from this program in two ways; a loan with up to 20 years' maturity, grace periods and interest rated below market rates and guarantees for projects that do not have sufficient guarantee. All expenses relating to energy efficiency measures for the rehabilitation of qualifying buildings are supported (i.e. aged 30 years or more, or in the case of younger buildings a conservation level of 2 or lower, abandoned industrial spaces and private/social housing units) [61].

Further, in Norway, "**Enova**", a state-owned corporation, offers financial support to companies and individuals for energy and climate friendly initiatives. Enova will cover the extra project costs incurred by companies pursuing energy and climate friendly solutions. In addition, Enova provides funding of up to 25% of the documented expenses for privately owned residential households which fulfil all applicable criteria [62].

In Italy, the "**Intesa San Paolo Condominium Scheme**" provides a medium-long term loan intended to finance renovation works or other interventions on the building of single condominiums or condominium complexes (e.g., replacement or installation of boilers, photovoltaic systems, electrical systems, etc.). The funding cannot exceed 80% of the costs incurred [55].

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The European Bank for Reconstruction and Development (EBRD) is launching a new "**Green Economy Financing Facility**" (GEFF) in Montenegro that will provide loans to households for energy efficiency improvements. Homeowners who are approved and will receive funding from the scheme, will also be eligible to apply for an EU grant for up to 20% of their investment. Eligible expenditure includes thermal insulation, double-glazed windows, high-efficiency boilers, heat pumps, solar collectors/solar water heaters and photovoltaic systems [63].

At a European level, the **European Investment bank (EIB)** has a series of sustainability-related instruments. However, these are often of significant size (>25-50M€), so they are more intended as city-wide initiatives rather than isolated ones. Nonetheless, once a city has applied and received the loan it can then distribute the funds to individual projects [19].

Other emerging financing schemes/tools include:

- **On-tax or bill financing:** a mechanism to repay energy efficiency investments within utility or tax bill and recovered through the existing payment collection infrastructure. Through research made by Europace (collection through property-related taxes), it is apparent that this kind of financing is not viable everywhere. The most suitable countries to adopt this scheme were: Austria, Belgium, Italy, Poland, Romania, and Spain [21]. On-bill financing is prevalent in the US and Canada, but efforts are being made to develop such schemes in various EU countries [64].
- **Revolving funds** refer to reserves of money which is used to finance a set of activities by lending to one or more borrowers. The borrower is expected to repay the original amount over a specified period as well as an interest which is usually a fee for administrative costs as well as to protect the fund from depletion [65]. An example is the energy fund Utrecht (efru) in the Netherlands.
- **Recurring funds** is an innovative financial tool introduced by the gent "knapt op" pilot project in Belgium whereby the homes of vulnerable homeowners were renovated through a financial contribution of up to 30.000 euros and repayment is made upon disposal of the renovated property, where the owner pays back the loan using the sale proceeds, plus an additional premium calculated on the basis of the added value of the house at the moment of selling [66].

4.6.4 **e-**SAFE application

As with fiscal incentives, **e-**FOUNDATION, would provide information to potential customers about the availability of financial incentives, as well as the conditions and procedures to be followed in claiming them, through the OSS it will partner with and potentially through the **e-**SAFE digital OSS platform. Ultimately, financial incentives will form an option within a pool of other options for potential customers, which may be combined with other financial schemes/tools.

Financial incentives may also be claimed by **e-**FOUNDATION itself though, to fund direct loans to be provided to potential customers (section 3.2.2.4). Once **e-**FOUNDATION establishes its target market location-wise, local financial incentives should be immediately investigated and utilised, given that **e-**IPR will be at a start-up stage and will not have the capital to fund **e-**FOUNDATION's operations. Finally, adaptable financial incentives have been designed and included in the white paper to be formed as part of T6.3, i.e., D6.3, for policy engagement purposes.

e-SAFE has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 893135.

4.7 Direct financing/funding

4.7.1 Definition

Direct financing is defined here as the provision of financing to customers through own funds rather than third party funds. Financing involves the provision of financial assistance in a contractual framework, with the expectation of repayment of the capital provided and payment of interest (optionally). Direct funding is defined as the provision of funding to beneficiaries through own funds rather than third party funds. Funding involves the provision of financial assistance, without the expectation of repayment of capital or the payment of interest. Since no consideration is provided by the beneficiary, there is usually no contractual relationship between the provider and the beneficiary.

