POWERUP

The catalyst for social innovation in the energy market

Business models with a value proposition to vulnerable households: Exploration in 5 pilot cities

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Deliverable D2.3: Local state of the art on energy systems, energy poverty and assessment of preferred business model options for local energy players. Part 2: Draft concept for long term business models in each pilot

Cover picture: Zhang Yi on Unsplash

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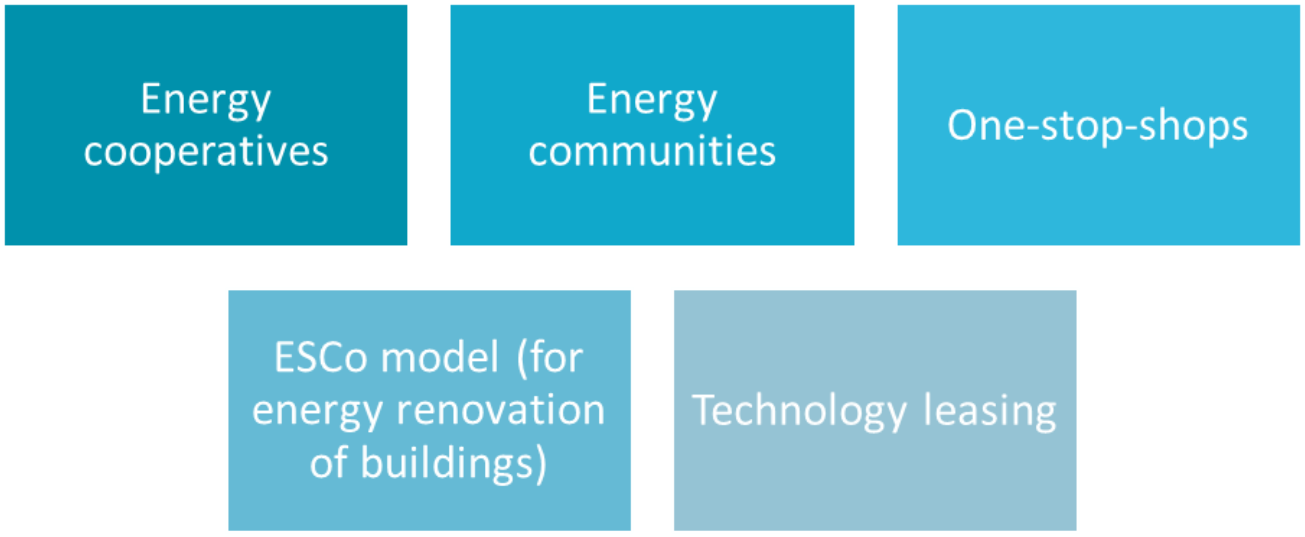
Executive Summary

This document is the result of a series of activities carried out with the pilot cities involved in the POWER UP project. The aim was to define their long-term strategy to fight energy poverty. After assessing the energy poverty situation at local level (see Part 1 of the Deliverable), and gathering first outcomes from the Local Working Groups and the System Mapping Workshops (see Paragraph 2), the pilots have declared their objectives and their willingness to take action to support households who are in a vulnerable situation.

In order to set up a strategy, a long-term business model was defined for each of them. Starting from the business model canvas, which is a practical tool commonly used in business organization and marketing, the project partners worked one-to-one with the pilots to create a framework for the activities they will carry out within the PowerUP project.

The following main business models were initially identified as suitable to deliver the "fight energy poverty" value proposition:



SINLOC transferred knowledge about these business models (see Paragraph 2.1) to the Pilots. Based on that knowledge, a long-term business model was then tailored for each pilot, mainly focusing on energy cooperatives (Eeklo and, partially, Heerlen), energy communities (Valencia and UCSA) and one-stop-shops (Roznov).

This document can help you understand how each pilot, starting from a different local situation and having defined a different business model and strategy, will face the energy poverty issues and achieve the expected results.

01

Long Term Business Models to fight Energy Poverty

1.1

Introduction to Long-Term Business Models

The Power Up project aims at developing pilot-tailored business models to tackle energy poverty. These business models are a key element of the whole project and have been developed in close collaboration with the pilot coordinators and the stakeholders involved in the different Local Working Groups. Therefore, the Business Models presented in this document are the result of a wider process: it started from the definition of generic business models for energy poverty developed in Task 2.4 and presented the pilot-specific needs and national characteristics of the energy poverty phenomena in Deliverable 2.2 (BMs based on energy community, energy cooperative, one-stop-shop, technology leasing).

The aim of the pilots was to develop a long-term model that could be replicable and sustainable over time, with a long-lasting effectiveness toward energy poverty. Cities want to activate virtuous models that efficiently help them in tackling the rising phenomena of energy poverty. The vulnerable part of the population will benefit through:

- the access to lower energy prices
- specific knowledge on the dynamics of energy markets
- tips and support on energy efficiency and reduction of energy expenditure

The most challenging part when developing the business models has been the adaptation of the conceptual and generic models to the specific pilot characteristics and political context driving the different local policy decisions. In fact, besides the regulatory framework, the context in which each business model will be deployed and implemented varies from pilot to pilot. In some cases, there is already a very clear idea of the activities to be carried out at local level, but the role of each stakeholder involved is a little blurry; in other cases, the objectives are clear but the strategy on how to connect with vulnerable households is lacking. So, while there is still work to do in the Local Working Groups before starting the activities, the long-term business models presented in this deliverable can guide the implementation phase. In order for a business model to be successful, the pilots will have to make sure that all aspects (“brackets”) of the business models are adequately assessed.

All business models are based on the "Business Model Canvas", a very widespread tool used in many industries and contexts to build business models. However, the name of some components of the standard Business Model Canvas have been adapted to the social goal of the model: the emerging market player will not be commercial, but be devoted to tackling the energy poverty phenomena. So, the standard brackets of "Customer Segments" and "Customer Relationships" have been modified to "Citizen Segments" and "Citizen Relationships".

1.2

Long-Term Business Model for EEKLO

Allowing vulnerable households to access locally-produced energy at fair prices

Pilot information

Eeklo, a small city in Flanders, halfway between Ghent and Bruges, counts about 21,000 people. With lower-than-average incomes and 17.9% of residents receiving social assistance, the city is relatively poor compared to its surroundings. In Eeklo, the majority of the housing stock consists of terraced houses and small apartment buildings. There are also some family residences, 30% of which are older than 50 years. Eeklo was a center for the textile industry in the 20th century, and as a result, the city center still boasts narrow alleys lined with terraced worker homes.

Business Model

For the EEKLO pilot site, the energy cooperative business model has been chosen as the backbone of the initiative. The model represents **a virtuous collaboration among the municipality and a Belgian energy cooperative** (Ecopower), both determined to fight energy poverty.

Energy cooperatives are quite widespread in Northern Europe. This is particularly the case in the Netherlands and in Belgium, where Ecopower, one of the pioneers in the field, is located. To date, Ecopower counts nearly 70,000 members and supplies about 2%[1] of Belgium's domestic energy needs. The electricity is sold to the cooperative's members at the market price of energy, without markups: being a cooperative, Ecopower never intended to make a profit.

[1] Vansintjan, D. (2021, January). Comunità energetiche: uno sguardo al panorama europeo. We for Green.

The aim of Ecopower and of other cooperatives is to provide their members with renewable energy through local shared facilities, helping them achieve energy self-sufficiency. On average, the Ecopower tariff is aligned or slightly cheaper than other commercial offers in the Belgian electricity market. In the current context of soaring market prices, the production cost for Ecopower has remained stable as the electricity is produced from renewable sources. So, in 2021 and 2022 the tariff offered by Ecopower has always been cheaper than the market price of commercial suppliers, reaching a 40% difference in value in certain periods.

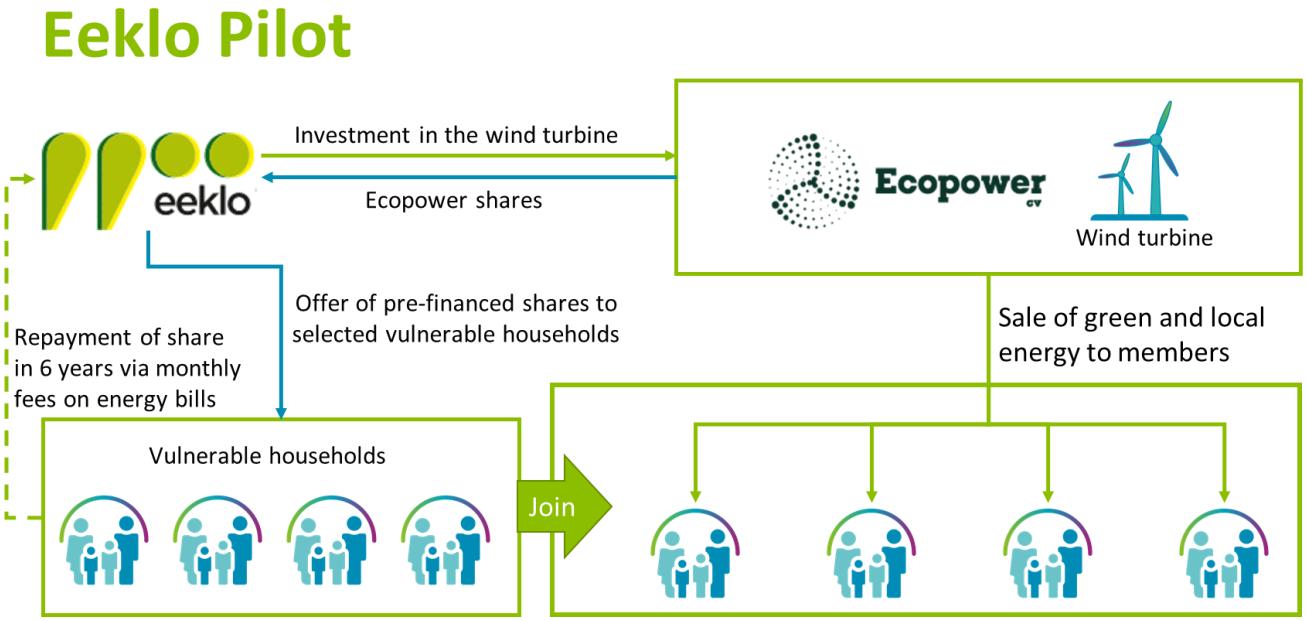
People can become a member of the energy cooperative by purchasing one cooperative share, which has a price 250 euros.

The municipality of Eeklo is developing, in close collaboration with Ecopower, a model in which it invests in the new wind turbine by purchasing Ecopower shares. Then, these shares can be distributed to vulnerable households through a lending contract.

At a first stage, the municipality had the opportunity to financially participate up to 25% of the investment in this wind turbine, for a total value of € 750,000, which would give it the right to 3,000 Ecopower shares. In November 2022, the city council finally decided to invest in 1% of the wind turbine, for a value of €25,000, which is equivalent to 100 Ecopower shares. These shares will be lended to 100 selected vulnerable households, which will benefit from Ecopower tariffs, lower than average market prices. The value of the shares will be paid back to the municipality in 6 years through a monthly fee included in the energy bills.

After the period of 6 years, the vulnerable households will have completed the purchase of the shares while staying an Ecopower member. In the meantime, the municipality can reinvest the proceeds from the shares lending and purchase additional shares that can, in return, be lended to other vulnerable households - in a rolling way.

The following is a simple graphical representation of the Eeklo Pilot, showing the interactions between the stakeholders involved.



Following this scheme, we developed a Business Model based on the classic components of the Business Model Canvas. The boxes of the canvas have been filled according to the theoretical business models for energy cooperatives presented in Deliverable 2.2 and the pilot's specific needs, characteristics and willingness.

<table>
<tr>
<td rowspan="2">KEY PARTNERS

Ecopower: local energy cooperative

Social Huis: local association

Veneco Fluvius: local DSO</td>
<td>KEY ACTIVITIES

Match households and measures;
Administrative support
Financial support
Informing households</td>
<td rowspan="2">VALUE PROPOSITION

Lower threshold to become member of the energy cooperative;

Financial benefits as member of the cooperative

Involve vulnerable people in the energy transition;

Knowledge transfer about the energy world and how to make difficult situation profitable;

Environmental benefits from the production of energy from renewable sources;</td>
<td>CITIZEN RELATIONSHIP

Dedicated meetings and workshops;
Meeting at the OSS;
Direct proactive communication in case of people who are dropped by commercial energy supplier</td>
<td rowspan="2">CITIZEN SEGMENT

Mainly people who are being dropped by commercial energy suppliers;

Criteria to be identified by staff of the OSS;</td>
</tr>
<tr>
<td>KEY RESOURCES
Financial resources for shares purchasing (and financing the wind turbine);

Small budget for IT billing modifications;
Small budget for kick off and advertising;</td>
<td>CHANNELS

One Stop Shop about housing and energy;
Local Committee for meter swap;</td>
</tr>
<tr>
<td colspan="3">COST STRUCTURE
Initial purchase of the cooperative shares;
Operative costs for IT modifications in the Ecopower system;</td>
<td colspan="3">REVENUE STREAM
Economic return from the investment in the wind turbine;
Repayment of the shares through monthly installment</td>
</tr>
</table>

Description of the Model Components

The central element of the model, represented by the value proposition, represents the goal of the municipality which is to provide vulnerable households with access to cheaper energy. Considering the high presence of energy cooperatives in the area, already providing cheap energy to their subscribers, the link could be easily identified. Energy cooperatives provide cheaper energy for their members, but becoming a member requires the purchase of a participation share. Such shares, even if it is not particularly expensive and can be seen as an investment with a return (lower costs, small yearly dividend), represents a financial barrier for vulnerable householders.

To make sure this model delivers its value proposition, all the other components need to be properly built, specifically shaping and designing the CITIZEN SEGMENT and CITIZENS CHANNELS dynamics. The citizen segment which the model aims to target is composed of

those citizens that struggle to pay their energy bills on time and are being discarded by commercial suppliers. In Belgium, once an energy customer is insolvent and dropped by his/her commercial supplier, the distribution system operator will activate the prepaid feature of the electricity counter, which requires advance payments, and higher costs per kWh. Those citizens will be identified by a municipal committee (already existing and operative) who is now responsible for preventing cut offs, and so have direct information about citizens in energy poor situations. However, this will not be the only channel for the municipality. Contacts with vulnerable households will be established through a local One-Stop-Shop which will be in charge to distribute part of the shares according to some criteria to be developed.

On the other side of the model, looking at RESOURCES, PARTNERS and ACTIVITIES, it becomes clear that an energy cooperative is a good strategic partner for such an initiative. Energy cooperatives provide energy at lower prices compared to commercial suppliers and it is in their DNA to promote social and community benefits. In today's context of energy market shocks and unusually high tariffs, energy cooperatives are managing to deliver electricity at far lower tariffs thanks to their nature and production from renewable sources. Renewable energy production plants, hydro solar or wind, are characterized by high investment costs but lower operating costs, having the possibility to produce energy at a fixed price over time, not being affected by market prices of other commodities.

