

# ENTRUST POLICY TOOLKIT

FOR POLICYMAKERS AND PRACTITIONERS WHO  
SEEK TO ENGAGE PEOPLE AND INFLUENCE THEIR  
BEHAVIOUR

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## What is the ENTRUST policy toolkit?

The ENTRUST policy toolkit is designed for policymakers and practitioners whose work ultimately seeks to engage people and influence their behaviour in order to deliver improved outcomes. It presents a set of policy recommendations aimed at reducing the environmental impact from energy consumption. The toolkit covers both the supply and demand sides of the energy sector. That is, Transport, Buildings, and Local energy production. Eight key objectives are outlined. These were identified with the collaboration of local community stakeholders.



Increasing the purchase and use of electric vehicles



Increasing the practise of car sharing



Encouraging automobile commuters to carpool



Encouraging the use of public transport



Reducing electricity usage through smart technologies



Initiating thermal refurbishments



Promoting subscription to green-energy suppliers



Enabling green energy self-consumption

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## INTRODUCTION

Influencing how people behave, whether it be choosing to take public transport rather than driving one's car, retrofitting one's home with energy-saving appliances, or installing solar panels on one's roof can be challenging.

When it comes to changing human behaviour in the energy sector, there are a number of barriers to consider. The energy sector is diverse and spans a wide range of different assets in power generation, heating and cooling, buildings, transport, and industry. One aspect that makes behaviour change difficult is that energy infrastructure has a long lifespan - a nuclear power plant, for example, is built to last around 50 years. Another aspect preventing change is the rapid development of new technologies reducing energy consumption automatically, limiting the incentives for humans to change. A long-term policy guidance is then required if a sustainable and cost-effective transition towards a low-carbon energy sector is to occur.

With this in mind, the ENTRUST partners set out to co-design a policy toolkit that proposes to policymakers a mix of policy options aimed at reducing the environmental impact of energy consumption through behaviour change. This guideline outlines a summary of the steps taken in the development of policy options and the main results. For more information on the ENTRUST Policy Toolkit, we invite readers to review Deliverable 4.5 "Policy toolkit typology".

It is structured in two parts:

### Part 1. GUIDELINES FOR POLICY MAKERS TO CO-DESIGN POLICIES TARGETING ENERGY BEHAVIOUR CHANGE

This part is a brief how-to guide for policymakers who want to identify policy options, based on sector specific circumstances. It outlines a step-by-step methodology to explore opportunities in the energy sector; understand the multiple factors that influence the way people act every day; map existing policy interventions to address these factors; identify gaps and new ideas; engage stakeholders; and prioritise and develop the best policy mix. This methodology has been specifically designed by the ENTRUST partners and applied to develop the present work.

### Part 2. POLICY ASSESSMENT AND RECOMMENDATIONS

This part presents the mix of policy recommendations with regards to the eight target areas. 44 policy recommendations promoting sustainable behaviours have been developed and included in the present report. The set of policies include 19 top-down, 8 bottom-up, and 17 hybrid approaches and proposes the following mix of policy instruments: 7 regulatory frameworks, 4 planning & infrastructure, 5 fiscal measures, 10 service provision, 7 communication and marketing tools, 2 guidelines, 3 collaboration platforms, and 6 business support schemes.

For each of these, we elaborate on:

**CONTEXT:** Includes the why behind the target behaviour.

**FACTORS and BARRIERS:** Includes a short summary of the predominant factors that influence the way people act every day.

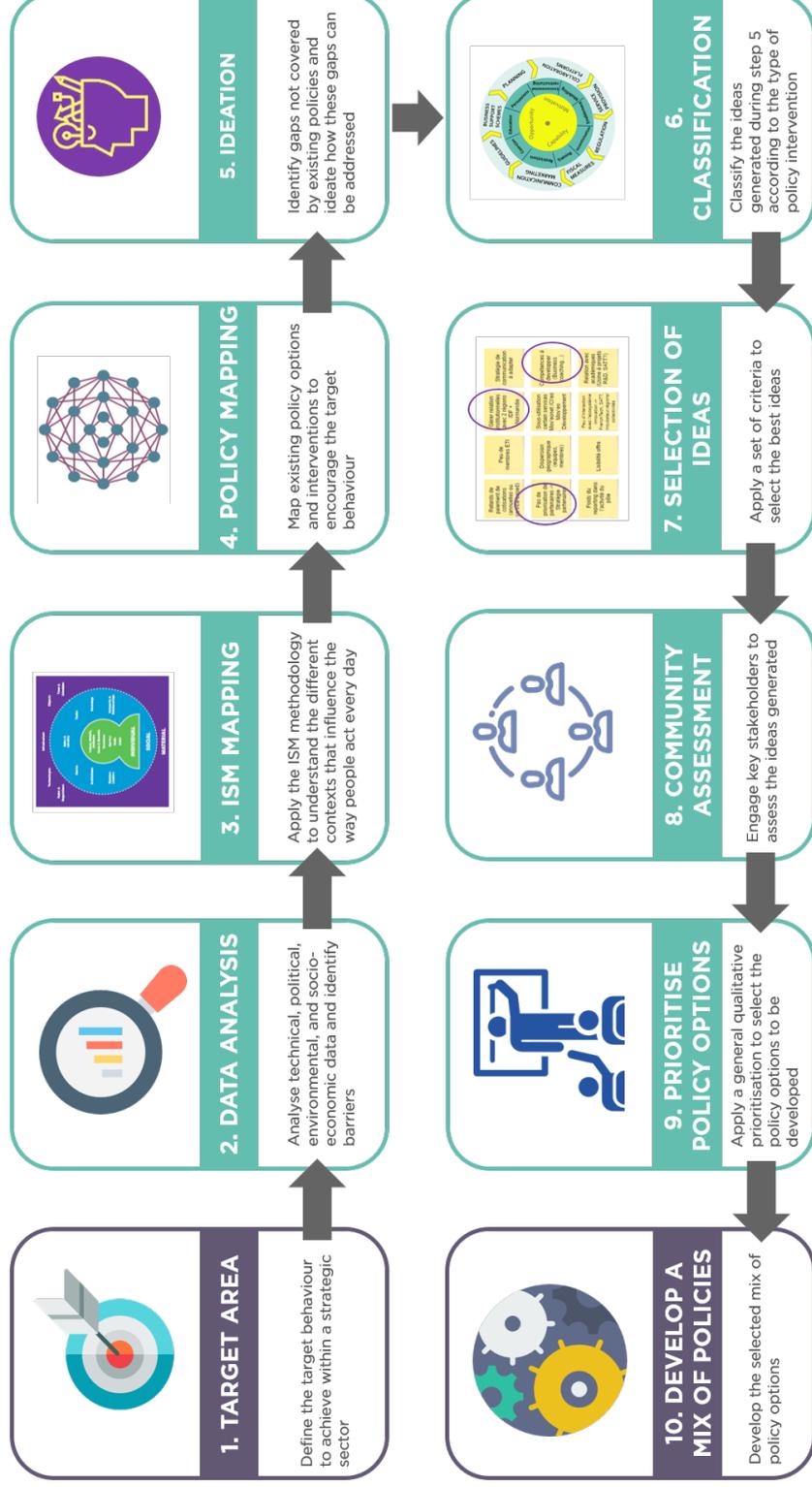
**MIX OF POLICY OPTIONS:** Includes the mix of policy options in summary form to address the identified factors.