4.7.2 Relevant target markets

As indicated above (section 3.2.2.4), direct financing/funding options may only be made available to energy poor/low-income customers where no other realistic financing options exist, and subject to any limitations placed by law and/or the articles of association of **e-**FOUNDATION.

4.7.3 Prevalent markets

A variety of direct financing and funding schemes have been around for a long time therefore examples can be drawn from any jurisdiction/context. More analysis will be performed by the **e-**NABLE group to understand what types of direct financing/funding could be provided by **e-**FOUNDATION.

4.7.4 **e-**SAFE application

Direct financing may take one (or a combination) of the following forms:

- Energy performance contracting (EPC), whereby repayment is made through energy savings or cost savings.
- Property based contracting, whereby repayment is made through increased rent or capital appreciation (upon sale), though anti-gentrification strategies should be considered.
- Soft loans with flexible/preferential terms, e.g., zero-interest loans.
- Repayment made through profits arising from energy trading (see section 4.4).

Direct funding is envisaged to involve direct payment for renovation works to contractors and other professionals for the benefit of the beneficiary. A contractual relationship can be formed with the main contractor while a contractual relationship will not be formed between the beneficiary and **e-**FOUNDATION or the contractor unless it is considered preferable.

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5 CONCLUSION

The present report, constituting Version 2 of Deliverable D6.2, aimed to develop and present the **e-**SAFE possible actors' business models, namely **e-**IPR and **e-**FOUNDATION, utilising the BMC methodology. The revised report emanated following discussions on a consistent basis, among the **e-**NABLE group at project meetings and on an ad hoc basis, as well as with stakeholders and the Advisory Board.

e-IPR will be the legal entity managing the relationships with **e-**SAFE's target market and business partners and receive all revenue emanating from such relationships. As a result, **e-**IPR will be the core **e-**SAFE trading company, in charge of holding, managing, and developing **e-**SAFE assets and trading profits.

e-FOUNDATION may act as the enabling, funding/financing, and advocacy vehicle of **e-**SAFE, aiming to make **e-**SAFE affordable to its target customer segments. To this end, it may pursue a one-stop-shop experience for its customers (through other one-stop shops and through its own platform) and develop an array of financial/funding tools/schemes to be matched with the various target customer segments. Furthermore, it may play an advocacy role, engaging with stakeholders to promote deep seismic and energy renovation.

This report also sets out the financial/funding schemes/tools that **e-**FOUNDATION may have in store for its potential customers, i.e., a dedicated crowdfunding platform (**e-**CROWD) incorporating a peer-to-peer lending platform, direct financing options, financial and fiscal incentives etc.

The establishment of **e-**FOUNDATION will be considered by the **e-**SAFE consortium and/or **e-**IPR by the end of the project.

Version 3 of Deliverable D6.2 will aim to arrive at a final plan with respect to logistics, operations, and governance. The overall and final plan to be created by Task 6.2 will be reflected and updated, if necessary, within Deliverable D6.4, the **e-**SAFE exploitation plan.

Deliverable D6.3 "White Paper for policy engagement" complements this exercise by proposing flexible financial and fiscal incentives that can be used by local government authorities to encourage deep energy and seismic renovation [1].