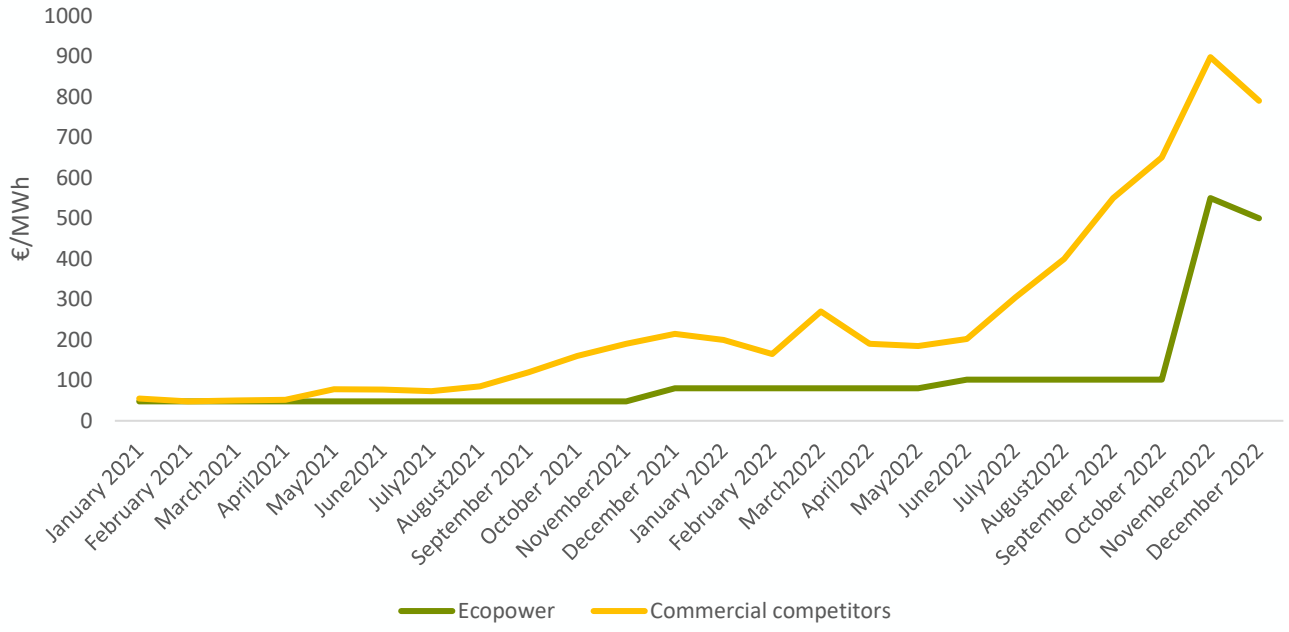


Figure 1 Energy tariffs comparison. Source: Ecopower elaboration

Among its partners the Municipality also counts

- Fluvius, the local DSO
- Veneco, an inter-municipal organization, and
- Ligo, a center for basic education that trains energy poor households in energy efficiency.

Together with these partners, the Municipality plans to carry out several activities (see KEY ACTIVITIES box). The core activity consists in delivering the share to vulnerable households, including the selection path described above. The City also wants to support the social services when it comes to deciding on which measures can produce the higher benefit for the household, on supporting households in switching energy suppliers or renting appliances and other energy knowledge related activities.

When it comes to the KEY RESOURCES needed for the model, the focus lies on the financial resources for the purchase of cooperative shares. Even though it is not mandatory for making the model work, the city of Eeklo is also willing to invest an additional amount in a wind turbine. This investment will allow to obtain an economic return for the City bringing additional resources to fight energy poverty. Financial resources will also be needed for smaller expenses such as IT implementation and advertisement: Ecopower will need to make minor modifications in its IT and billing system, while the municipality will advertise the program.

Financial expenditure is also considered within the cost structure of the initiative. After the upfront cost to buy the shares, these will circulate among vulnerable citizens without the need of being refinanced by the Municipality.

In order to make this model even more sustainable in the long-term, the town is considering charging a small monthly fee to the citizens who received the free share. That way they will buy them over time. By doing so, the citizen will continue to benefit from cheap energy from the cooperative even after the 6 years period. On the other side, this scheme will also allow the Municipality to use the proceeds from the selling of the shares to buy more shares and circulate them among more vulnerable citizens.

Long term perspective of the Model and roadmap for the implementation

This model will allow the city of Eeklo to sustainably provide access to cheaper and renewable energy to vulnerable householders, lowering the barrier represented by the economic

commitment in buying a cooperative share. Households in energy poverty situations are usually facing financial constraints which make even small investments difficult or impossible. Furthermore, the Belgian practice of replacing a meter with a prepaid one, to which higher tariffs are associated, worsens not only their economic situation but also the living conditions of the houses. It represents a dangerous loop for vulnerable households that find themselves unable to pay the bills and without the possibility to heat their homes or access hot water.

Considering the current energy prices, this model will be extremely effective in delivering its benefits towards vulnerable citizens, whose number is unfortunately expected to grow. Renewable energy sources are usually characterized by high up-front fixed costs (construction/installation) but low variable costs (no need for fuel). Such dynamics help to keep prices constant over time and protect from external geo-political shocks. Finally, the possibility of recollecting the shares and distributing them again allows a high number of people to access the model. As there is no need to invest, citizens will be happy to enter the scheme. The household who repaid the share through installments will be able to benefit from it even after the lending period. That will reduce his/her risk of returning in an energy poverty situation.

From an operational point of view, now that the Municipality has decided to invest in the wind turbine and to purchase the 100 Ecopower shares, there are some further steps to be taken, such as: legal check on the overall proposed scheme; definition of the contractual clauses to lend the shares to the vulnerable households; mechanisms to charge the cost of the shares in the energy bill. The involved stakeholders meet in January 2023 to define a concrete roadmap and timeline for the implementation.

Meanwhile, activities related to the involvement of vulnerable households are going on. One co-creation workshop with households has already been carried out and more are planned in the future. The City is also reviewing some communication materials, including an energy guide, that will be useful in the local working groups and then to be spread to all citizens.

1.3

Long-Term Business Model for VALENCIA

The incubator of citizen energy communities

Pilot Information

Valencia, a city on Spain's East coast, has a population of about 800,000 and is the third-largest metropolitan region in the nation. Apartment buildings of 5-7 stories and some family homes are the norm for housing. According to a study by the Municipality of Valencia (2016)[2], 32.7% of Valencians experienced feeling too cold and/or too hot at home, which affected their day-to-day lives negatively, 12.2% spend more than 10% of their income on energy bills, and 18.2% allocate more than twice the national median share of energy expenditure in income on their energy bills.

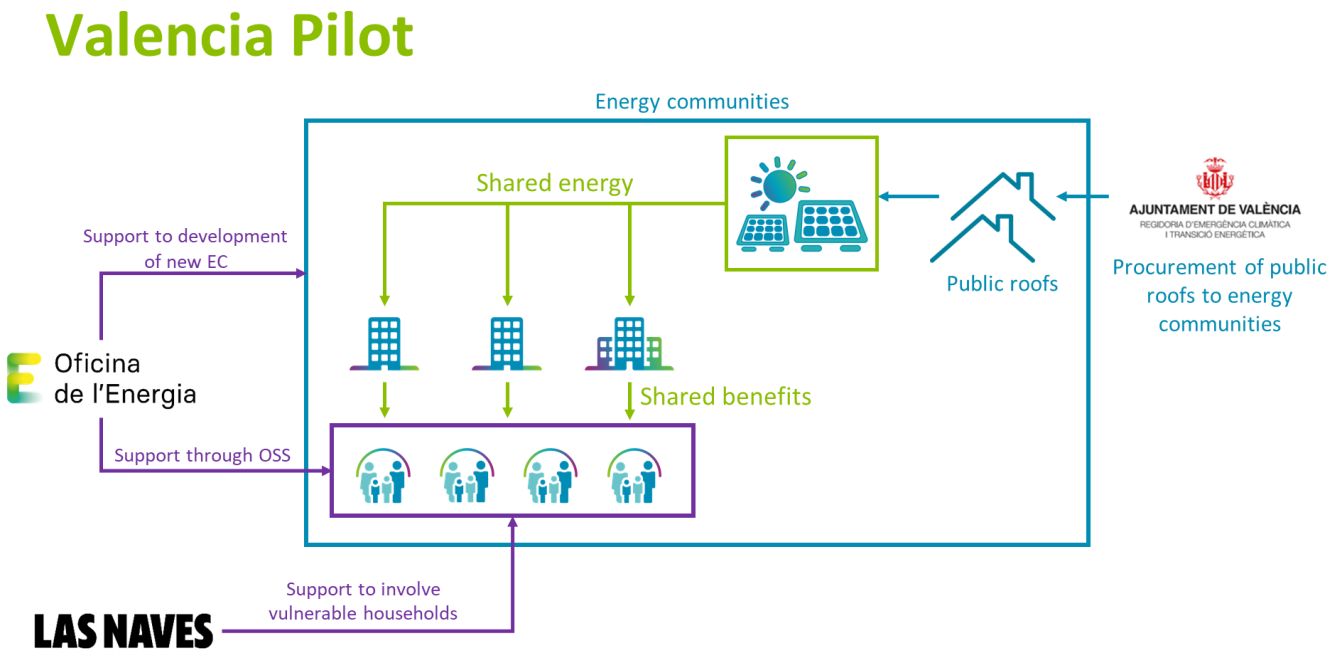
Model

The City of Valencia has elaborated a **strategy for fighting energy poverty based on the development of renewable energy communities**. Renewable Energy Communities, as defined by the EU Directive [2018-2001], are open entities, usually associations, where renewable energy is produced and shared among its members. The city's goal is to promote the privately driven development of these communities, providing technical and legal assistance and supporting the inclusion of vulnerable people.

Through its "Oficina de l'Energia" office, the City has already supported the creation of the first energy community (in the "Castellar" neighborhood, on a public building as a demonstration site) through technical and administrative support to the citizens. Following that first experience, the City is currently exploring innovative ways for helping further energy

[2] Municipality of Valencia/Ayuntamiento de Valencia. (2016). Proyecto de Mapa de la Pobreza Energética Para el Ayuntamiento de Valencia. Instituto Ingeniería Energética y Universitat Politécnica de Valencia.

community projects getting started. For the "Castellar" energy community the City has directly taken part in the project, also offering a public roof for the installation of the PV plant For the upcoming energy community projects, however, the City will have to tender its roofs. At the same time, the City still wants to keep control over the implementation of these new initiatives, in particular to make sure that PVs on public buildings will also benefit vulnerable citizens.
The following is a simple graphical representation of the Valencia Pilot, showing the interactions between the stakeholders involved.



Following this scheme, we developed a Business Model based on the classic components of the Business Model Canvas. The boxes of the Canvas have been filled according to the theoretical business models for energy communities presented in a previous report (D 2.2) and taking into account the Pilot's specific needs, characteristics and willingness.

KEY PARTNERS	KEY ACTIVITIES	VALUE PROPOSITION	CITIZEN RELATIONSHIP	CITIZEN SEGMENT
Social Services, NGOs and social stakeholders Energy Communities from the City AVAESEN (Valencian Region Energy Cluster); ASELEC (Association of electric, renewables and telecom companies)	Support energy communities; Foster collaborations within LWG; Find effective means of tackling energy poverty; **KEY RESOURCES** Available roofs Financial: Pv investment (1000-1300 €/Kw), civil works, other accessory costs	Deliver economic benefit to the targeted groups; Knowledge transfer towards vulnerable people;	The relation with citizens and vulnerable households will be maintained by the staff of the OSS **CHANNELS** One Stop Shop, asking for interest, advertising the initiative; Advertising through social media;	Active Members: people interested in the energy community and using their own resources. Energy Poor Households: people identified through social services that will benefit from the Renewable Energy Community

COST STRUCTURE	REVENUE STREAM
Investment for the PV installation; Operations and Maintenance expenses;	Community shares sale Savings on energy bills Surplus compensation

Description of the Model Components

In the Business Model for Valencia, the different components have been developed based on the model that the city was already taking into consideration. The KEY PARTNERS are of different nature but, as required by the model, are relevant for the whole business model in many parts. Social services and NGOs are important for the identification and interfacing with the vulnerable households (customer segments and channel).

Social services will help transfer knowledge on socio-demographic particularities and define if the individual measures are effective for tackling energy poverty. The other energy communities in the city will lead the way as illustrative examples of successful initiatives of collective energy projects. They will help the City to test different variants to the model and learn from their experience.

The AVAESEN cluster[3] and the ASELEC association have been organizing events about energy communities and their set-up. AVAESEN is involved in several innovative initiatives regarding energy issues and will be key for the co-defining and implementation of specific projects. ASELEC will be a key actor for the field implementation of projects, as it has technical capacity and experience, as well as direct contact with citizens.

In the future, a partner specifically dedicated to crowdfunding operations could also be involved to implement such financing mechanisms.

The KEY ACTIVITIES to be performed within the model are the ones related to the development of energy communities, focusing on tackling energy poverty. The aim of the model is to support local citizens who wish to set up an energy community. In addition, the *Oficina de l'Energia* will offer them effective measures for tackling energy poverty and include such dynamics in the rationale of the community. The effectiveness of the proposed measures will be evaluated over time, thanks to the contribution of local social stakeholders and previous engagement with energy poor households. The City will foster collaborations within the Local Working Group, presenting projects, collecting ideas and engaging the local stakeholders.

The needed KEY FINANCIAL RESOURCES are mostly related to the investment for the installation of a renewable energy source and the constitution of the Energy Community as a legal entity. The most expensive investment cost is the purchase and installation of the renewable energy source, typically a photovoltaic plant, which costs around 1.500/1.700€ for every kW peak to be installed for small-scale projects. The remaining costs are related to the legal costs for the constitution of the energy community as a legal entity and potentially ancillary costs for civil construction works. On the other hand, the physical and knowledge resources needed are mainly available roofs for the PV installation and the knowledge in the renewable energy sector.

VALUE PROPOSITION is the core of the business model, the component that identifies the value that is being created by the functioning of all the other components. In this model the value that the City wants to create and deliver is an economic benefit to the targeted groups. The value proposition is wide, but considering it in relation to the proposed activities, partners and resources it is clear that the economic value is going to be delivered to the segment of people identified through dedicated energy communities.

[3] AVAESEN is the Valencian Region Cleantech Cluster. It gathers an ecosystem of 300 public and private stakeholders, out of which 160 are companies in the renewable energy, water cycle, waste management and smart cities (https://www.avaesen.es/en/about-us/)

The CITIZEN RELATIONSHIP and SEGMENTS are the components responsible for identifying and reaching the vulnerable households that will benefit from the value proposition that the model will deliver them. In this business model the citizens are divided in two categories:

- Active Members: people interested in the energy community and investing their own resources.
- Energy Poor Households: people identified through social services that will benefit from the Renewable Energy Community

In order to recruit active members, tailored information and promotion campaigns can help reach a great number. Different channels such as social media, printed materials or a dedicated website can be useful tools. The Energy Office has a major role in citizen engagement as trusted public service for information and support on energy communities deployment.