The policy options included in this guideline are presented in more detail in Deliverable 4.5 "Policy toolkit typology".

# GUIDELINES FOR POLICY MAKERS TO CO-DESIGN POLICIES TARGETING ENERGY BEHAVIOUR CHANGE

The methodology presented hereafter has been specifically developed by the ENTRUST partners. It is inspired by the Design Thinking approach and has been complemented by applying insights from behavioural science thinking, as well as by engaging citizens in the policy-design process.

The 10 steps outlined below depict the process our researchers followed throughout this deliverable. They were designed with policymakers in mind, and are to be implemented consecutively. However, policymakers could pick one or a few of the tools and use them – to a certain extent – by themselves or in a different order. The 10 steps are meant to be applicable to any country or region, with different focal points to accommodate for local circumstances.





## 1 SELECT A FOCUS AREA/TARGET BEHAVIOUR

“If you want to change a behaviour, first specify that target behaviour” (GSR Behaviour Change Knowledge Review, 2008). In this first step the core team should select the focus area/target behaviour. As an illustration, this is a specific behaviour (e.g. purchasing electric vehicles) undertaken by a group of people (e.g. citizens). Note that this is not necessarily the same as a policy goal. For instance, a policy goal might be ‘to reduce CO<sub>2</sub> emissions, air pollution and energy dependency from the transport sector’, but from the users’ perspective this could involve taking public transport, carpooling to work, or commuting by bike. All of these are different behaviours, with different contexts and influences, and each would need to be targeted differently.

## 2 ANALYSE CONTEXT DATA AND IDENTIFY BARRIERS

Carry out a context analysis per country/region for the target behaviour, covering the latest technical, political, environmental, and socio-economic issues faced by individuals. The context analysis serves as the starting point for a structured policy design process, as it helps to identify the existing behaviour-specific barriers that need to be addressed (step 3). Both qualitative and quantitative evidence should be collected.

## 3 MAP “ISM” BEHAVIOUR FACTORS

Apply the ISM methodology to understand the different contexts -the Individual, Social and Material- and the multiple factors, that influence the way people act every day.

### THE INDIVIDUAL CONTEXT

This refers to the factors held by the individual that affect his/her choices and modify his/her behaviour. Examples of individual factors are: values, beliefs and attitudes; costs and benefits; emotions; agency; skills and habits.

### THE SOCIAL CONTEXT

This includes the factors that exist beyond the individual in his/her close ecosystem. These influences include understandings that are shared amongst groups. Examples of social factors are: opinion leaders; institutions; norms; roles and identity; tastes; meaning; networks and relationships.

### THE MATERIAL CONTEXT

This corresponds to the external factors present in the wide environment, which both shape and constrain human behaviour. Examples of material factors are: rules and regulations; technologies; infrastructure; objects; times and schedules. Use the ISM tool to identify the 18 factors that influence behaviours within the three ISM contexts (see figure on next page).



Source: Factors that influence behaviour (The “ISM model”) (Darnton & Horne, 2013)

An example illustrating the insights and ideas that can be gained from using the ISM tool is provided in Deliverable 4.5 “Policy Toolkit” of the ENTRUST project.

#### 4 MAP SECTOR-SPECIFIC POLICY OPTIONS

Once the different factors and barriers have been identified, policymakers can map existing policies and interventions that are being used to encourage the target behaviour. Eight types of policy interventions (adapted from Michie et al. 2011) specific to the energy transition are described below.

POLICY INTERVENTION TYPE	Description
REGULATORY FRAMEWORKS	<ul style="list-style-type: none"> <li>Government strategy to establish rules or principles of behaviour or practice</li> </ul>
PLANNING & INFRASTRUCTURE	<ul style="list-style-type: none"> <li>Public investment and procurement in infrastructures</li> </ul>
FISCAL MEASURES	<ul style="list-style-type: none"> <li>Using the tax system to reduce or increase the financial cost</li> </ul>
SERVICE PROVISION	<ul style="list-style-type: none"> <li>Establishing and delivering support services</li> </ul>
COMMUNICATION & MARKETING	<ul style="list-style-type: none"> <li>Education, public information campaigns and awareness raising</li> </ul>
GUIDELINES	<ul style="list-style-type: none"> <li>Creating documents that recommend or mandate best practice</li> </ul>
COLLABORATION PLATFORMS	<ul style="list-style-type: none"> <li>Public Private Partnerships with businesses at a national, regional or city level</li> <li>Industry collaboration platforms, value-chain and cross-sectoral initiatives</li> </ul>
BUSINESS SUPPORT SCHEMES	<ul style="list-style-type: none"> <li>Financial support to businesses, for example direct subsidies, provision of capital, or financial guarantees</li> <li>Technical support, advisory, or training to businesses</li> </ul>



Desktop research can be practical for policymakers wanting to map sector-specific policies. Another valuable exercise at this stage would be interviewing industry stakeholders and other policymakers who have already implemented energy policy in other regions/countries. Inspiration could also come from innovative public sector supported mechanisms applied in other policy areas.

## 5 IDENTIFY GAPS AND IDEATE

In order to understand the context of future policy interventions it is necessary to identify gaps in existing interventions. Then organise an ideation workshop with the core team to work on how these gaps can be addressed. In other words, in addition to current efforts, what can be done to encourage the desired behaviour change? Some ideas will arise naturally and may already have been generated as part of the mapping of behaviours (step 3), whilst others may require more creative thinking. Brainstorming exercises carried out at this stage can enable greater creativity, outside-of-the-box thinking, and a more thorough understanding of key stakeholders.