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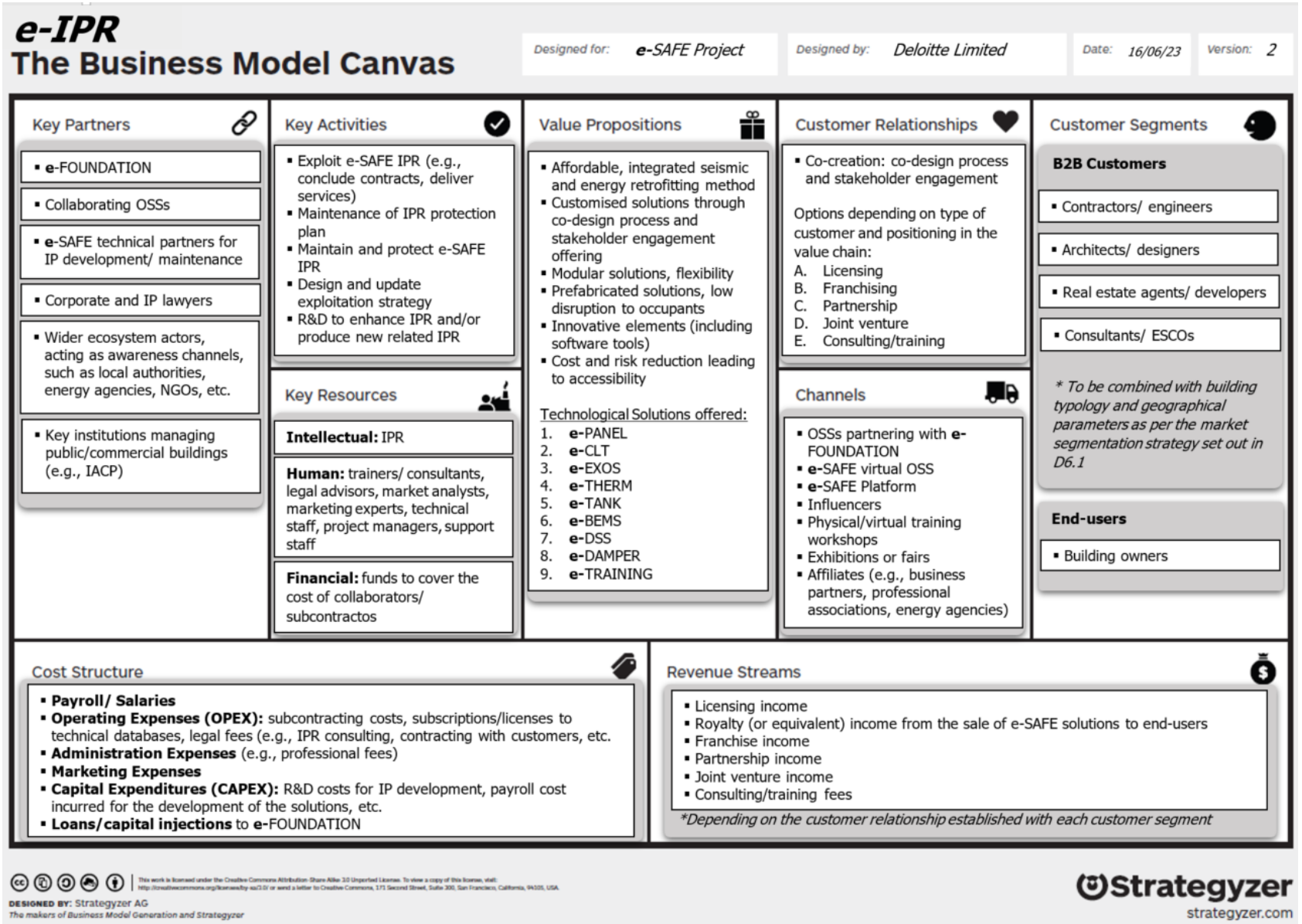
8 APPENDIX 1: e-IPR BUSINESS MODEL CANVAS