As for energy poor households, different approaches should be considered. To create trust and achieve a close relationship with potential beneficiaries, NGOs and grassroot organizations working in each neighborhood can facilitate the process by acting as intermediaries. Besides that, the social services department can identify households in energy poverty, low-income families that could benefit from clean, affordable energy to reduce their energy bills. There is a close relationship between the social services and the Climate Emergency and Energy Transition department of the municipality, which enables to identify and test different ways to reach these families, e.g., the ongoing collaboration between the Energy Office's Right to Energy Area and the different social services centers around the city for providing advice and support to vulnerable households on energy issues.

The COST STRUCTURE and REVENUE STREAM of the energy community are based on the size and number of participants. The major costs are represented by the investment for the PV installation, its maintenance over the years and the costs related to the management of the community itself. On the other side, the major benefit from the investment, that can be considered as a revenue in the financial planning, is the reduction in energy costs faced by the members of the community.

Long term perspective of the model and roadmap for the implementation

The goal of the overall model goes beyond the implementation of a single energy community. It aims at leveraging its sustainability and impacts for introducing social dynamics for tackling

energy poverty. By doing so, the City of Valencia is promoting a sustainable model that activates citizens already interested in the energy community model. The City of Valencia, through its One-Stop-Shop "The Energy Office" will offer technical support to private citizens willing to develop an energy community and include vulnerable households among its members. With this strategy the city is not directly investing financial resources into the energy communities but is using its budget as a sort of "incubator", catalyzing the renewable energy communities' development process. Privately-driven communities will be encouraged to include vulnerable people among their members, allowing them to benefit from the renewable produced energy.

In the next future, from an operational point of view, the City will have to find the best suitable solutions to boost the creation of new energy communities with the inclusion of vulnerable households. To do so, there is a need for administrative and legal support to make clear how the City can tender the public roofs and how it can require that private developers of energy communities involve the vulnerable households.

The City has already been asked for its public roofs by private developers to install PV plants and to create energy communities around them. There are several different implementation opportunities and each one requires a tailored assessment to ensure its compliance with the public sector and tender regulation. In the coming months, for the implementation of these projects within Power UP, the City and its Energy Office will address these points to define a proper solution.

Meanwhile, discussions are ongoing about setting up a municipal public-private energy company, which could play a key role in matching the investment needs in renewable energy production and socially engage vulnerable households in new energy communities.

1.4

Long-Term Business Model for ROZNOV

A one-stop-shop to support citizens in energy transition

Pilot information

Rožnov pod Radhoštěm, hereafter referred to as Roznov, is a town of approximately 16,000 inhabitants in the Radhošte massif in the Moravian region of the Czech Republic. Housing in northern Roznov is characterized by multi-storey apartment buildings, whilst in the southern area the housing developments tend to be more mixed, with a majority of inhabitants owning their home. The municipality owns 327 social housing apartments. People living in these flats tend to be well supported and their situation is monitored.

Model

The Municipality of Roznov, guided by SEMMO, the Czech association of local energy managers, is committed to follow a multidisciplinary strategy for tackling energy poverty. The main actions to be carried out are two:

1. the development of a One-Stop-Shop in the Municipality of Roznov;
2. a retrofit intervention, including the installation of the first municipal PV plant on a public social housing building, owned by the Municipality.

The One-Stop-Shop (OSS) that the municipality aims to establish will be a hybrid model between a facilitation OSS and a coordination OSS, according to the categories defined by the Innovate project[4]. In such configuration the OSS will partially perform the following activities:

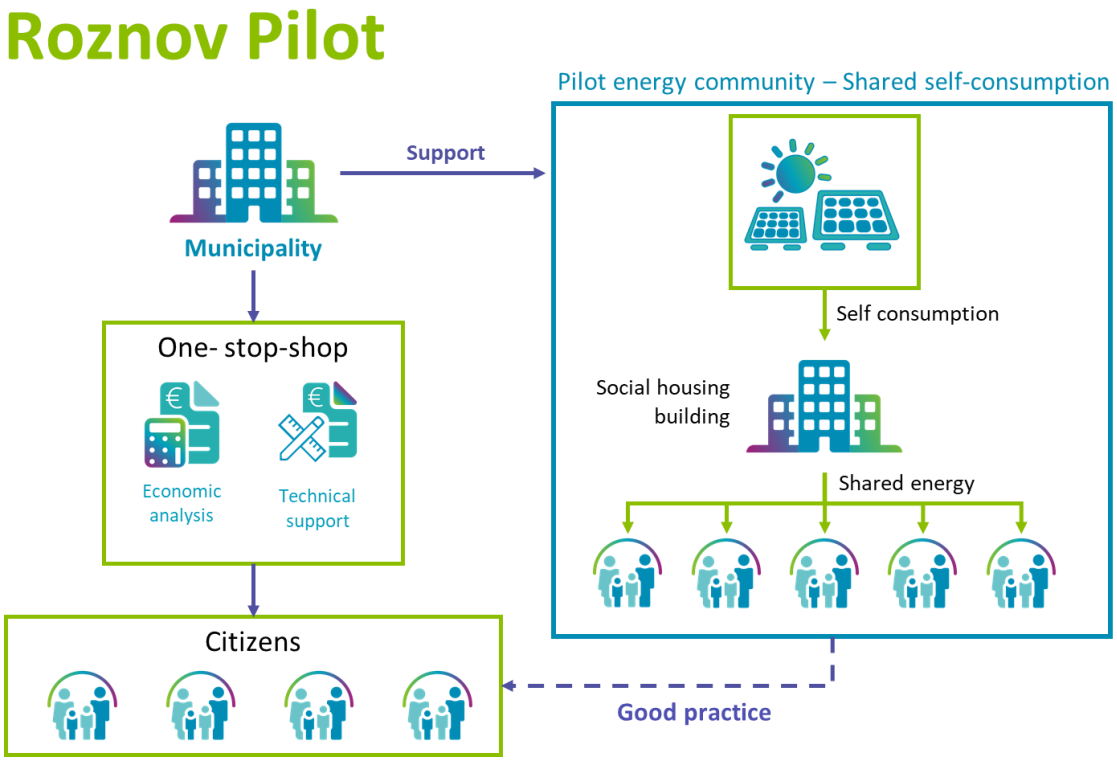
- Raise awareness on energy renovation benefits

[4] M. Eisermann, J. Cicmanova, Maraquin (2020, July) - INNOVATE Project - How to set up a ONE-STOP-SHOP for integrated home energy renovation? In https://energy-cities.eu/wp-content/uploads/2020/07/INNOVATE_guide_web.pdf.

- Provide general information on optimal renovation works
- First advice at the 'orientation stage'
- Involve existing market actors (suppliers)
- Define conditions for the effective result of renovation works

Regarding the pilot retrofit intervention on the public social housing building, the municipality is planning to install a 50kW on the roof of a multi-apartment building. The electricity produced by the PV plant will benefit people living in the building by reducing their electricity bill through self-consumption (by households individually and for collective condominium parts). The surplus energy could be sold to the market, generating additional revenues, or could be potentially consumed by other municipal buildings (according to the evolution of the regulation on self-consumption).

The following is a simple graphical representation of the Roznov pilot, showing the interactions between the stakeholders involved:



Following this scheme, we developed a Business Model based on the classic components of the Business Model Canvas. The boxes of the Canvas have been filled according to the theoretical business models for One-Stop-Shops presented in a previous report (D 2.2) and the Pilot's specific needs, characteristics and willingness.

<table>
<tr>
<td rowspan="2">KEY PARTNERS

Dpt. Of strategic development and projects;

Social Department

Assets Management</td>
<td>KEY ACTIVITIES

Awareness raising
Financing
Technical assistance</td>
<td rowspan="2">VALUE PROPOSITION

Increase awareness and help people achieving energy savings and energy efficiency while keeping comfort conditions;

Inform about national and EU funds;

Transfer of general knowledge about energy costs;

Define prosumers and their benefits

Increase trustworthiness;</td>
<td>CITIZEN RELATIONSHIP

Relation with the vulnerable households will be through the STAFF at the OSS</td>
<td rowspan="2">CITIZEN SEGMENT

Potential vulnerable households: people identified through social services that will benefit from OSS services
Any citizen interested in OSS services and advice ;</td>
</tr>
<tr>
<td>KEY RESOURCES

Staff from the municipality
Energy consultation and Information Centers</td>
<td>CHANNELS

One Stop Shop;
Digital channels;
Use of municipal channels: newspaper and local TV;
Local events;
Dedicated workshops;</td>
</tr>
<tr>
<td colspan="3">COST STRUCTURE
Cost of the staff running the OSS;
Operational cost of OSS</td>
<td colspan="2">REVENUE STREAM
Municipal budget using external financing
In the future services of the OSS might be for a fee</td>
</tr>
</table>

Description of the Model Components

In the provisioned One-Stop-Shop the City of Roznov will be committed to the following KEY ACTIVITIES:

- Provide advice and consultations to a variety of clients about what can be done in their properties, eg. energy savings, energy efficiency and renewables
- Create educational materials for various external clients (owners, tenants, companies…)
- Educational seminar/workshops for external clients
- Internal education of local government staff
- Identify a suitable source of financing for the renovation and other energy efficiency measures
- Help prepare the proposal
- Explain what technical documents are needed for what actions, their structure and requirements
- Advise how to find relevant experts/companies
- Share municipal experiences with similar projects

The KEY RESOURCES needed for developing the model and performing the numerous activities are mainly related to the staff operating the OSS and the building where the OSS will be located. In Roznov, the municipality itself will provide an office within its premises and its municipal staff to give advice to potential clients.

CITIZEN RELATIONSHIP and SEGMENT are a crucial part of the model, it is crucial to ensure that the value proposition will be delivered to the targeted citizens, vulnerable householders in this case, and a positive relationship is established. The municipality will need to prepare a methodology for the identification of the vulnerable people to which dedicated services, or payment exemptions, will be reserved.

Long-term perspective of the Model and implementation roadmap

The Municipality of Roznov is committed not only to setting up and running the OSS but also to a retrofit intervention of a public housing building. Such retrofit intervention will be used as a showcase for citizens interested in retrofitting their own dwellings, giving them the possibility to make an inspection and assess the benefits of the intervention. The OSS will deliver know-how to citizens and will stimulate their participation in energy efficiency interventions and energy transition projects, making them understand the economic and environmental benefits related.

From an operational point of view, the Municipality of Roznov will start the renovation project by doing an energy audit on the building and an economic evaluation of the PV installation, which will be ensured by SEMMO. Meanwhile, the municipality will assess the overall structure of the building, prepare the tender documents to select the company that will carry out the renovation works and installation of PVs and prepare a proposal for funding to the Modernisation Fund with the assistance of SEMMO.

Regarding the involvement of vulnerable households, the municipality is planning a series of monthly meetings with citizens, including the target group, starting in January 2023. People living in municipal social housing buildings, including the building that will be renovated, will be invited to join the meeting.

1.5

Long-Term Business Model for San Giuseppe Vesuviano – San Gennaro Vesuviano - Palma Campania - Striano

Driving the implementation of the first energy communities in the area, benefitting vulnerable households

Pilot Information

San Giuseppe Vesuviano, San Gennaro Vesuviano, Palma Campania and Striano are four Italian municipalities with a total population of 66.546 inhabitants in the metropolitan city of Naples, in the Campania Region. Poverty, deprivation and unemployment are the main social issues in the pilot area, as well as in the broader Campania region. The large majority of people in the area own their homes as is fairly characteristic across Italy. However, vulnerable groups, especially ethnic minority groups, which make up 1/5 of the population, tend to rent apartments. These vulnerable groups often live in overcrowded housing that is not adequate to fulfill their needs.

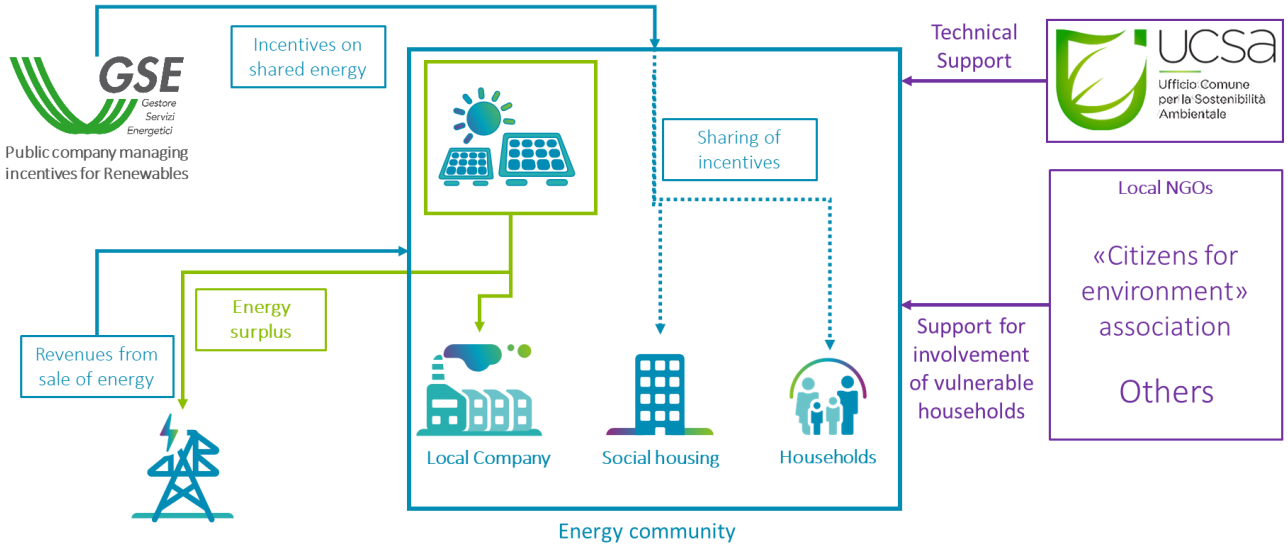
Model

Leveraging on the new Italian regulation on energy communities (Law 199/2021), UCSA is planning to support the installation of new PV plants on buildings and the setting up of new Renewable Energy Communities in the four municipalities, involving vulnerable households.
According to Italian regulation, everybody can participate in an energy community (citizens, companies, public administrations, NGOs, etc.), which must be set up in the form of a juridic entity, typically an association or a cooperative. As an entity, an energy community will have its

own internal regulation defining the governance structure and, most importantly, defining how the economic benefits are shared among the members.

Within an energy community, there are prosumers (members owning a renewable energy plant, typically a PV on their roof) and consumers. Surplus energy produced by prosumers and not directly self-consumed on-site is put into the grid. The amount of energy that is consumed by the other members of the community (consumers) in the same hourly period of the surplus energy produced by the prosumers is defined as "shared energy". Since this sharing is only virtual and consumers cannot directly benefit from a reduction in the energy cost on the bill, the Government (through the public company "GSE") grants an incentive to the community on the "shared energy". This incentive, according to the internal regulation of the community, can be shared among the members.