## 6 MAP INDIVIDUAL SOCIAL AND MATERIAL (ISM) BEHAVIOUR FACTORS

An additional step towards contextualizing future policies entails determining the functional characteristics of each policy intervention. Classify the ideas generated during step 5 according to the type of policy intervention. This is a similar process to what was done in step 4, however, a layer of classification is added. It is advised to use the "Intervention Wheel" in this step. This tool is built on the Behaviour Change Wheel (Michie et al. 2011) and has been extended by including the type of policy interventions from step 4. The advantage to using the wheel in this step is that it helps policymakers to streamline their policy ideas into specific policy interventions with related, practical functions (education, coercion, training, enablement, incentivisation, etc.).

At this point, do not worry too much about the formulation of the policies. The objective is to build a structured map of the mix of policy options generated.



INTERVENTION	Description
EDUCATION	<ul style="list-style-type: none"> <li>Increasing knowledge or understanding</li> </ul>
PERSUASION	<ul style="list-style-type: none"> <li>Using communication to induce positive or negative feelings or stimulate action</li> </ul>
INCENTIVISATION	<ul style="list-style-type: none"> <li>Using the tax system to reduce or increase the financial cost</li> </ul>
COERCION	<ul style="list-style-type: none"> <li>Creating expectation of punishment or cost</li> </ul>
TRAINING	<ul style="list-style-type: none"> <li>Imparting skills</li> </ul>
RESTRICTION	<ul style="list-style-type: none"> <li>Increase target behaviour by reducing opportunity to engage in competing behaviours</li> </ul>
ENVIRONMENTAL RESTRUCTURING	<ul style="list-style-type: none"> <li>Changing the physical or social context</li> </ul>
MODELLING	<ul style="list-style-type: none"> <li>Providing an example for people to aspire to or imitate</li> </ul>
ENABLEMENT	<ul style="list-style-type: none"> <li>Increasing the means / reducing the barriers to increase capability or opportunity</li> </ul>



## 7 SELECT BEST IDEAS

The ideation sessions described above can result in a large number of ideas for each target behaviour. To guide further analysis, ideas need to be prioritised before moving on to the next step, the community assessment.

The following criteria could serve as guidance for policymakers looking to prioritise ideas targeting energy behaviour:

- The potential impact of the policy recommendation on people's behaviour
- The potential capacity of the policy recommendation to drive society toward a sustainable energy transition
- The potential capacity of the policy recommendation to be accepted by citizens

Make a list of the ideas to present to the community for feedback and assessment.

## 8 COMMUNITY ASSESSMENT

As in any strategic project, key stakeholders should be engaged in the project. Citizens should be involved in the design of the policies so as to ensure a fuller and more realistic picture of the drivers and barriers shaping people's behaviour, as well as to assess the ideas generated in steps 5-7. In the ENTRUST project, a focus group consisted of community representatives from the Trapèze, an eco-neighbourhood in Boulogne, France.

Contributions from the community enabled the creation of several new policy options, helping to modify and refine numerous policies presented.

## 9 PRIORITISING

Identifying barriers preventing targeted behavior change policies and developing policy options to address these are key outcomes of working through the steps of this toolkit.

Prioritising proposed ideas can help put policies into perspective. Some useful criteria to prioritise policy options include their potential impact, pros and cons, cost-benefit analysis, practicality and feasibility (including time and resource constraints), to address existing gaps, and acceptance by the community.

The ENTRUST project used the following criteria to prioritise policy options:

- The **sustainable benefit** of a policy option:
  - The potential capacity of the policy recommendation to change people's behaviours
  - The capacity of the policy recommendation to place citizens at the centre of the energy system
  - The conformity of the policy recommendation with the concept of "Energy justice." This concept aims at "providing all individuals, across all areas, with safe, affordable and sustainable energy" (Heffron & McCauley, 2017)
  - Respect for sustainable development principles

In particular, the first two criteria were assigned a weight of 2.0; the third criterion held a weight of 1.0, and the fourth criterion was assigned a weight of 1.5.

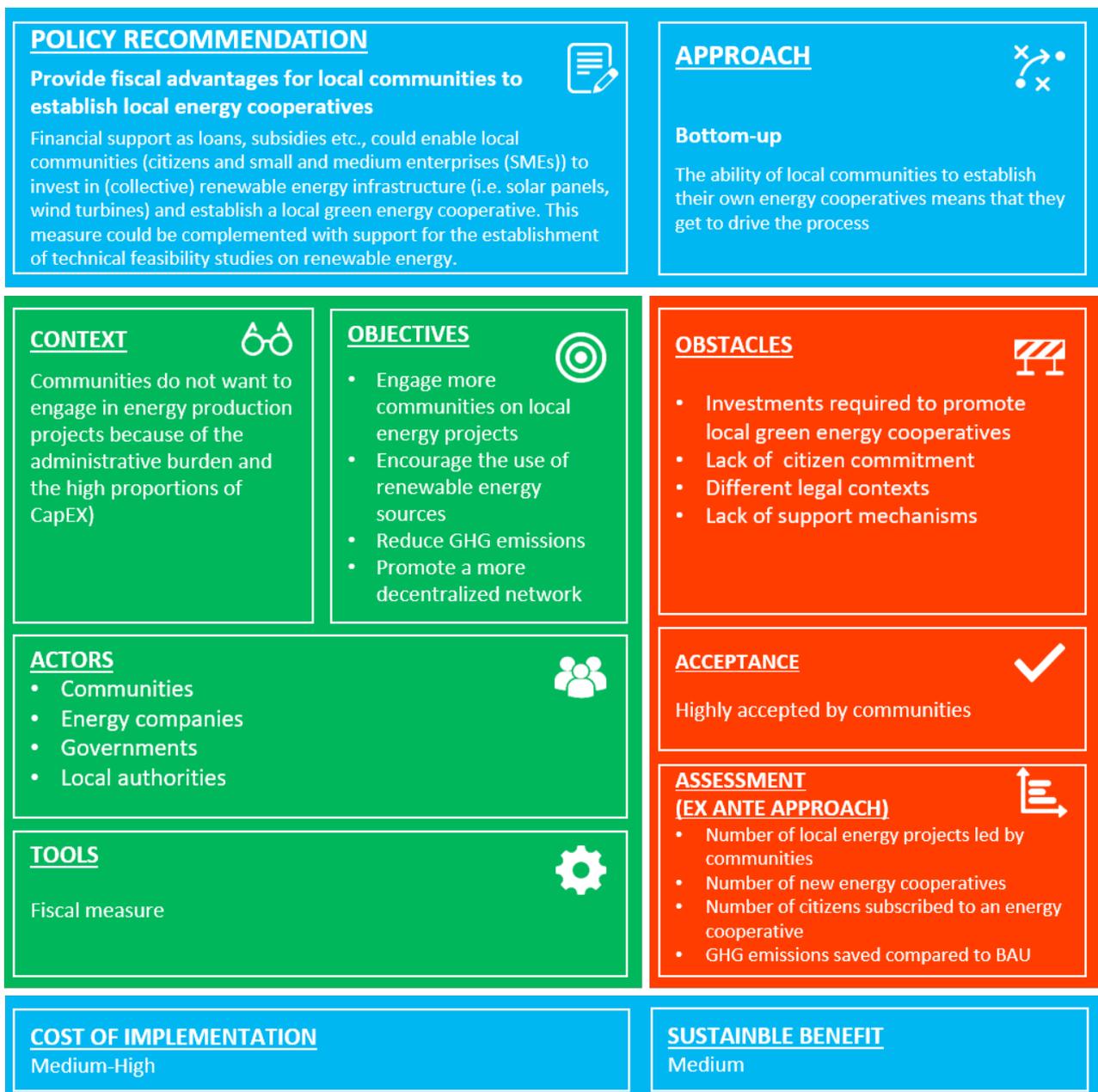
- The **cost of implementation** of a policy option: a macro analysis was carried out.