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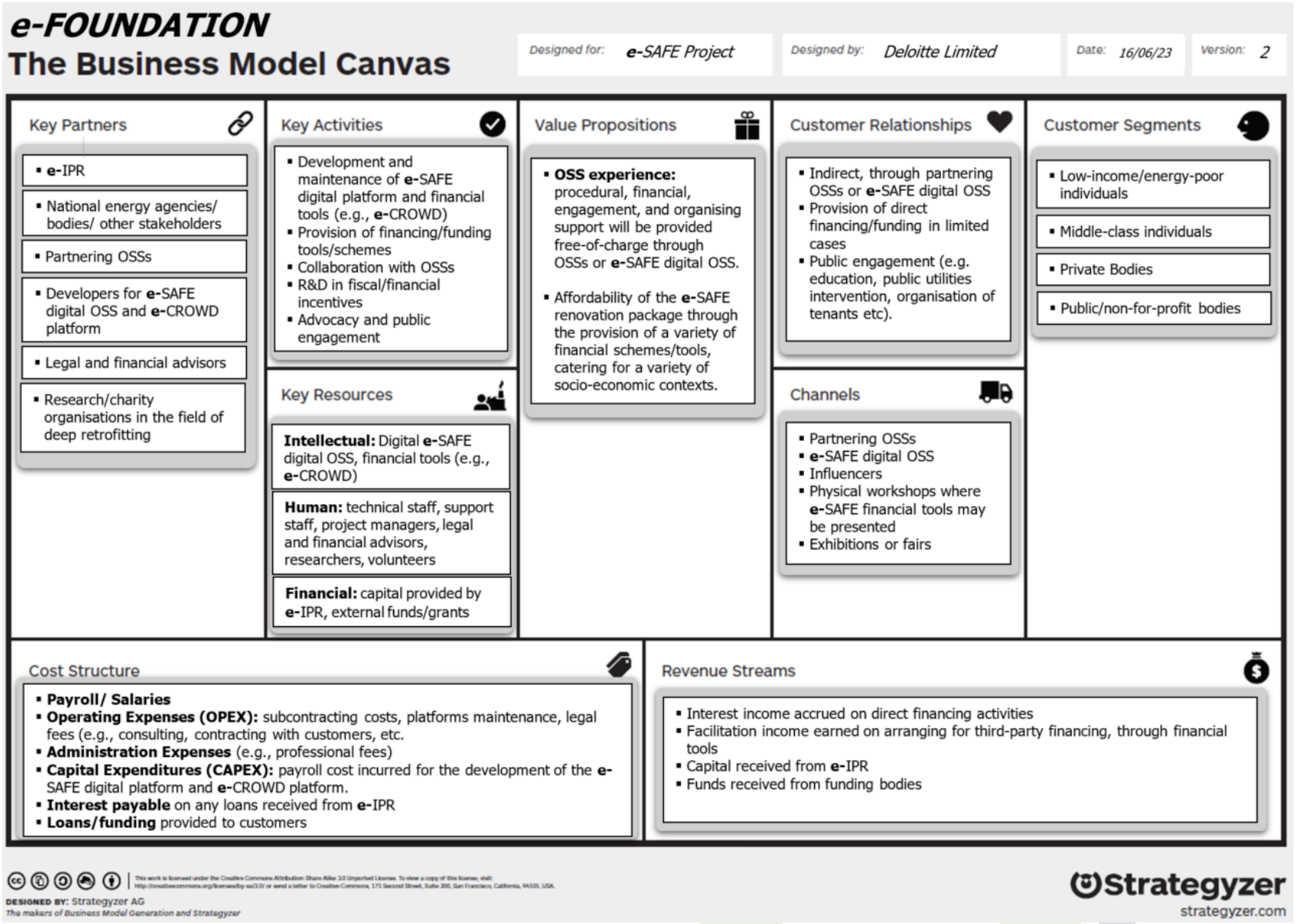
9 APPENDIX 2: e-FOUNDATION BUSINESS MODEL CANVAS



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10 APPENDIX 3: COMPARISON TABLE

INCENTIVES	CYPRUS	ITALY
Corporate tax rate	12.5%	24% national + 3,9% regional
IP box regime	80% of the profits qualifying for the regime are exempt from tax. With a corporate tax rate of 12.5%, this can result in an effective tax rate of as low as 2.5%. Qualifying expenditure includes salary and wages, direct costs, general expenses associated with research and development activities, commission expenditure associated with research and development activities, research and development expenditure outsourced to unrelated parties etc. Qualifying assets include patents, software and other non-obvious, useful, and novel. Qualifying income includes royalty income, licence income, embedded royalties arising on sale of products/services etc.	No equivalent
NID regime	The Cyprus Income Tax Law provides for a notional interest deduction (NID) from the taxable profits of businesses financing their operations through new equity, in a similar manner that companies financing their operations through debt, enjoy an (actual) interest deduction in calculating their taxable profit. The NID is calculated by reference to the rate of return of a ten-year government bond of the State in which the new capital is invested, increased by 5 percentage points, in force as at 31 December of the year preceding the relevant year. The NID is capped at 80% of the taxable income derived from each asset or group of assets or activities	The deductions allowed for tax purposes include the “allowance for corporate equity’ (ACE) which is permit for notional yield of the annual increase in a company's equity with certain exclusions and directions. The notional yield is 1.3% as from fiscal year (FY) 2019. The deduction is available each year, provided the equity increase is not diminished.