UCSA Pilot



Following this scheme, we developed a Business Model based on the classic components of the Business Model Canvas. The boxes of the Canvas have been filled according to the theoretical business models for energy communities presented in the previous report D 2.2 and the Pilot's specific needs, characteristics and willingness.

KEY PARTNERS	KEY ACTIVITIES	VALUE PROPOSITION	CITIZEN RELATIONSHIP	CITIZEN SEGMENT
"Citizens for environment" association, Forum dei Giovani, Pro Loco, ENEA, AESS, Partners are from two different fields, social and technical	The municipalities will establish different energy communities and support private citizens in their development **KEY RESOURCES** Available roofs Financial: Pv investment (1000-1300 €/Kw), civil works, other accessory costs	Making electricity generation from renewable sources local and widespread Making the energy transition usable for all community stakeholders Environmental benefits	Relationship with vulnerable householders will be maintained by OSS staff and social services **CHANNELS** OSS and social services in the 4 municipalities	Active Members: people interested in the energy community and using their own resources; Energy Poor **Households**: people identified through social services that will benefit from the Renewable Energy Community;

COST STRUCTURE	REVENUE STREAM
Investment for the PV installation; Operations and Maintenance expenses	Energy and cost savings for direct self-consumption Incentives for energy communities granted by the GSE

Description of the Model Components

The joint office for energy and environment (UCSA) of the four municipalities aims at developing energy communities devoted to the involvement of energy poor households and to creating value by sharing energy.

The VALUE PROPOSITION of the Municipalities is composed of three major elements:

1. making electricity generation from renewable sources local and widespread;
2. making the energy transition usable for all community stakeholders;
3. delivering environmental benefits.

The renewable energy community, with its innovative approach, seems the perfect tool for delivering all the mentioned value to vulnerable citizens and the local territory. A renewable energy community is, by definition, a mechanism for producing and sharing renewable energy while delivering in its territory 3 major benefits:

- Economic benefits: thanks to the locally produced renewable energy, members will decrease their energy expenses;

- Social benefits: delivered to vulnerable households towards which a cheaper energy source will be extremely effective, moreover it creates knowledge on energy and energy efficiency, helping people to improve their consumptions;
- Environmental benefits: consuming energy produced from renewable sources will diminish the consumption of energy produced by fossil fuels;

For delivering such a value proposition UCSA will assist the municipalities in developing energy communities, one for each town, and identify the vulnerable households to be included.

In terms of KEY RESOURCES to perform the activities and deliver the value proposition, the model requires both financial and operational resources. Financial resources are needed to purchase and install the renewable energy source (photovoltaic plants), based on the available roofs of the neighborhood. Management capabilities are also needed, for the maintenance and functioning of the technical equipment and the governance of the different energy communities.

For such an ambitious plan the KEY PARTNERS will play an important role. In this case the municipalities have identified local NGOs, already participating in the local working groups (LWG), that should facilitate the creation of energy communities and the aggregation of selected disadvantaged residents. Furthermore, the initiative will be sustained also by larger organizations, like ENEA (National Agency for New Technologies, Energy and Sustainable Economic Development) and sister municipalities.

Regarding the CITIZEN SEGMENT, CHANNELS AND RELATIONSHIP: UCSA, in collaboration with the local social services offices, has developed a tailor-made strategy for the identification of vulnerable households, based on economic and social parameters. Through this strategy, a first list of vulnerable households to be included in the renewable energy communities has already been proposed to the municipalities. While the relationship with these identified vulnerable households will be held by local social services, UCSA will be responsible to coordinate the Local Working Groups and to make the stakeholders work together to achieve the objectives.

In terms of COST STRUCTURE and REVENUE STREAM, the four Municipalities have not yet fully defined a definitive plan to implement the business model. In particular, it's still to be defined who could provide the roofs (and how), where to install the PV plants and who could support the up-front investment costs. In fact, on one hand, costs for the purchase and installation of the PV plants and setting up of the energy communities are quite easy to calculate and will be proportional to the size of the investment. On the other hand, it will be more complicated to

determine how the economic value generated by the share of energy (under the current Italian legislation on energy communities) can be distributed among the different actors and vulnerable households. This could depend on the nature and scope of the stakeholders involved (companies, NGOs, Municipalities, etc.) but also on the availability of financial resources to invest, the expected return on investment and the availability of profits to be shared amongst the community members,

Long-term perspective of the Model and roadmap for the implementation

The 4 municipalities and the UCSA office aim at developing the first energy communities in the area in order to be a role model and, thus, encourage private citizens in developing their own. First, the municipalities will find a way to invest in these pilot renewable energy communities ensuring the participation of vulnerable households as benefiting members of the communities. Then, once the pilot is ready, the municipalities will support the activation of citizen-led initiatives, following the good practice and example.

The Municipalities aim to replicate and extend energy communities within their territories in order to reach at least 100 vulnerable households and potentially include all vulnerable households in the long term. Municipalities will not only fund and develop energy communities, but will also help private citizens in their development through advisory services performed by their One-Stop-Shops and Social Services.

The real challenge will be the inclusion of vulnerable households in these initiatives and how to make them benefit from the incentives/return from the participation in the energy communities.

From an operational point of view, UCSA will start developing a technical and economic feasibility study for the installation of new PV plants which will serve the energy community. The finalization of the study and the implementation of the project is subject to the publishing of the final Decrees by the Italian government, that will set the definitive rules for energy communities. These Decrees are expected to be published by March 2023.

Meanwhile, UCSA has already mapped the vulnerable households that could be involved in the project. In the upcoming months, activities will be focused on defining the rules and schemes to engage the vulnerable households, also according to who will actually do the investment. Availability of financial resources for the upfront investments could be an issue, thus UCSA will also look for incentives or funds from the regional or the national government.

1.6

Long-Term Business Model for HEERLEN

Fostering cooperation between local stakeholders to boost energy transition

Pilot Information

Heerlen is a town in the Limburg region of around 86,000 people, with around 250,000 in the wider metropolitan area. Formerly a coal-mining hub, which saw large expansion of the town in the early 19th century, Heerlen is left with a legacy of older, inefficient buildings, relative unemployment and deprivation. With regards to the housing stock, 93% of homes were built before 2000, most prior to 1970, and many need insulation and renovation, due to their age and condition.

Model

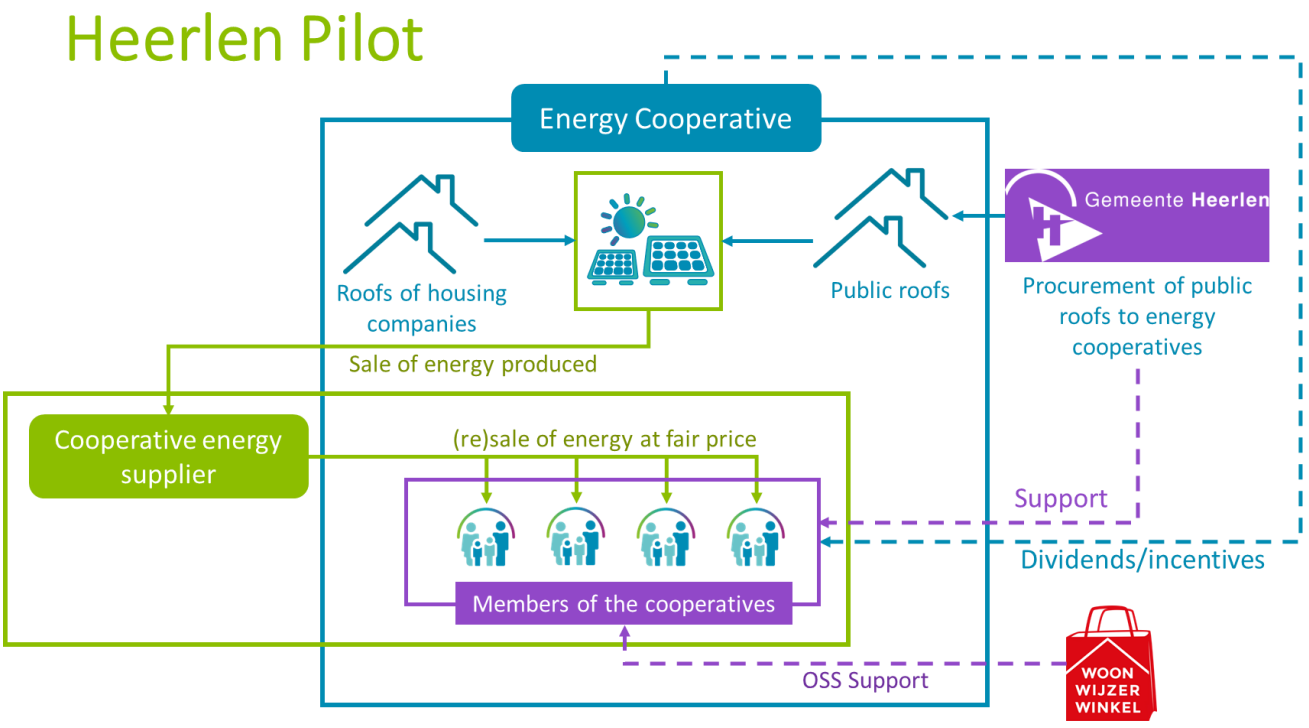
Heerlen is developing a long-term business model for tackling energy poverty, focusing on a general collaboration between Public Administrations (City and Region), local energy cooperative and citizens.

The model is rooted in the availability of (big) roofs in the city that can be exploited for renewable energy sources (photovoltaic plants). The objective of the Municipality would be to make local vulnerable households benefit from the energy produced by these PV plants. The main objective is to start small energy communities which would install solar panels on roofs, guided by an energy cooperative. These small energy communities will thus have a strong connection with the installation, so engagement of members/participants is made easier. Members could take a share in the installation, according to the amount of energy they will likely consume. In return, they get a dividend and an energy tax reduction ("postcode-roos"). Shares can be bought with own money or a low interest loan.

These communities, as part of an energy cooperative, will sell the renewable energy produced by the PV plant back to the members for a fair price. The sale of the energy produced is done through an external cooperative energy company. A percentage of the profit gained from renewable energy production is used to support vulnerable households in upgrading the energy efficiency of their home or way of living.

The Municipality is already evaluating some pilot models: one is a project currently supported by the Municipality through the exploitation of a large public roof and the involvement of the nearby neighborhood; another one is being explored with a housing company, focusing on medium-sized roofs on buildings with a mix of renters and owners. The challenge is to find a suitable business model to renovate the houses with some of the gains from the renewable energy installation.

The actual way in which public roofs could be tendered and how the Municipality can make sure vulnerable households are involved is still to be defined. In the meantime, the Municipality is committing to act as a facilitator and promoter of energy community initiatives and projects, fostering the activation of collaboration between stakeholders and introducing the energy poverty topic in the discussion.



For the Heerlen case, the Business Model Canvas was filled in according to the information currently available, considering the potential future developments of the model, which are still to be finetuned.

<table>
<tr>
<td rowspan="2">KEY PARTNERS

Woonwijzer Winkel (OSS)

Social Housing corporation

Heerlen Stand-By!

Parkstad – (city region)

Energiecoöperatie Heerlen Duurzaam

Energiecoöperatie of Heerlen (knowledge transfer)</td>
<td>KEY ACTIVITIES

Support to install PV plants for energy cooperatives
Tender public rooftops in energy poor areas
Cooperation in the energy cooperatives consortium
Promotion of initiatives to tackle energy poverty</td>
<td rowspan="2">VALUE PROPOSITION

Making energy transition accessible to vulnerable householders</td>
<td>CITIZEN RELATIONSHIP

Co-creation workshops with vulnerable households</td>
<td rowspan="2">CITIZEN SEGMENT

Vulnerable households as identified by the Municipality</td>
</tr>
<tr>
<td>KEY RESOURCES

Public roofs available for PV installation

Investments by private local cooperatives
low interest loans</td>
<td>CHANNELS

Community buildings
One-Stop-Shop
Involvement actions by local cooperatives</td>
</tr>
<tr>
<td colspan="3">COST STRUCTURE
Staff costs for the internal organization and specific consultations
Financial resources for support schemes for vulnerable households</td>
<td colspan="2">REVENUE STREAM
Fees from specific services</td>
</tr>
</table>

Description of the Model Components

Through this model the municipality's VALUE PROPOSITION focuses on making the energy transition accessible for all, including vulnerable households. This strategy focuses on increasing the production and distribution of local generated energy.

The municipality, playing a key and central role as facilitator between stakeholders, has involved several KEY PARTNERS in this strategic plan:

- local energy cooperatives, that can directly involve the vulnerable households and drive and initiate local energy communities;
- the local one-stop-shop, that can provide advice, information and training on energy savings and energy efficiency;
- the "Parkstad" City Region, which can implement policy measures to support the project and make the municipalities of the area work together for a common goal.

In terms of KEY RESOURCES to perform the activities and deliver the value proposition, the City will have to decide if it is willing to invest financial resources for the development of the proposed actions or if it only wants to act as coordinator and facilitator of the process. In the province and nationally, low interest loans are available.

For the CITIZEN SEGMENT, CHANNELS AND RELATIONSHIP the City has already started thinking about how to involve vulnerable citizens and how to make them benefit from the initiatives. This will be one of the main topics that the City will discuss in the local working groups.

In terms of COST STRUCTURE and REVENUE STREAM, the city has not yet defined who will be in charge of the investment cost and what could be the revenues or benefits from the investments. This will be defined in the implementation phase of the business case.

Long-term perspective of the Model and roadmap for the implementation

The business model developed for the Municipality of Heerlen shows some clear points and objectives, especially in terms of value proposition and partner involved, but needs further thinking and elaboration about how to deliver the value proposition to the vulnerable households.

From an operational point of view, the municipality continues to work on the pilot project by:

- involving the vulnerable households through co-creation workshops, to gather information and feedbacks and to define how to include them in the development of the energy transition project;
- creating local energy communities together with the energy cooperatives to find and create renewable energy projects;
- coordinating the activities of the local energy cooperatives and other public administrations (including the "Parkstad" City Region) to define a common strategy to foster the energy transition of the area.

Thus, for the implementation phase, the role of the municipality will be central to match the investment (and return) expectations of the energy cooperatives with the needs of the vulnerable households, who cannot likely afford the upfront investment cost. By managing and coordinating this process from the beginning, and putting the energy poverty theme on the discussion table as a central issue, the municipality expects that all stakeholders involved will work together to identify and implement suitable solutions.

02

Activities with the Pilots

Knowledge transfer and system mapping workshops

2.1

Knowledge Transfer to the Pilots

The definition of the long-term business models for the pilots is the result of a series of activities carried out earlier during the project (within Work Package 2). The first activity focused on transferring some basic knowledge about business models to the pilots: what they are, how they are built and what they are useful for. The activity started with the identification of generic business models that can be put into place to tackle energy poverty at local level. These models have been analyzed, according to the needs and objectives of each Pilot: i) Energy Communities; ii) Energy Cooperatives; iii) ESCo model; iv) Technology leasing models; v) One-Stop-Shops.