## 10 DEVELOP A MIX OF POLICY OPTIONS

Once a prioritised set of potential policy options is determined, the next and final step is to develop the proposed policies and structure them into potential policy packages. Consider the roles of government (central, regional and local), business and other stakeholders, such as community members, when classifying the different policies (top-down, bottom-up and hybrid approaches).

Use the “Policy Canvas” framework as an initial way to develop each policy recommendation. This tool is built on the same logic as the Business Model Canvas (Osterwalder & Pigneur, 2010) and aims to facilitate the policy-design process. The “Policy Canvas” framework can be described through nine building blocks: context, actors, tools, policy recommendation, approach, objectives, obstacles, acceptance and assessment. The “Policy Recommendations block” is the core of the canvas around which the other blocks are articulated.



# TRANSPORT



## INCREASING THE PURCHASE AND USE OF ELECTRIC VEHICLES

### CONTEXT

The electrification of transport is needed to bring down emissions, as currently 94% of energy demand in transport is met by oil. Therefore, making electric vehicles (EV) a more viable purchase choice for consumers is key to meeting the European Union's 2030 climate goals of achieving the reduction of at least 40% of CO<sub>2</sub> emissions (compared to 1990 levels).

### FACTORS AND BARRIERS

The option to purchase an EV on the market is relatively new. Consequently, many uncertainties exist around how citizens would respond to these policy recommendations. For instance, many consumers are unsure if they are eligible for subsidies, and therefore if they could afford an electric car. Driver anxiety regarding completing a journey before running out of battery plays into purchase concerns. Recharging skills also influence people's decision about whether or not to purchase an EV.

Certain factors such as making the technology more affordable, providing more accessible infrastructure, and maximising visual impact (branding) can encourage a person to purchase an EV. Action in the form of greater subsidies, incentives, and planning guidelines are needed to boost market demand, particularly as the sector is in a critical stage of development.

Within this context, the following policy options could be further investigated:

### POTENTIAL POLICY OPTIONS

-  **1. Provide fiscal incentives for organisations (companies, charities, councils, associations, etc.) that buy electric vehicles for their automobile fleet.**  
 *Organisations buying a lot of cars could help to reduce air pollution through the purchase of EV fleet. Fiscal measures such as tax reductions or subsidies could encourage organisations to adopt an EV fleet.*  
€€€ **LOW**
-  **2. Implement an incentive programme that allows electric vehicles to be exempt from road tolls.**  
 *The switch to an electric car could be expensive. People often question the economic interest of such behaviour. This type of incentive could encourage people to purchase EV.*  
€€€ **MEDIUM**
-  **3. Provide fiscal advantages for organisations to build their own charging networks for electric vehicles.**  
 *The fear of running out of power during a journey could dissuade people from purchasing a EV. Improving the infrastructure could alleviate their concerns and encourage drivers to switch to electric vehicles. These fiscal advantages can be financed via subsidies or tax reductions.*  
€€€€ **MEDIUM**



- 
**4. Provide information (maps, apps) of the electric vehicle infrastructure.**  
 Making electric vehicles more convenient could reduce drivers' anxiety. In addition, information as real-time updates, available charging points can reduce driver's anxiety and enhance user's experience.  
 € (MEDIUM)
- 

**5. Propose a European standard plug for fast charging via a norm.**  
 A technical norm could be created to specify a common plug system to ease universal fast charging of EVs.  
 € (MEDIUM)
- 

**6. Create "cradle to cradle" best practices in the design and manufacturing processes of electric vehicles.**  
 The sustainable nature of electric cars is often questioned by people. Moreover, producing cars both electric and made from reusable materials (aligning with cradle-to-cradle standards), will benefit the whole value chain. A PPP could provide norms, best practices and guidelines that help electric car manufactures to recycle.  
 € (LOW)
- 

**7. Build electric vehicle parking spots at public transport stations in rural areas.**  
 Public transport is primarily provided in urban areas and the lack of availability in rural areas can force rural residents, through lack of alternative options to take their cars increasing both congestion & pollution. If the infrastructure for EVs were developed at public transport stations, rural residents might be more inclined to use public transport to travel to the city. Besides developing the electric charging stations, this measure reduces the anxiety (running out of power) of rural citizens who drive EV and increases the intermodality of transport.  
 €€€€€ (HIGH)

**APPROACHES**

-  Top-down
-  Hybrid

**POLICY INSTRUMENTS**

-  Fiscal measures
-  Collaboration platforms
-  Regulatory frameworks
-  Service provision
-  Guidelines
-  Planning & infrastructure

**IMPLEMENTATION COST**

- € Low €€€ Medium
- €€€€ Medium-high €€€€€ High

**SUSTAINABLE BENEFITS**

- (LOW)
- (MEDIUM)
- (HIGH)



## INCREASING THE PRACTISE OF CAR SHARING

### CONTEXT

Car sharing is a membership-based service, often run by municipalities, private companies, or non-profit organisations (in the form of PPPs), whereby individuals are able to access shared vehicles, parked throughout communities, for short-term use. Members typically pay an annual fee as well as an hourly rate per usage. Car sharing is most successful in dense urban areas, when it is offered as a complement to other forms of transit, and/or when it is located in areas that may not be strongly connected to existing transport options. In Paris, for example, the introduction of car sharing programmes, which make available electric-powered cars, has contributed to a 25% reduction in car use (IEA, 2016).