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	and of the total net taxable income arising from the new capital. A taxpayer claiming NID can therefore achieve an effective tax rate of as low as 2.5% (or lower if the NID regime is combined with the IP regime). NID can be claimed every year for as long as the new equity is not redeemed/reduced.	
R&D super deduction	For expenses incurred during the years 2022, 2023, and 2024, including expenses of a capital nature, an additional tax deduction is granted for R&D expenses, equal to 20% of the relevant expenses. Effectively, 120% of the actual eligible R&D expenses (including expenses subcontracted to related parties) are deductible from taxable income.	A 110% "super tax deduction" (resulting in an overall deduction of 210% of eligible R&D expenses) is available for R&D expenses (not subcontracted to related parties) related to eligible intangible assets (e.g., software protected by copyright, industrial patents, designs and models).
Carry forward of losses	Companies may carry forward all tax losses incurred during a tax year over the next five years to be offset against taxable income.	Losses may be carried forward and offset against corporate taxable income. However, 20% of taxable income in any year cannot be offset by carried-forward losses and will be subject to corporate tax in accordance with the "minimum tax" rule. Losses incurred by a company during its first three taxable periods may be carried forward and used to fully offset corporate taxable income, but only if the losses relate to a new business activity.
Treaty network	Cyprus has concluded over 60 tax treaties (68). The OECD multilateral instrument (MLI) entered into force in May 2020 in Cyprus.	Italy has concluded more than 100 tax treaties. Italy signed the OECD multilateral instrument (MLI) in June 2017 but has not ratified it yet.
Tax credits	n/a	For investments in R&D activities, a tax credit of 10% of eligible expenditure is available, up to a maximum of €5m per year. For green technological innovation activities, aimed at the creation of new or substantially improved products or production processes for

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		the achievement of an objective of ecological transition, a tax credit of 10% is available, up to a maximum of €4m per year.
Capital gains	Capital Gains Tax is imposed at the rate of 20% on: • Gains from the disposal of immovable property situated in Cyprus. • Gains from the disposal of shares of companies not listed on a recognised stock exchange which own immovable property situated in Cyprus. • Gains from the disposal of shares of companies which indirectly own immovable property situated in the Cyprus and derive at least 50% of their market value from such immovable property. Disposals of Intellectual Property Assets are not subject to capital gains tax or income tax.	Capital gains derived from the sale of assets normally are treated as ordinary income and taxed at the 24% corporate income tax rate, plus IEAP at the 3.9% rate. Capital gains derived from the sale of participations, however, are generally not subject to IRAP and are 95% exempt from corporate income tax if the following requirements are met: • the participation has been held for a minimum continuous period that may range between 12 and 13 months, • the participation is classified as a financial fixed asset in the first financial statements drawn after the participation was acquired, • the company in which the participation is held is not considered a "low-tax jurisdiction" (LTJ) entity for purposes of Italy's controlled foreign company (CFC) regime and • the company in which the participation is held carries on a business activity (this requirement will not be met if assets are represented primarily by real estate property not used in the business activity). The last two conditions must have been satisfied continuously over the last 3 years or the life of the company, if shorter.
Set-up cost	No minimum capital	Min. €10.000
Innovative SMEs	A qualifying individual that makes an investment in an innovative SME may deduct the costs of the investment from his/her taxable income, subject to the following limitations:	The following incentives are available for innovative SMEs: • Tax credit for investments in the capital (30% IRES subjects – 50% IRAP subjects)

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	• Percentage limit: The tax deduction is limited to 50% of the investor's taxable income in the year in which the investment is made. • Annual limit: The total deductible amount may not exceed €150,000 per year. Any non-deductible investment may be deducted in the five years following the year of investment, subject to the restrictions mentioned above. The qualifying investor must make a "risk-finance investment", i.e. equity, quasi-equity, loan or a combination. Both initial and follow-on investments are eligible (the latter subject to conditions).	• Special types of capital shares for special investor benefits • Free access to the Guarantee Fund • Exemption from stamp duty for documents filed with the Chamber of Commerce • Derogations from ordinary company law • Extension of the deadline for covering losses • Derogation from the discipline on shell companies and companies with systematic losses • Remuneration through equity instruments (e.g., work for equity, stock option pool) • Reinvested capital is taxed at a reduced rate of 15% • No tax on capital gain
Annual Running costs	€10-15k (e.g., accounting, auditing, compliance, company levy)	€5-10k (e.g., accounting, auditing, compliance, company levy)

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