Training materials were prepared and shown to the pilots and to all the Consortium partners in dedicated sessions and workshops. The aim of that activity was to provide the pilots with the necessary knowledge and information to start thinking and building a long-term business model to fight energy poverty in their local context. The report Business models for inclusive energy services tackling energy poverty (Deliverable 2.2) explains each of the schemes upon which the tailored long-term business models have been shaped and developed, and include the training materials used.

For all pilots, particular attention was paid to the sustainability of the models, their replicability and the involvement of vulnerable households. Involvement of vulnerable households is a key element of these peculiar business models as it is one of the main specific objectives of the whole Power UP project. Without a precise and clear understanding of the segment of population to be targeted and involved, as well as the proper channels to get in touch with them and to establish a relationship, all business models risk failure.

This is why the pilots have set up Local Working Groups in their municipalities and have carried out some System Mapping Workshops, as will be shown in the next paragraph. The information, feedback and feelings gathered during these sessions helped build the long-term business models for the pilots, especially in the parts related to how to deliver the value proposition to the vulnerable households.

2.2

System Mapping Workshops

In order to identify barriers and opportunities for implementing business models tackling energy poverty, each pilot performed a system mapping of the energy socio-technical system in their local contexts. The session was organized with the stakeholders being part of the local working groups of each pilot, in order to gain a common understanding of the challenges and the situation, based on the different perspectives.

Previous to the organization of the system mapping workshops by each pilot, different methodologies have been presented to the project partners and applied with one practical example. For the readers interested in different system mapping tools (stakeholders mapping, pentagonal problem, and backcasting), you can refer to the training materials available in Annex 1. The main questions and outcomes of these system mapping workshops are presented below.

Pilots	Dates	Participants	Methodology used
Campania area	10 June 2022	Social services of the 4 municipalities Technical services of one municipality	Pentagonal problem and backcasting
Eeklo	3rd May 2022	social services, the DSO, a community centre, a one-stop-shop for housing and energy and the social housing organisation	Pentagonal problem
Heerlen	18 July 2022	5 local energy cooperatives	Opportunity mapping an discuss different models
Roznov	June 2022	municipal departments in charge of assets management, strategy and social services	Backcasting
Valencia	July 2022		Backcasting and Ocean of opportunities

Table 1: overview of the system mapping exercises performed by the POWER UP pilots

Campania area (UCSA)

The system mapping workshop for the Italian pilot took place in Castellammare di Stabia on June 10th 2022. The social workers of the UCSA municipalities and the one from Castellammare di Stabia plus two technical staff, one from UCSA and one from Castellammare participated.

After having revised the possible options on system mapping, the participants decided to select as methodologies the Pentagonal problem and Backcasting.

Main questions

- how easy will it be to create a community? Typically, in Italy there are are only few experiences across the various sectors, especially in the energy sector;
- how could the Municipality act or be recognised as facilitator and/or sponsor of energy communities at local level aiming to reduce energy poverty?
- how to ensure that the local One Stop Shops motivate the residents to participate in an energy community to support the reduction of energy poverty?

Main outcomes

Target group

In the local context, it is quite difficult to separate energy poverty from other basic needs.

Solution to research

Different approaches that are feasible and suitable to all potential participants: owners, tenants, social tenants, etc.;

Facilitate access to services (i.e. sharing mobility), installations for production and home appliances to promote energy savings;

Ensure participation of enterprises, companies and businesses in general as prosumer or simply consumer.

Barrier for change

- Resistance to change consumption habits
- Complexity to set up and manage an energy community.

Eeklo

In Eeklo, the system mapping workshop took place on the 3rd of May 2022 from 13:30 to 16:30, after the local working group was established and two introductory meetings with the local working group took place. Composed of social services, the DSO, a community center, a one stop shop for housing and energy and the social housing organization, the members have a comprehensive knowledge on the local situation regarding energy poverty from different

perspectives. The system mapping workshop had as a goal to facilitate knowledge sharing and discussion about the knowns, unknowns and assumptions about energy poverty in Eeklo in a structured way. The methodology of the pentagonal problem was adapted to cater to this challenge. The unknowns and assumptions then formed the basis for further research and for the preparation of the co-creation sessions with vulnerable households.

Main questions

- Known and supposed consequences of energy poverty noticed in contacts with vulnerable households in Eeklo?
- What are the driving forces enlarging or diminishing energy poverty on local and national level? (policy, behaviour, beliefs,…)
- Which business models should we further investigate?
- Which are barriers for change we could encounter during the project?

Main outcomes

Target group:

- Due to the high energy prices and the government measures on national level to temper the impact on vulnerable households, the profile of households at risk of energy poverty is shifting.
- Energy is often the tip of the iceberg: once a family searches for help for high energy costs, often a lot of other difficulties are discovered by the social services such as housing, material deprivation,…
- Already in 2022, the number of self disconnections from the electricity grid started to rise.

Drivers for energy poverty:

- Complexity of regulations is a huge barrier which excludes households, complicates choices and makes confidence levels drop.
- Current measures are targeted to groups who have enough initial capital to invest.
- Housing is a crucial factor.

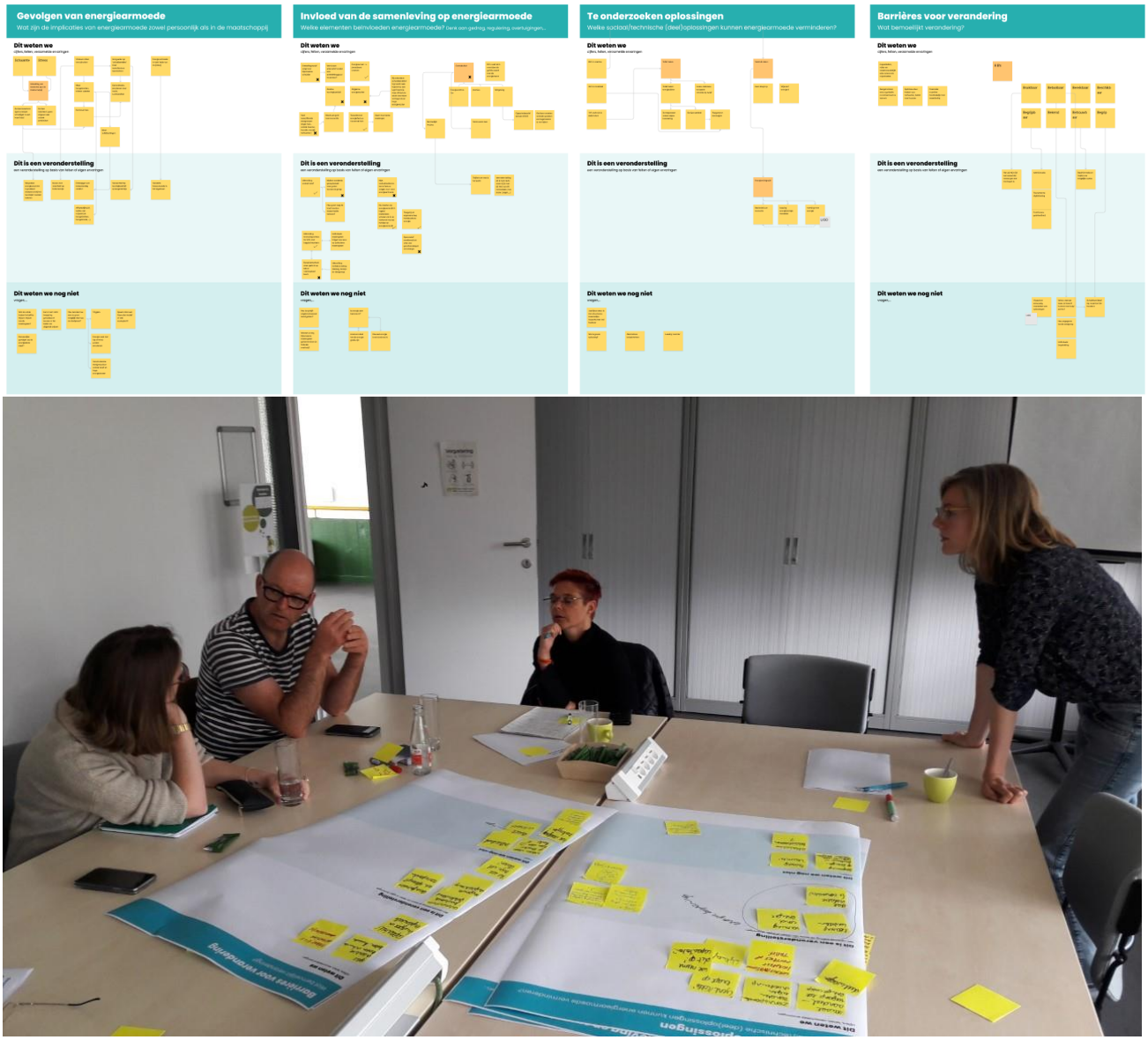
Solutions to research:

- Remove barriers to become a member of an energy community.
- Give access to shared mobility.

- Leasing of solar panels and household appliances.

Barriers for change:

- Limited budget and capacity within city administration and social services to tackle problems in a more holistic way.
- Complexity: literacy, administration, digitalisation.
- Usability of solutions: resistance to change.
- No one size fits all solutions (owner vs tenant vs social tenant,…).



Heerlen

In Heerlen the system mapping and orientation took place on the 18th of july. All 5 local energy cooperatives were represented. All are actively involved in their own way in the bigger city region Parkstad (250.000 inhabitants), while none of them is active with energy supply yet. An introductory round provided also an insight into the possible common goals.

We looked at the Agem model[5], a model that was used in the Northeast of the Netherlands. Agem is an energy cooperative, involving (as of beginning of 2021) 8 Municipalities and 15 local energy cooperatives. Agem leverages on the collaboration between several actors to boost the energy transition in the region, providing knowledge and advice on energy efficiency and locally-generated renewable energy. The group was positive and this model gave food for thought for the next step. The idea of a local supplier and involving the one-stop-shop was a big plus for most.

Main questions

- What is important for you?
- What are the strengths and knowledge you want to contribute to?
- What model do you think is most valuable?
- What social components are important?
- How are you involving vulnerable people?
- What is your communication strategy?
- What are you expecting from the municipality/ local government?

Main answers

Own identity and freedom of decision-making is important for all cooperatives, both participative and not (top down).

Strengths that are mentioned: knowledge and active in the local neighborhood to gain trust among the inhabitants. Combining the target group energy poor is for some a topic that was nog discussed specifically. Possible ways were discussed to involve this group. No or lower contribution and start off the first pilots in vulnerable areas so these people can benefit.

Cooperatives are open for the model and want to think about their way of contributing, preferable to have the one stop shop as local energy office

[5] www.agem.nl

A follow-up meeting was held with the local energy cooperative of Heerlen (gebieds cooperatie Parkstad) to discuss further steps.
The Municipality facilitated the local social partners in the neighborhood, and brought the right key players together. A community worker familiar with the vulnerable households, a social housing corporation and the municipality were represented. Together we talkies about involving and gaining trust with specific vulnerable households and how to reach the,
A plan will be carried out in the next few months.
Below a meeting about energy poverty and vulnerable households in the one stop shop with community workers and a meeting in the local community house with energy poor households talking about energy poverty and challenges and discussing opportunities.

Rožnov

In Rožnov a system-mapping workshop took place at the end of June 2022. Representatives from various municipal departments, including assets management, strategic and social, who are currently also the members of the local working group, were present to map out what activities and resources are needed to establish a one-stop-shop in the municipality. We used the backcasting approach, defining the vision of the future OSS and identifying current conditions and circumstances. We ensured all aspects of the business model were discussed in detail resulting in OSS timeline, including activities, outputs for next three years (2022-2024).

Main questions

- What format should OSS have?
- What activities should it carry out?

- Who will be doing the activities; internal or external capacities?
- How often, where, for whom?
- How will it be financed?
- How will it be promoted?

Main outcomes

Definition of Timeline of activities and responsibilities for both one-stop-shop and PV installation

Valencia

The System Mapping session for the Valencia pilot was held on July the 12th 2022, from 11:00am to 2:00pm in Las Naves. Members of the Local Working Groups were invited to actively share their impressions, discuss and reflect on different collective models of renewable energy generation, with potential impact of energy poverty in the spotlight.

The session included two different dynamics, with the following agenda:

- Introduction of the session and contextualization (POWER UP and RIP Project)
- First dynamic "Ocean of Opportunities": introduction and brief description of different ongoing projects/models at the Spanish and European level, considering legal entities involved, ownership of installations, financing, space for installations and impact on energy poverty. These initiatives were distributed in a chart with 2 axes, the horizontal one on citizen leadership (top-down vs bottom up) and the vertical one on impact on

energy poverty (high vs low). Discussions were made around these models, looking for ideas to be implemented on València at big scale.

- Second dynamic "Backcasting": focused on the Requiem in Power (RIP) project, discussion on the most likely model, and necessary steps to be made to make sure that the energy is effectively socialized and targeting reduction of energy poverty. Two models presented (both assuming fees for participation), one managed by a public body, another one managed by a third entity (by public procurement).
- Informal space to exchange impressions (and lunch)

Main questions

For the first dynamic:

- Are there enough feasible models?
- Any chance to fill a gap, do we miss something?
- Can we identify those with greater impact?
- And those with the broadest scope?
- What about replicability? The easiest ones to be deployed in the city.

For the second dynamic:

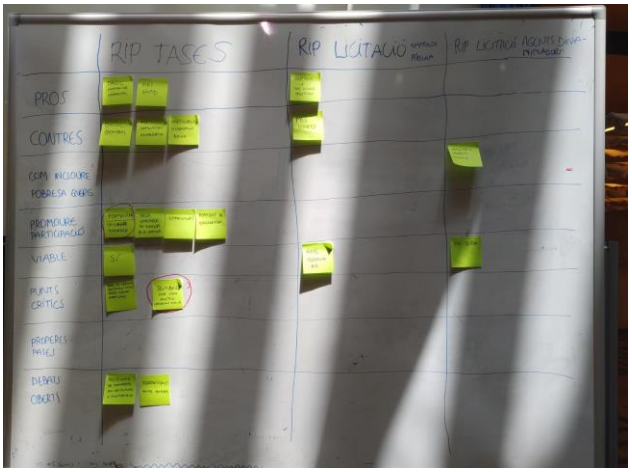
- Weak and strong points for both alternatives.
- Any tipping point?
- Is there a preferred model?
- What should we consider in any case?
- What should be the next steps?

Main outcomes

In general, for both dynamics:

- Different models should coexist in the city, with a special focus on the "fee model" and the Castellar example.
- Fee model would make it really easy for citizens to participate, avoiding conflicts on tenancy, ownership of apartments, up-front investments and different uncertainties.
- Positive response and great interest in the creation of a public (or semi-public) energy company to drive the projects.
- The RIP project is not an Energy Community;

- Consider the possibility to transfer ownership of installations to citizens once amortized (difficult);
- We should make it easy specially for vulnerable households, not expecting them to be more proactive than middle-class households. This is, not asking them to attend multiple training workshops so they can be beneficiaries of the models;
- Accurately define how to distribute energy among vulnerable households, % of energy according to actual needs;
- There should be space for citizen initiatives like the Castellar case, so they can find a roof or space to deploy their projects;
- Any model should be political-proof to ensure credibility.
- For the RIP project, and in general, communication, citizen participation and integration of vulnerable households should be performed with very tailored methodologies to the specific neighbourhood particularities.
- Local entities would be key to reach participants of collective-self consumption models.