### FACTORS AND BARRIERS

The factors identified include affordability (car sharing is cheaper than buying a personal car), as well as self-satisfaction, due to car sharing's low impact on the environment and easy usage. However, attitudes and agency are all influenced by 'range anxiety'. This includes concern over finding an available car and specified parking spot at the time needed, as well as concern regarding running out of battery (in the case of car-sharing programmes that operate with EVs). Insufficient consumer awareness, in terms of usage and payment methods, remains a critical barrier to adoption. Finally, the importance of regulations and planning guidelines, together with the essential collaboration between industry and municipalities, is key to promote car sharing.

Within this context, the policy options below could be further investigated. Note that all policy options address car-sharing programmes that operate with EVs.

### POTENTIAL POLICY OPTIONS



**1. Offer the possibility for participants of an electric car-sharing service to book vehicles and park in non-dedicated spots.**



*The booking option aims to relieve the fear that some drivers may have in terms of not being able to find a car or parking spot when needed. Furthermore, the convenience of a car sharing service, namely the ability to park in more spaces, is key to progressively replacing personal cars.*

€ **HIGH**



**2. Serious gaming - Cumulate "Smart Mobility" points when using electric car sharing vehicles.**



*The sense of freedom associated with the possession of a car is still a strong deciding factor for individuals. To appear as a credible solution, car sharing should promote intermodality. The points obtained in the "Serious gaming" could be converted into advantages such as discounted public transport tickets or free rental of a bike for one day. Such incentive could encourage users in a virtuous green circle.*

€ **MEDIUM**



**3. Propose car-sharing membership fee that is determined pro-rata according to income.**



*This political measure is imbued with social justice. It seeks to enable a greater number of people such as students, unemployed, retired people to access this service.*

€ **MEDIUM**



**4. Allocate specific parking spots for drivers of electric car-sharing services.**  
 Finding a parking spot can be very difficult and time consuming especially in densely populated areas. Moreover, the cost associated with parking can be substantial. Provide car sharing specific parking spots could be a real game changer for the promotion of car sharing. It would be interesting to locate these parking slots near train stations, airports, business areas, bus stops, universities, etc.  
 €€ **MEDIUM**

**5. Include a range of car models within citywide electric car-sharing programmes.**  
 The satisfaction of users' experience is key to generalise a practice. In this perspective, car sharing services must find innovative ways to attract new users. The aim of this measure is to attract new categories of users such as: families, students, disabled persons, etc. For instance, a car equipped with baby seats or adjusted cars for wheelchair people are car models that could satisfy specific categories of users.  
 €€€ **LOW**

**6. Subsidise the creation of electric car sharing programmes in medium cities.**  
 The development of electric car sharing services has been so far the prerogative of metropolis because of density factor and parking constraints. Democratise car sharing practice in medium cities is a political decision. Central government must support the development of car sharing in medium cities by providing subsidies/interesting loans. This financial measure could encourage the implementation of car sharing companies. It should be consistent with local policy measures such as: promotion of soft mobility, parking restriction and limitation of car pollution.  
 €€€€ **MEDIUM-HIGH**

**7. Offer training sessions to enhance electric car sharing practices .**  
 To democratise car sharing and attract new users, it is necessary to inform and teach the basics of car sharing. The objective of such measure is to inform potential users about:

- The working of the car sharing platform. This type of training could be beneficial to people who are not familiar with digital technologies.
- Know-how to drive an electric car. The use of this type of vehicle could be taught during driving lessons at driving schools.

€ **LOW**

**APPROACHES**

- Top-down
- Hybrid

**POLICY INSTRUMENTS**

- Communication & marketing tools
- Business support schemes
- Service provision
- Planning & infrastructure

**IMPLEMENTATION COST**

- € Low
- €€ Low-medium
- €€€ Medium
- €€€€ Medium-high

**SUSTAINABLE BENEFITS**

- LOW**
- MEDIUM**
- MEDIUM-HIGH**
- HIGH**



## ENCOURAGING AUTOMOBILE COMMUTERS TO CARPOOL

### CONTEXT

Carpooling is the sharing of car journeys so that more than one person travels in cars. Carpooling is considered as a more environmentally-friendly and sustainable way to travel, as sharing journeys reduces air pollution, carbon emissions and traffic congestion on the roads. Each vehicle used for one-way car sharing, can eliminate in particular as many as 11 cars from playing the streets and cutting greenhouse gas emissions by nearly 13 tonnes a year (Martin & Shaheen, 2016).

### FACTORS AND BARRIERS

Individual citizens with the freedom to choose their own mode of transport will usually not seek to maximise global environmental benefits through carpooling although there are other reasons for choosing to carpool. The factors identified include affordability as well as increased flexibility when compared to public transport, in terms of travel time and distance covered. The majority of users at the moment tends to be young people. Information and communication technologies (ICT) have facilitated an evolution in new mobility services such as carpooling. As such, basic computer and technology skills could also be an issue for some, in terms of using the platform and payment methods. In addition, security is a great concern for drivers and riders who are carpooling together via an app, in terms of fear of the people you meet.