2.3

Conclusions and next steps

This document defines a framework with which the pilot cities can implement their actions against energy poverty. By defining each single component of the long-term business model, each city has set the pillars and can start developing the concrete activities foreseen in the Power UP project.

To sum up, the identified business models vary from pilot to pilot:

- Valencia and UCSA will seize the opportunities coming from the new regulation for Renewable Energy Communities, which can involve vulnerable households as members and/or as beneficiaries of the produced and shared energy and related economic value created;
- Eeklo will directly invest money in a wind turbine, purchasing the shares of the local energy cooperative Ecopower and lending them to selected vulnerable households, making them benefit from competitive energy tariffs;
- Roznov will set up its own one-stop-shop, aiming at supporting the citizens in taking action for energy savings and energy efficiency; at the same time, the City will invest in the renovation of a public social housing building, including the installation of a PV plant, benefiting the vulnerable households living inside;
- Heerlen will work on a collaborative and comprehensive model, which aims at involving municipalities, local energy cooperatives and citizens to define common strategies for a just energy transition in the area.

Though each business model has its own features and each pilot plans a different set of activities, all are focused on the involvement of vulnerable households with the final aim of fighting energy poverty.

As a next step in the Power UP project, the pilots will keep on animating the Local Working Groups in order to enter more in the details of the actions and to define the Business Cases, assessing the financial costs and benefits related to the intervention.

Annexes

Annex 1 – System Mapping Methodologies

POWERUP

The catalyst for social innovation in the energy market

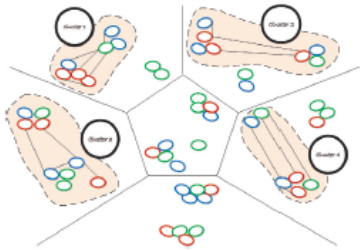
System mapping methodologies

Energy socio-technical system at local level

This project has received funding from the European Union's Horizon 2020 research and innovation program under Grant agreement No. 101033940

Tools and methods

Pentagonal problem



A: Challenge definition – System mapping, Workshop 1
D: Low
W1: Systemic components of the problem
W2: Inputs on challenge status from challenge owners
W3: KM + system mapping session. Two versions are included: standard and policy-oriented sections.

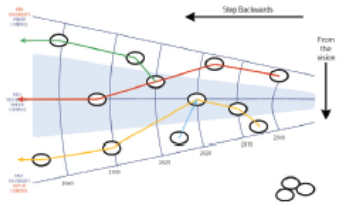
Ocean of opportunities

A: System mapping, Workshop 1
D: Medium
W1: Ranked priority areas and key system elements
W2: List of existing actions by area or topic
W3: KM + Visioning exercise. Two versions are included: standard and policy-oriented sections.

Circular economy explorer

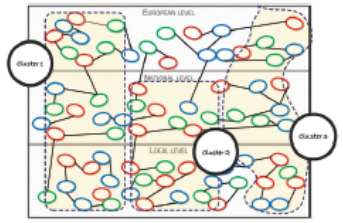
A: System mapping, Workshop 1-2
D: Medium-high
W1: List of potential actions, driving forces and trends
W2: Selected cases and sectors as priority areas
W3: Prototyping business model and actions
Two complementary tools: system simulation and driving forces and trends exploration

Future radar



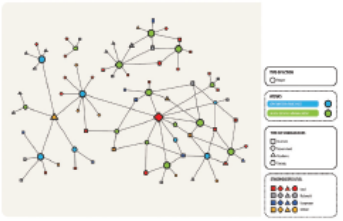
A: System mapping, Workshop 2
D: Medium-high
W1: List of potential actors and driving forces
W2: Selected cases and sectors as priority areas
W3: Prototyping business model and actions. Two versions with different layout are included

Socio-technical roadmap



A: Road mapping
D: Medium-high
W1: Resource mapping and prioritisation of innovation areas
W2: Existing system map and info about local available assets
W3: KM and action/project prototyping session
Two versions are included: Standard and multi-level governance setting

Network Analysis



A: System mapping, Workshop 2
D: Medium-high
W1: List of potential actors and driving forces
W2: Selected cases and sectors as priority areas
W3: Prototyping business model and actions
Network elements and illustrative cases are provided

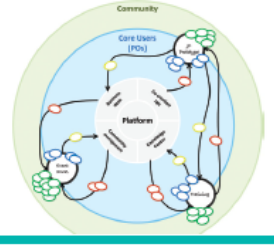
Program prototyping

A: Road mapping with focus on value proposition
D: Medium-high
W1: List of key elements for action/programme prototyping
W2: Selected cases and sectors as priority areas
W3: Prototyping business model and resource allocation

Gap analysis

A: System mapping, Workshop 2 or beginning of road mapping
D: Medium-high
W1: List of potential actors and driving forces
W2: Selected cases and sectors as priority areas
W3: Prototyping business model and actions
Network elements and illustrative cases are provided

Platform prototyping



A: Road mapping with focus on portfolio of actions
D: High
W1: List of potential actors and driving forces
W2: Selected cases and sectors as priority areas
W3: Prototyping business model and systemic relations between actions

Presentation of some tools

- Stakeholders mapping
- Pentagonal problem
- Backcasting

Stakeholders mapping

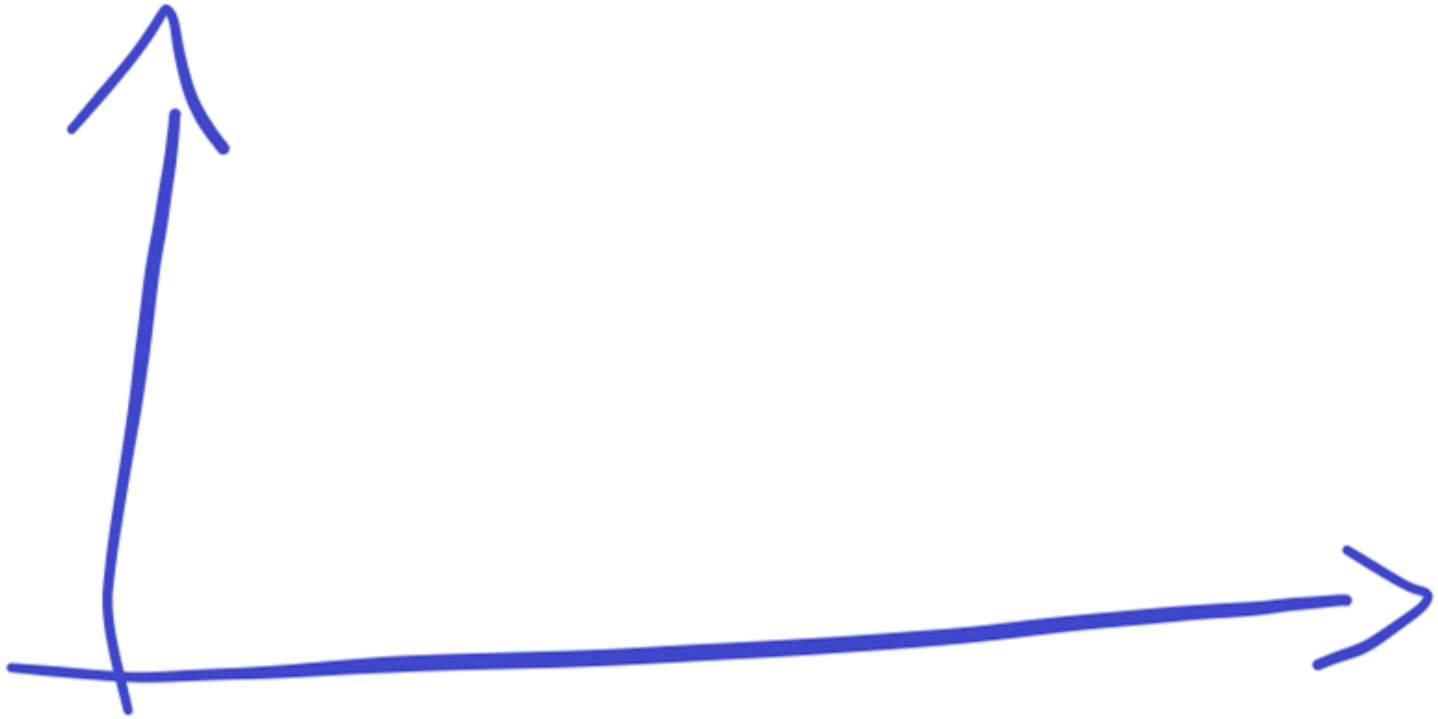
- Stakeholder maps are helpful for any project,
- Especially when you have a large project that impacts lots of key players across roles, departments, and even organizations.
- Two axis:
  - level of interest (how much the stakeholders are impacted by the outcome of the project)
  - level of influence (how much can the stakeholder impact the project)

Stakeholders mapping

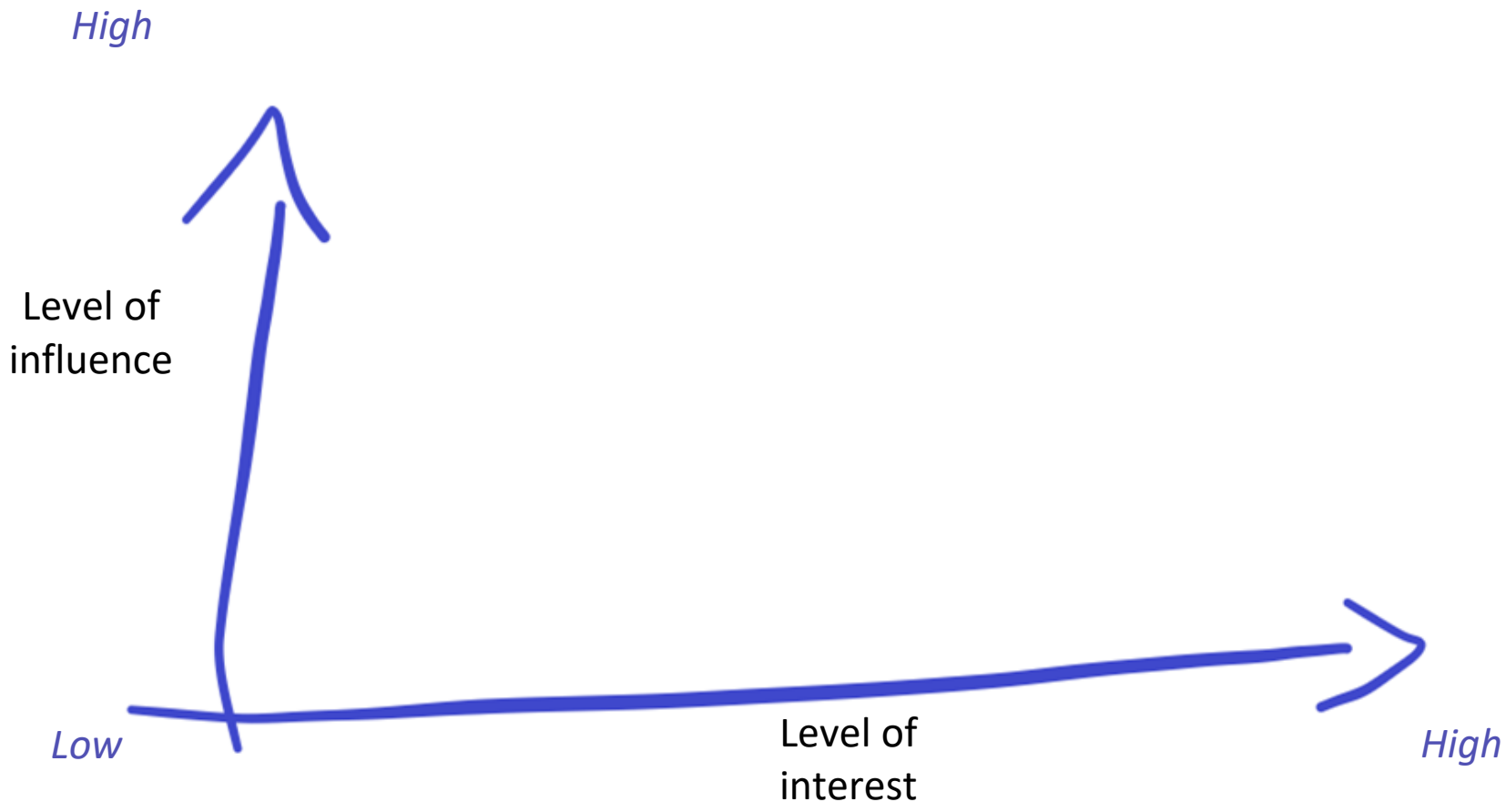
- What you can expect:

1. Identify Stakeholders
2. Analyze Stakeholders
3. Map Stakeholders
4. Prioritize Stakeholders

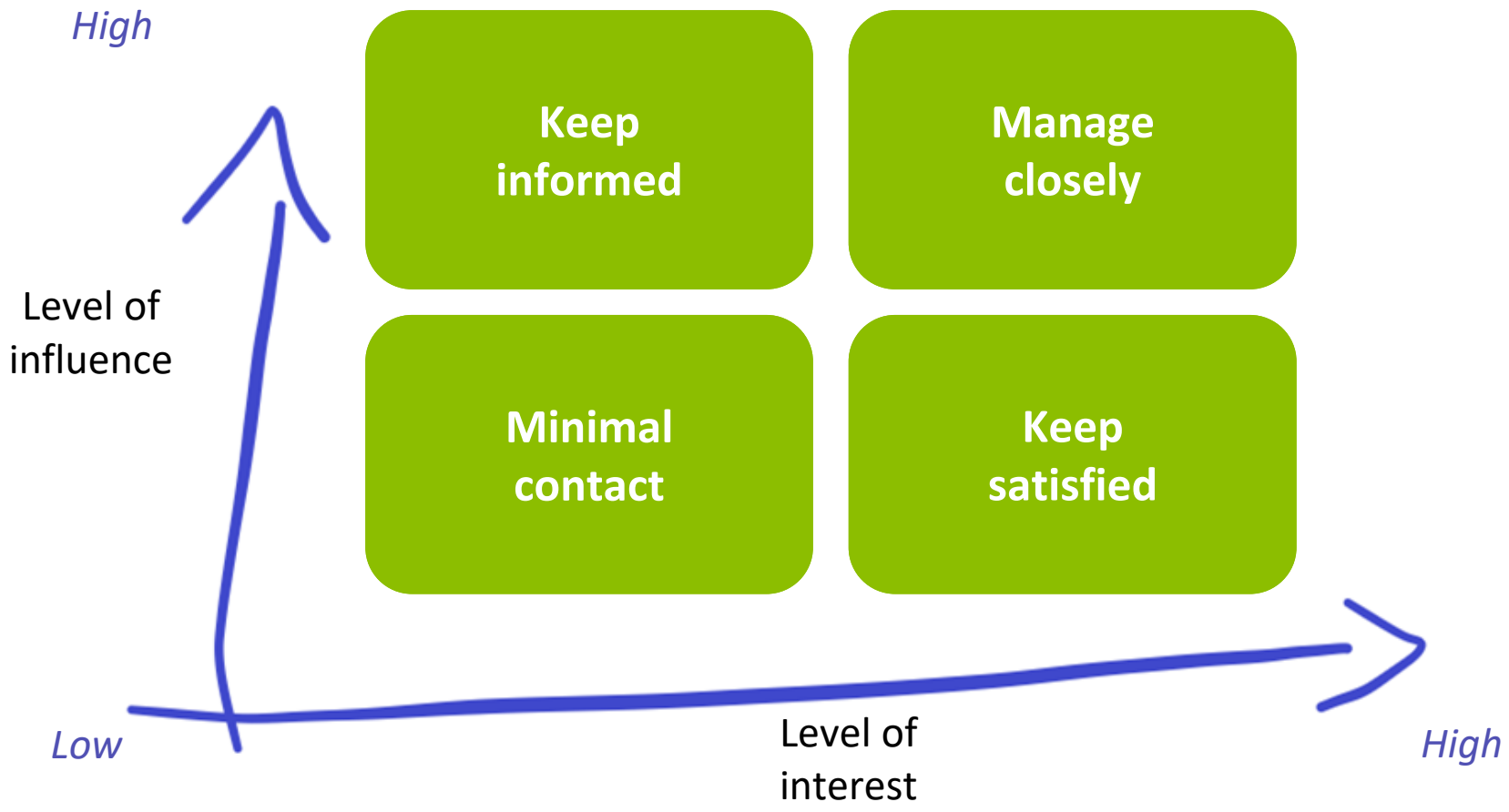
Stakeholders mapping



Stakeholders mapping



Stakeholders mapping

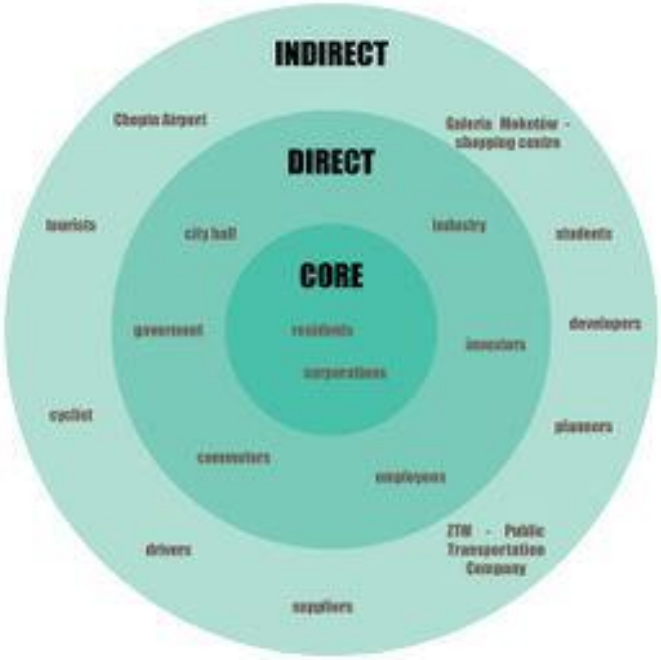


Stakeholders mapping

- Stakeholders are essential to the success of a project.
- Stakeholder mapping is the start of an effective communication plan.
- It is also a way to manage expectations.
- Engage key stakeholders early on
- Secure needed resources
- Improve communication
- Anticipate stakeholder questions, concerns, and needs

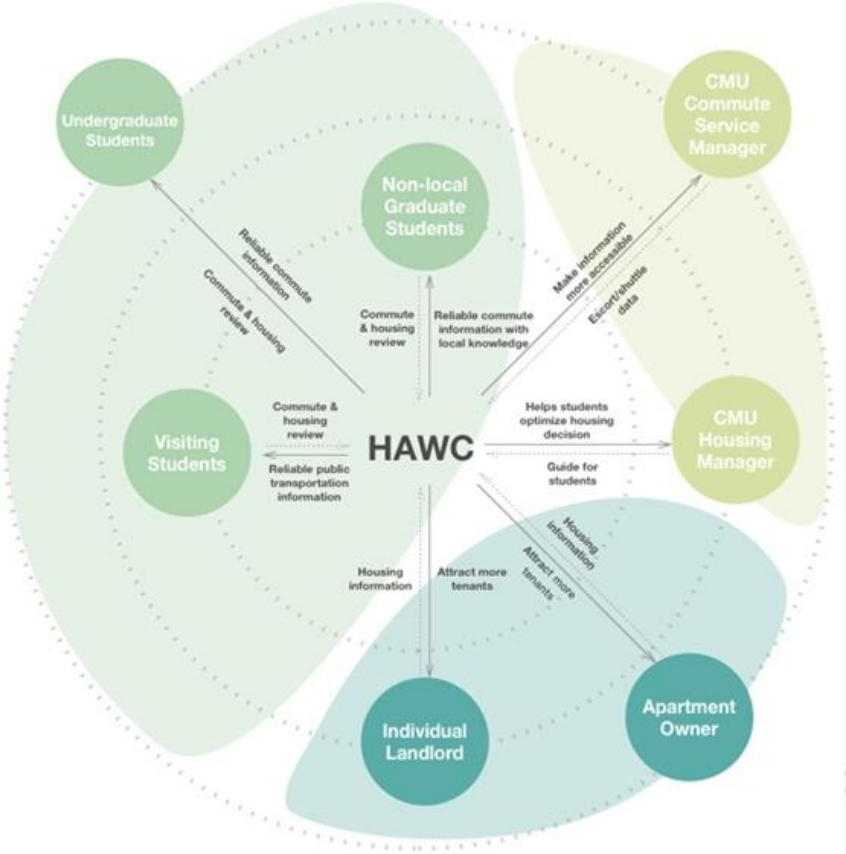
Stakeholders mapping variant

- From core stakeholders...
- ... to direct and indirect stakeholders

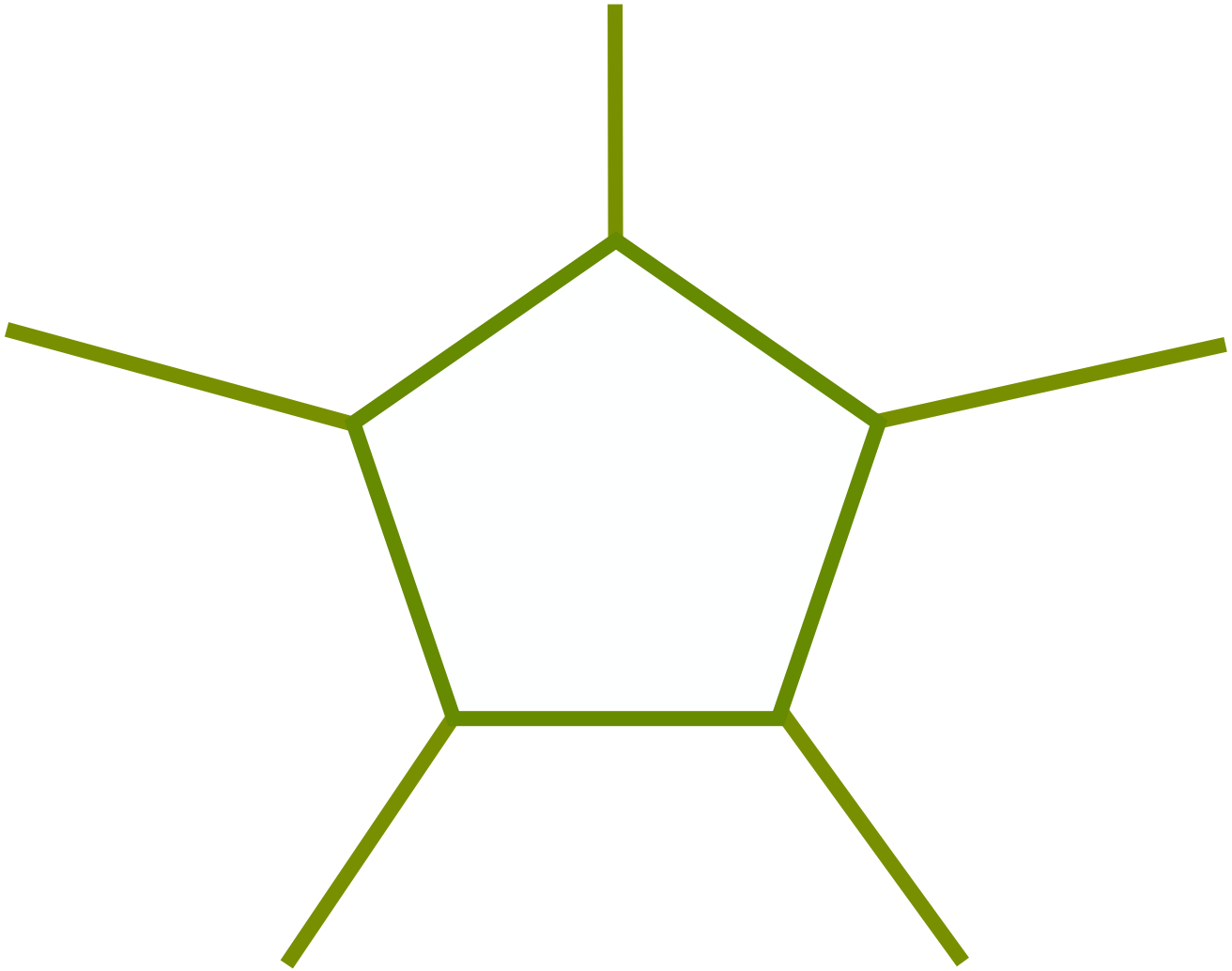


Stakeholders mapping variant

- From core stakeholders…
- … to direct and indirect stakeholders
- with clustering
- and underlining positive or negative impact or importance
- showing links



Pentagonal problem



Pentagonal problem

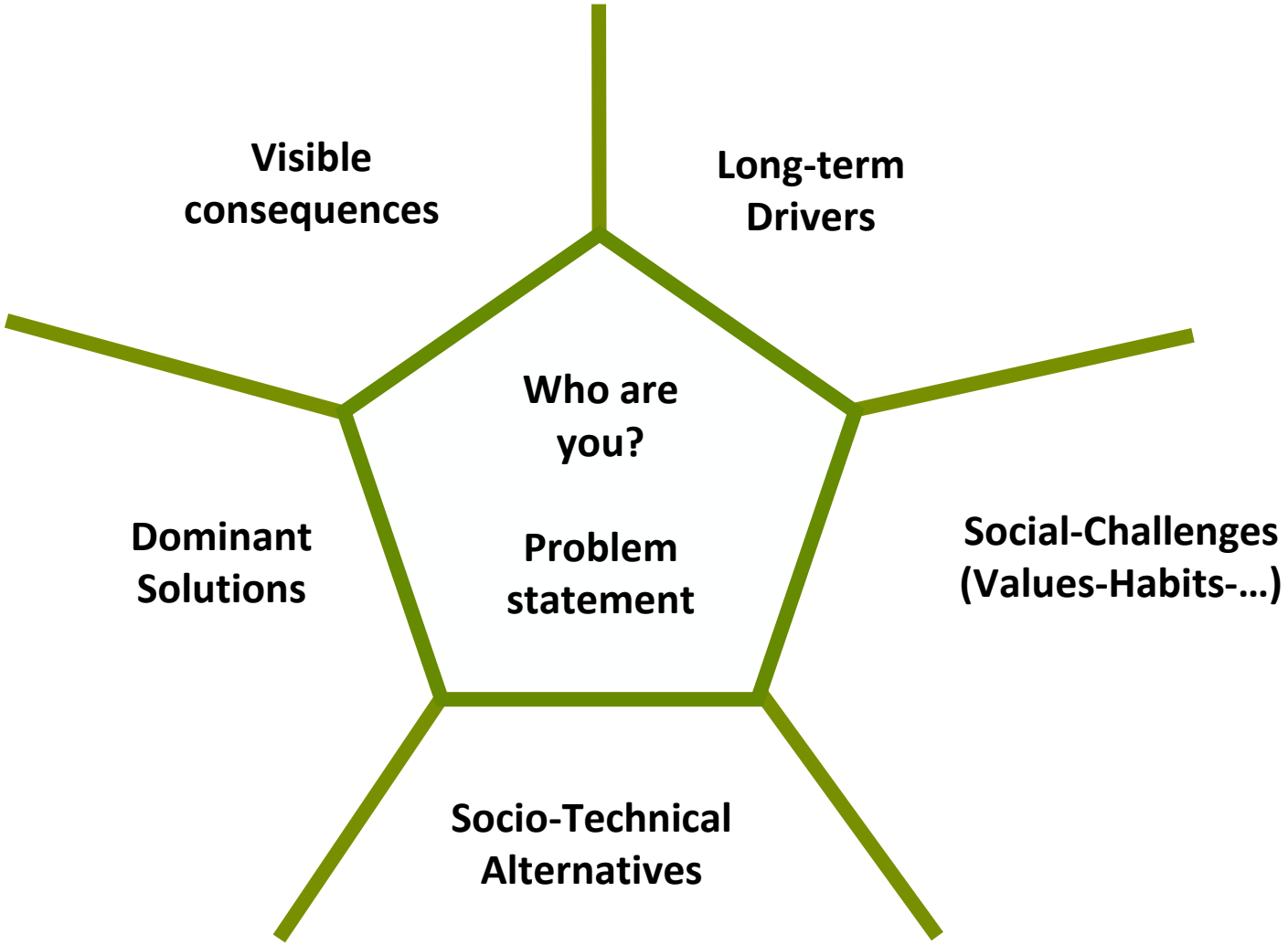
- Pentagonal Problem is a visual tool to help teams **nail down the problem**, identify its different components and details, agreeing on a common ground for future actions

- Pentagonal problem
  - starts with your own perspective of the problem
  - helps you to deepen your understanding by including different aspects of it
  - prepares to look for system solutions.