Within this context, the following policy options could be further investigated:

### POTENTIAL POLICY OPTIONS



#### 1. Provide fiscal advantages for businesses to actively encourage carpooling programmes for their employees.



*The transportation sector is a significant emitter of GHGs. Carpooling eases traffic congestion, reduces greenhouse emissions and fossil fuel consumption.*

*The incentive programme could include:*

- *Reduced cost for carpoolers in parking lots.*
- *Preferred parking for carpoolers: near building entrances, covered, etc.*
- *Carpooling platform: Teach the usage of these platforms, especially for less digitally savvy people.*
- *Prize drawings or rewards like coupon books for local restaurants.*

€€€€€ (MEDIUM)



#### 2. Reserve a lane on highways for the use of carpools.



*Peak hour traffic congestion is an inherent result of the way modern societies operate. Carpooling offers quicker and more reliable rides, particularly during peak periods. Preferential lanes serve as a strong incentive to carpool. These lanes provide an alternative to traffic congestion.*

*Occupancy requirements for carpool lanes (minimum passengers per vehicle) will be set according to travel conditions, levels of existing congestion, times of the day and projected use of the lanes.*

€ (MEDIUM)



- 
**3. Develop a public app-based or dynamic ridesharing platform for daily rides (up to 100 km).**
- 

*Carpooling service providers are mostly oriented for long distance rides. However, there is a need to make carpooling possible for short distances and attractive for workers. Drivers using this platform set the route and the platform automatically determines the best pick-up and drop-off points. In addition, drop-off points should be connected to other forms of public transportation such as bike stations, public transportation stops, and other transportation hubs.*

€ HIGH
- 

**4. Create a carpooling ranking with occupancy requirements during peak pollution days .**
- Swelling urban population and increased volume of motorised traffic in cities have resulted in severe air pollution affecting the surrounding environment and human health. Such measure enables more polluting vehicles to circulate if they match a certain occupancy rate during pollution peak. For instance, the more polluting car must have 4 people (including the driver) to be allowed on the road.*

€ LOW-MEDIUM

**APPROACHES**

-  Top-down
-  Hybrid

**POLICY INSTRUMENTS**

-  Regulatory frameworks
-  Service provision
-  Business support schemes

**IMPLEMENTATION COST**

- € Low
- €€€€ Medium-high

**SUSTAINABLE BENEFITS**

- LOW-MEDIUM
- MEDIUM
- HIGH



## ENCOURAGING THE USE OF PUBLIC TRANSPORT

### CONTEXT

Public transport plays a central role in transport systems, particularly in large cities where private vehicle ownership is not widespread. In general, public transport is significantly more energy efficient than private vehicle use, with bus and rail travel accounting for 18% of passenger-kilometres (p-km) in Europe (International Energy Agency, 2010).

### FACTORS AND BARRIERS

Maximising global environmental benefit is not the main priority or rationales of citizens when using public transport. Citizens seek a mode that maximises comfort, reliability, speed, convenience, and cost. Public transport is often perceived as less attractive in terms of the quality and price of services provided. Meanwhile, current norms are that public transport tends to be for people with limited resources, being that as incomes rise, those with financial means switch to cars.

More spatial guidelines, infrastructure and incentives are needed to boost market demand, particularly in both densely populated urban areas and rural areas.

Within this context, the following policy options could be further investigated:

### POTENTIAL POLICY OPTIONS



**1. Provide fiscal advantages for businesses in dense urban areas to implement flexible working hours and/or teleworking.**



*Public transport can be very crowded during peak times, encouraging many people to take their car. This fiscal measure (subsidies or tax reductions) encourage companies to implement flexible working hours and/or teleworking, thereby reducing the congestion in public transport during peak times.*

€ **MEDIUM**



**2. Include spaces for bikes on the metro, trains and buses.**



*Public transport cannot take/drop users at their exact start/finish points of their journey. The first and last kilometres of a trip to reach a destination could dissuade users from choosing to take public transport over their own car. Addressing this gap by developing the transport network into a multi-modal system, will encourage more people to take public transport.*

€ **MEDIUM**



**3. Set a strategy to have a bus fleet that is 100% electric/biofuel/hybrid by 2025.**



*Diesel-fuelled buses account for 50%-60% of the public transport in Europe and are responsible for around 6% of total EU emissions. Decarbonizing buses will help to reduce pollution and achieve climate goals.*

€€€€ **MEDIUM**

- 
**4. Offer free or discounted public transport tickets to attendees of major entertainment events.**


As individuals are increasingly expecting customised experiences, public transport must innovate to attract new customers. The objective of this measure is to appeal to non-users of public transport by offering them discounted public transport tickets when they purchase an entertainment ticket (such as to a concert, football game, amusement park, etc.). The economic shortfall could be offset by local public funds.

€€€€ **LOW**
  
- 
**5. Increase security measures in public transport stations.**


Safety is a concern for many travellers, meaning that many are reluctant to use public transport. According to this measure, the policy should:

  - Ensure full coverage of CCTV and clearly identify any gaps.
  - Create a "Warning" app/button that allows travellers to alert security services in real-time.
  - Require police to use public transport to/from work, reassuring passengers and providing them greater security with their presence.
  - Clearly identify to passengers if the station or vehicle is manned and where a passenger can seek assistance/find security personnel.

€€€€€ **MEDIUM**
  
- 
**6. Offer a metro service that runs 24 hours a day on the weekends.**


As individuals are increasingly expecting customised experiences, public transport must innovate to attract new customers. This policy not only encourages people to take public transport, but it also discourages people from driving while impaired.

€€€€€€ **HIGH**

**APPROACHES**

-  Top-down
-  Hybrid

**POLICY INSTRUMENTS**

-  Regulatory frameworks
-  Service provision
-  Business support schemes

**IMPLEMENTATION COST**

- € Low
- €€€€ Medium
- €€€€€ Medium-high
- €€€€€€ High

**SUSTAINABLE BENEFITS**

- LOW**
- MEDIUM**
- HIGH**

# BUILDINGS



## REDUCING ELECTRICITY USAGE THROUGH SMART TECHNOLOGIES

### CONTEXT

Smart meters and smart grids can reduce emissions in the European Union by up to 9%, with similar reductions in EU annual household energy consumption. This measure falls within the framework of the EU's Third Liberalisation package, which aims at replacing at least 80% of the electricity meters by smart meters by 2020 (European Commission, 2016).

### FACTORS AND BARRIERS

People's perception of smart technologies is complex. In particular, the implementation of smart meters in households brings contradictory opinions. For instance, there is a lack of knowledge of how smart meter works, misperceptions of inconvenience, and concerns over the security of personal data. Understanding the data and how to appropriately use smart technologies is not an easy task for certain users. Moreover, the return on investment and whether a smart technology can reduce an individual's energy bill is not clear.