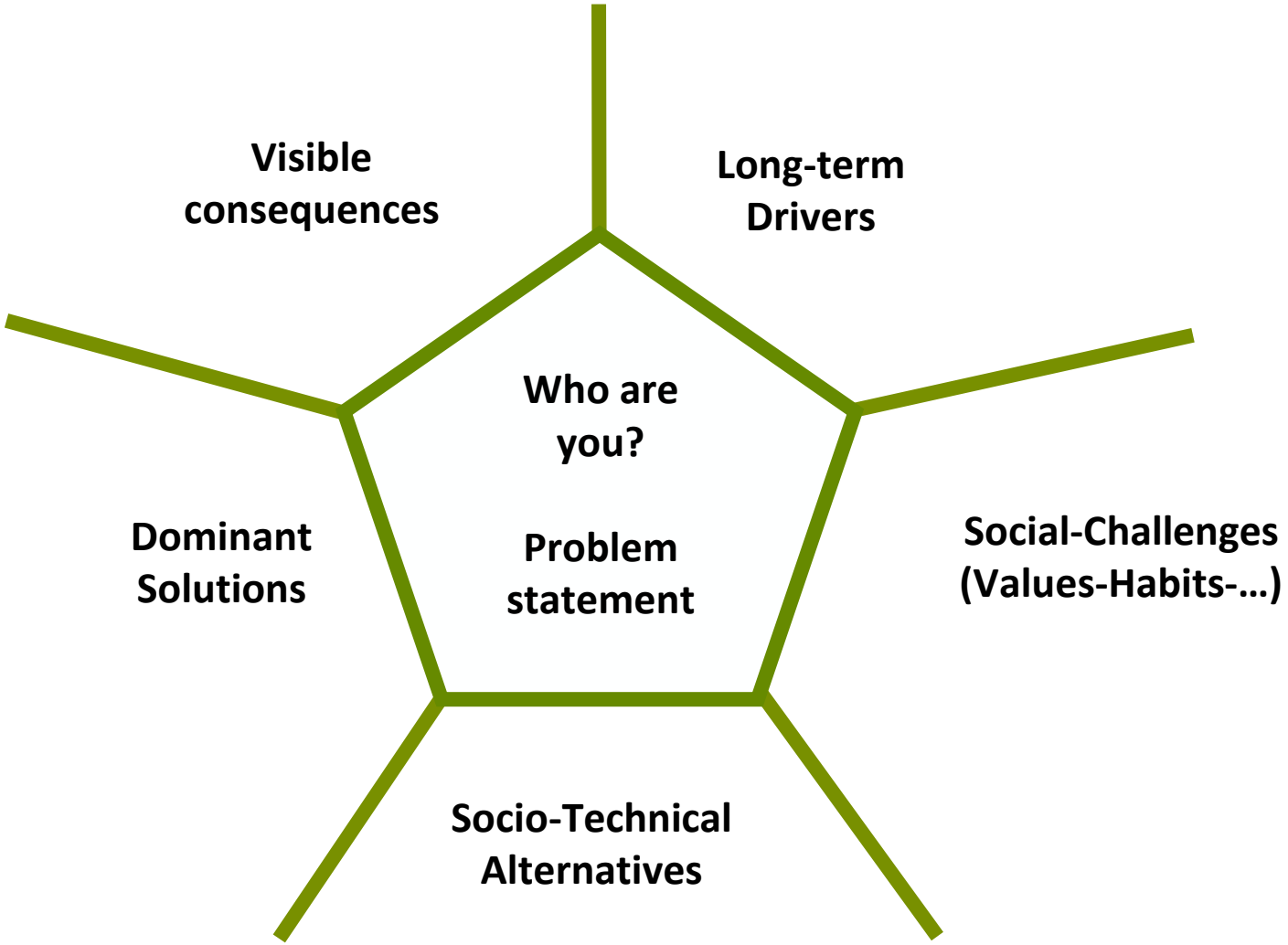
Pentagonal problem

- STEP 1. Define yourself and state your problem
- STEP 2. Visible Consequences
- STEP 3. Long Term Drivers
- STEP 4. Social Challenges
- STEP 5. Socio-Technical Alternatives
- STEP 6. Dominant solutions
- STEP 7. Debrief

Pentagonal problem



Pentagonal problem



Pentagonal problem -> the loop (1/2)

- Once you have completed the pentagonal description of your project, **go over the first problem statement** and how it has been enriched with the inputs coming from very different sources.
  - Do you think you got a thorough description of your challenge?
  - Did you get a new understanding of your problem?
  - In your description, do you feel you included more than necessary?
  - Would it be possible and advisable to cut something out in order to better explain the problem? Or, do you think you are still leaving something out?
  - Do you think your challenge is a technical problem, a social problem, an environmental problem… or a mixture of them? Does one of the "faces" seem more important than the others?

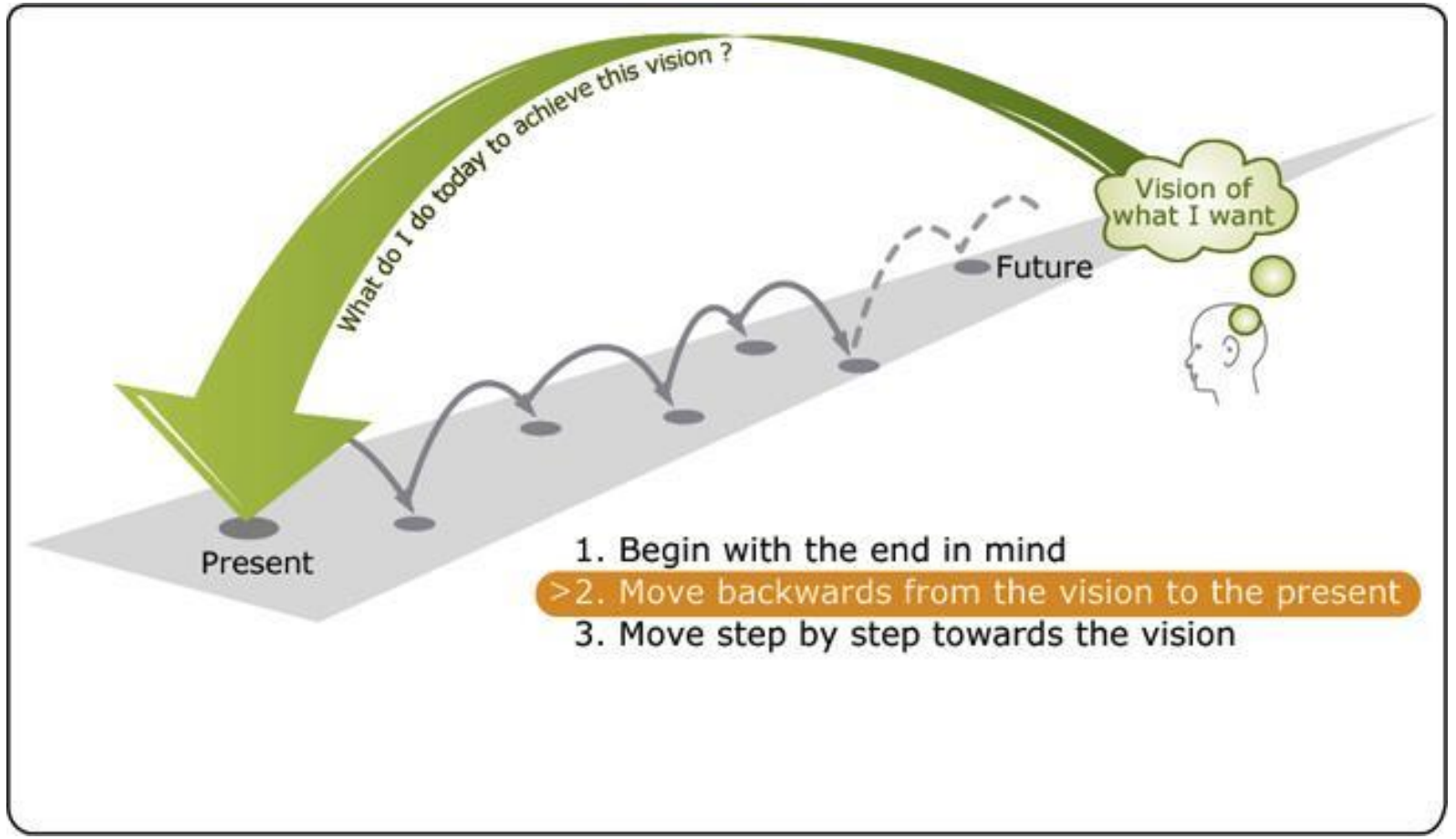
Pentagonal problem -> the loop (2/2)

- Now **try to rephrase the problem statement taking into consideration all the inputs you obtained**.
  - Are you able to come to a consensus for the new definition?
  - Is it easier or more difficult to broaden such a definition?
  - Do you consider it is possible to get everybody committed with a new definition of the problem?

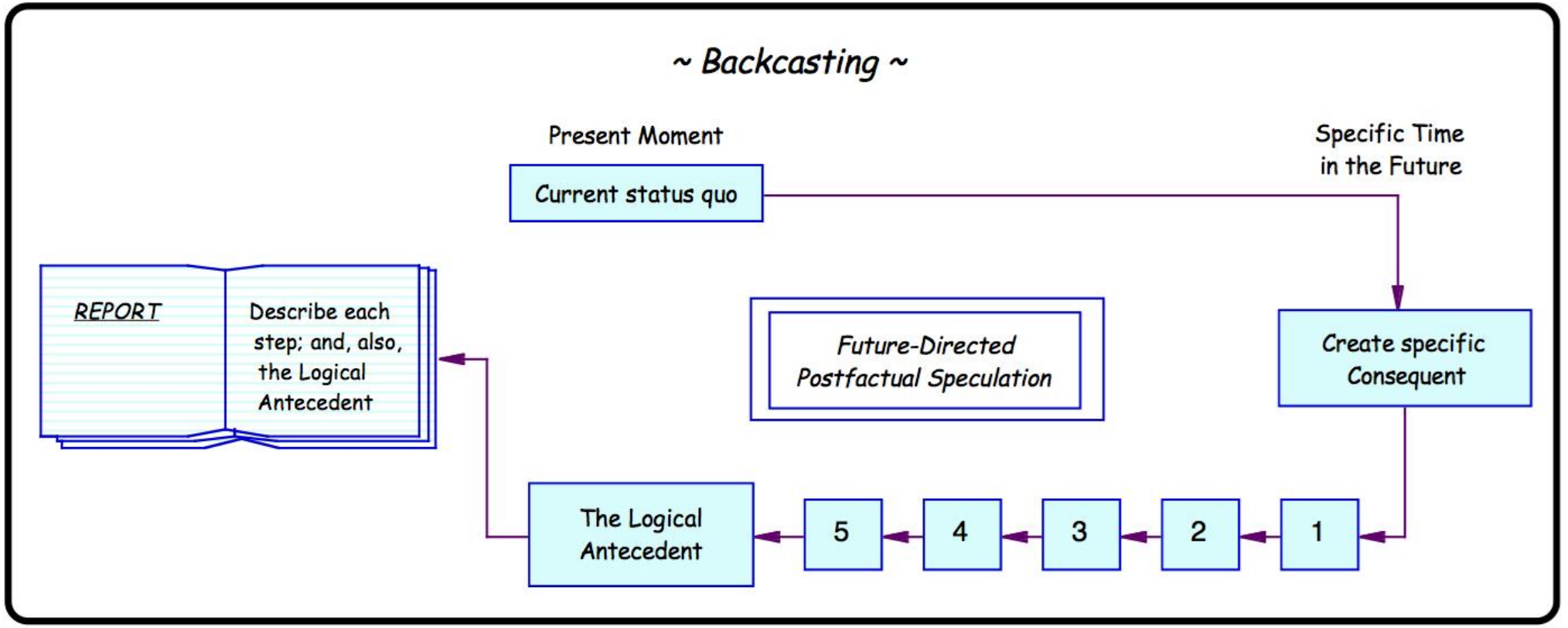
Backcasting

- “If we want to attain a certain goal, what actions must be taken to get there?”
- Opposite of forecasting

Backcasting



Backcasting: find the logical antecedent

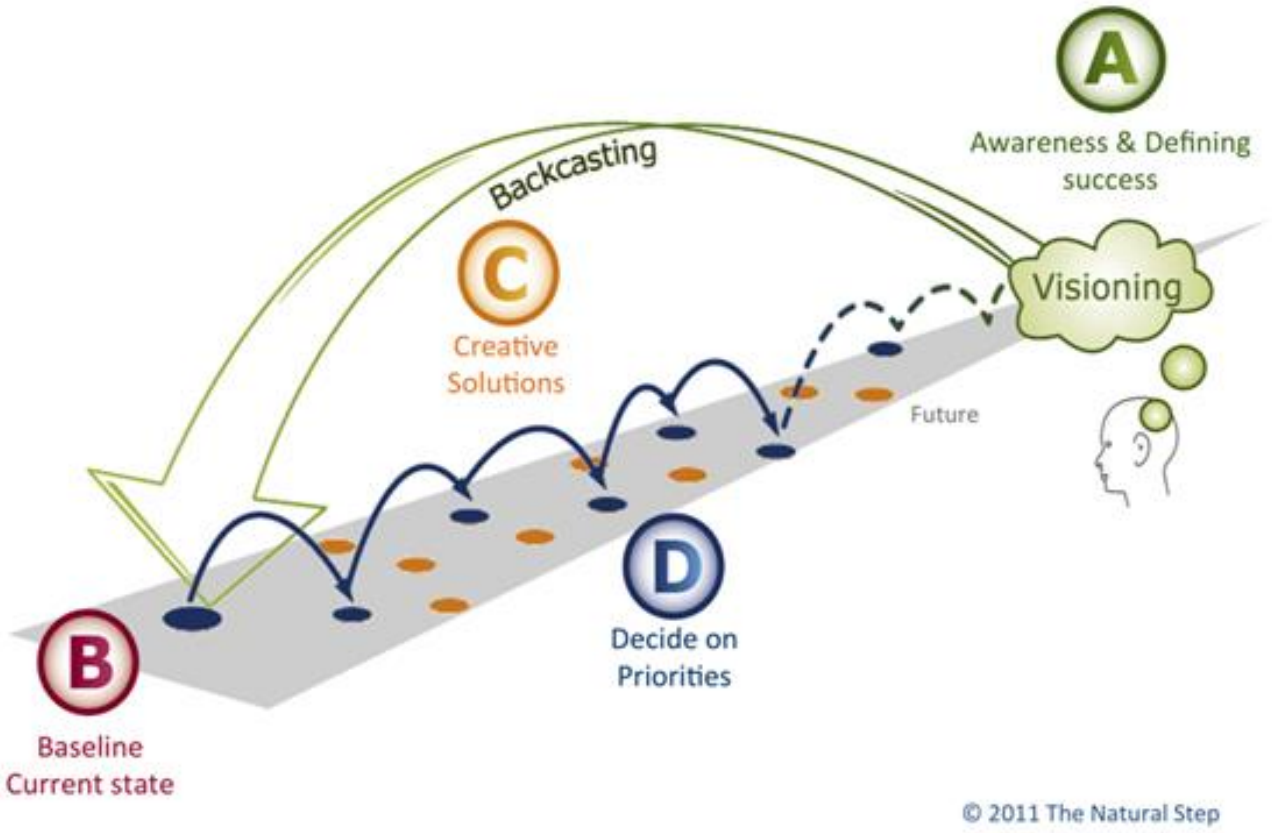


- By Dr Lindsay B Yeates

Backcasting steps

1. Define and establish the targets / vision
2. Gather information of present conditions and circumstances
3. Analyze the information gathered to ascertain what changes and amendments are required to the present conditions so that ultimately it comes inline with the vision established.
4. Establish a policy and strategy to implement the changes required

Backcasting: ABCD method



About methodologies

- They are not set in stone
- You can adapt / change / combine / get inspired
- You can use a totally different method
  - There are plenty of ressources available
  - We can help you ☺

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