Within this context, the following policy options could be further investigated:

### POTENTIAL POLICY OPTIONS



**1. Provide fiscal incentives to energy companies developing freemium services that enable the public to use smart technologies for their electricity bills.**



*The deployment of smart technologies in societies is questioned by citizens. Certain smart technologies such as smart meters may be rejected by citizens if their value is not understood. The users would access freely to a range of services developed by companies to enjoy the technology and possibly save energy and money. Municipality can be the beta tester of the services created before their roll out individual households.*

€€€ (MEDIUM)



**2. Create a programme to involve citizens in the co-design of smart technologies**



*Certain smart technologies are rejected because of the lack of citizen's involvement in the conception of the product. This involvement could be made possible through workshop sessions between companies and users which could encourage the uptake of smart technologies.*

€ (LOW)



**3. Attribute the data ownership to final users and set up mechanism to control the protection of data.**



*Invasion of privacy and data protection are two delicate topics which slow down smart technologies implementation. The attribution of data ownership to the final user and the establishment of a set up mechanism to control the protection of data could be a real game changer in the acceptance of such technologies*

€ (MEDIUM)

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**4. Hold public “show case events” to popularise smart meters and energy efficient technologies.**
- 

*To democratise smart technologies, it is necessary to evince transparency. Organising meeting and exchange of experience activities between early adopters and other citizens would encourage discussion around the advantages and disadvantages of smart technologies. It could help reluctant citizens to get a sense of the potential impact of smart technologies on their personal life.*

€ **LOW**

**APPROACHES**

-  Top-down
  Bottom-up

**POLICY INSTRUMENTS**

-  Communication & marketing tools
-  Business support schemes
  Regulatory frameworks
-  Collaboration platforms

**IMPLEMENTATION COST**

- € Low
- €€€ Medium

**SUSTAINABLE BENEFITS**

- LOW**
- MEDIUM**



## INITIATING THERMAL REFURBISHMENTS

### CONTEXT

Existing buildings represent significant energy-saving opportunities because their efficiency is often far below their potential. “Europe’s refurbishment rate has been around 0.3% for the last 20 years, despite concerted efforts to improve it over the past 10 years through the EU Climate and Energy Strategy” (Climate-Kic, 2017). In order to achieve its 2050 target for the building sector, the EU needs to reach a building refurbishment rate of around 3% per year, with the refurbishment including major retrofits.

### FACTORS AND BARRIERS

Individual citizens will usually not seek to minimise their home’s impact on the environment through retrofitting. This is particularly accentuated in countries with low energy prices. The factors identified include anxiety about the economic resources needed, as well as the uncertainty regarding both their energy savings and their energy bill. Skills and ‘know how’ are also an issue in terms of knowing who to contact or learning about the existing subsidies. Policies seeking to address these challenges must ensure that households are sufficiently motivated to undertake the improvements themselves and that the tools, mechanisms, supply chains and infrastructure are in place to allow them to do this.

Within this context, the following policy options could be further investigated:

### POTENTIAL POLICY OPTIONS

-  **1. Provide fiscal advantages for individuals to implement energy refurbishment.**  
*In Europe, buildings are responsible for 40% of the energy consumption and 36% of CO<sub>2</sub> emissions. Achieving EU renovation objectives requires ambitious financial support to encourage households engage in such projects. This measure could provide:*
  - Financial support such as loans, subsidies etc., could help initiate energy refurbishment and could be awarded on the basis of income for the purpose of social justice. If loans are preferred, they could be reimbursed via the energy saving achieved.*
  - Financial support could be also focused on encouraging comprehensive renovation projects. In this case, fiscal advantages could be based on the scope/degree of energy refurbishments*

This recommendation could also result in reducing people’s energy bills while simultaneously boosting their comfort.

€€€€ (MEDIUM-HIGH)
-  **2. Facilitate energy refurbishments by creating a “one-stop-shop” that can provide all the relevant information to households.**  
*A complicated administrative process to initiate energy refurbishments can dissuade households from undergoing such changes. Thus, a reduction in the number of contact points involved for customers throughout the process could encourage citizens to initiate energy refurbishment.*

€€€ (MEDIUM)

 **3. Promote “Energy Refurbishment Clubs” in neighbourhoods or communities.**  
 Achieving the renovation objectives set by EU requires ambitious financial support to encourage households to engage in energy refurbishment projects. The purpose of these “Energy Refurbishment Clubs” is to address renovation issues and lobby political actors. These associations would benefit from economies of scale when purchasing energy refurbishment services/materials for the community or neighbourhood.

€ **MEDIUM**

 **4. Set up a quality norm/label for the energy refurbishment companies.**  
 The inability to offer a guarantee to households in terms of energy savings is a barrier to household energy refurbishment. Such certification could encourage households that have doubts about initiating an energy renovation. A suitably certified company that has gained accreditation and displays a label must provide an estimation of the energy saving and guarantee the results (nonetheless it is necessary to determine an error rate).

€ **MEDIUM**

 **5. Develop a school education programme related to energy and its challenges.**  
 Teaching sustainable development is becoming a standard in European countries. Ensuring curriculum on energy related topics as the first step to raise people's awareness, diffuse “best practices” and make citizens more aware of their roles and responsibilities in achieving sustainability goals.

€€€ **LOW**

**APPROACHES**

 Top-down       Bottom-up       Hybrid

**POLICY INSTRUMENTS**

 Communication & marketing tools       Fiscal measures  
 Service provision       Regulatory frameworks

**IMPLEMENTATION COST**

€ Low    €€€€ Medium  
 €€€€€ Medium-high

**SUSTAINABLE BENEFITS**

**LOW**  
**MEDIUM**  
**MEDIUM-HIGH**

# LOCAL GREEN ENERGY PRODUCTION



## PROMOTING SUBSCRIPTION TO GREEN-ENERGY SUPPLIERS

### CONTEXT

The European Commission recently acknowledged that green-energy cooperatives and suppliers have a major role to play in the energy transition. Renewable energy is essential for this transformation to take place as it contributes to all of the Energy Union objectives: the delivery of security of supply, a transition to a sustainable energy system with reduced greenhouse gas emissions, industrial development leading to growth and jobs and lower energy costs for the EU economy.

### FACTORS AND BARRIERS

In some of the countries studied, such as Spain or France, people subscribing to green-energy cooperatives are seen as early adopters and innovators. Different legal contexts and a lack of support mechanisms position them far behind northern European countries like the Netherlands, Germany and Belgium (European Commission, 2015). In general, energy bills for green-energy cooperatives are slightly more expensive than that of traditional suppliers (Som Energia, 2017). Concerns regarding the intermittency of RES also discourages households from making the switch to green energy cooperatives.

Within this context, the following policy options could be further investigated:

### POTENTIAL POLICY OPTIONS

- **1. Provide fiscal advantages for green energy cooperatives to operate and up-scale.**  
*The development of energy cooperatives is not well-supported by governments. There is a lack of interest from traditional energy companies that have monopolised the sector. The measure supports the development and operation of green energy cooperatives. It could include feed-in-tariffs, subsidies such as tax cuts, etc. Only energy cooperatives that generate electricity from RES are eligible for these fiscal advantages.*  
€€€ (MEDIUM)
- **2. Provide fiscal advantages for local communities to establish local energy cooperatives.**  
*Communities do not want to engage in energy production projects because of the administrative burden and the high proportions of CapEX). Financial support as loans, subsidies etc., could enable local communities (citizens and small and medium enterprises (SMEs)) to invest in (collective) renewable energy infrastructure (i.e. solar panels, wind turbines) and establish a local green energy cooperative. This measure could be complemented with support for the establishment of technical feasibility studies on renewable energy.*  
€€€€ (MEDIUM)
- **3. Provide financial assistance to create and develop “Energy Clubs” within local communities.**  
*The non-commercial spirit of green energy cooperatives and the participation of volunteers is an important asset but also a weakness. Supplying an energy market demands technical knowledge, a professional organisation, and entrepreneurship. “Energy Clubs” are local bodies, often made up of a large workforce of volunteers, which offer personal advice about*

aspects of energy conservation & renewable energy. Information evenings & mentoring sessions are also held to promote the social dialogue with the support of local authorities. Financial assistance could motivate citizens engaged in local energy cooperatives to create "Energy Clubs" & education activities. This could be complemented with the provision of co-working spaces and meeting rooms in public buildings.

€€ (MEDIUM)



**4. Implement a regulatory framework that provides consumers with information on the energy sources used.**



Energy bills and energy letters from traditional suppliers are difficult to understand, and very often do not provide clear information about the source of energy used. The objective of the measure is to inform consumers about the energy sources and the GHG's emissions of their energy provider. The possible impact of understanding energy bills and sources of energy consumption could indirectly lead citizens to join or establish local green energy cooperatives or reduce their energy consumption.

€ (MEDIUM)



**5. Implement a regulatory framework that offers lower energy tariffs to citizens in communities directly affected by large scale renewable energy projects.**



Local energy production can be slowed down by public acceptability. Although many people support the development of energy cooperatives, often have strong reservations about the real impact of these energy technologies at local level (wind, solar, etc.). To reduce these dilemmas, citizens impacted by the development of large scale local renewable energy initiatives (visual and noise impacts) could benefit from advantageous energy tariff by energy cooperatives. The financing of this measure could be shared between the companies and the local/regional authorities.

€ (LOW)

**APPROACHES**



Top-down



Bottom-up



Hybrid

**POLICY INSTRUMENTS**



Communication & marketing tools



Business support schemes



Regulatory frameworks



Fiscal measures

**IMPLEMENTATION COST**

€ Low €€ Low-medium

€€€ Medium €€€€ Medium-high

**SUSTAINABLE BENEFITS**

(LOW)

(MEDIUM)



## ENABLING GREEN ENERGY SELF-CONSUMPTION

### CONTEXT

Renewable energy self-consumption can facilitate consumer empowerment by allowing active participation in and profit from energy markets, as well as encouraging smarter consumption patterns. Indeed, it can also lower energy system costs i.e., solar PV generation in sunny countries can help reducing grid peak demand for electricity driven by air conditioning. By generating and consuming electricity locally, system losses can be also reduced (European Commission, 2015).

### FACTORS AND BARRIERS

When considering self-consumption as an option, people have concerns regarding whether or not it is profitable, if they can truly be independent from the grid, how much of a financial investment they must make, and how energy regulations will impact them, among other things. In addition, storage technologies are not competitive yet because they remain too expensive for the end-users. Changing traditional habits is challenging since people are not well informed about the potential of savings, and most of them just do not know how to make the switch.

Within this context, the following policy options could be further investigated:

### POTENTIAL POLICY OPTIONS

-  **1. Implement a feed-in-tariff scheme for households/cooperatives to sell excess electricity back to the grid.**  
*The implementation of self-consumption is at early stages in many European countries. Financial schemes should be set up to favour self-energy consumption. This financial incentive could apply to both renewable energy production systems owned by individual households or third parties and self-consumption projects developed by green energy cooperatives. Excess electricity can be sold to grid to generate income and reduce electricity bills, thereby making more attractive self-consumption models. The temporary nature of the feed-in tariff is crucial to ensure the acceptance and the viability of this measure.*  
€€€€ (HIGH)
-  **2. Create a public web platform to inform citizens about energy self-consumption.**  
*Generally, people are not well-informed about energy-related issues, sustainable energy options or how they can be independent from large energy companies. This platform can include MOOCs, videos, blogs and social media that help to democratise self-energy consumption. Its contents could be created by universities and energy associations, which can diffuse "best practices" on this topic and share their expertise.*  
€€ (LOW)

- 

**3. Use of public assets to stimulate demonstrations of self-consumption solutions and encourage new business models.**



*Demonstrators will be conceived of as socio-economic and technical pilots for innovation and market uptake. Such measure could then help co-creating potential effective business models and services to make on-site generation accessible to a larger number of consumers. New financial schemes such as leasing contracts for batteries, new ways of sharing costs (decreasing up-front investments) and new partnerships should be explored.*

€€€€€ (MEDIUM-HIGH)
  
- 

**4. Create and implement win-win financing schemes for tenants and owners to adopt RE installations.**



*On average, the share of tenants in countries covered by the ENTRUST project is around 30%. The tenant-owner relationship is a real dilemma in terms of energy. This measure will promote the adoption of RE installations for self-consumption. A fair agreement should be found to satisfy both parties regarding the distribution of gains and costs over time. Authorities could play a role in guaranteeing this type of agreement.*

€ (MEDIUM)
  
- 

**5. Adopt a European Directive to redesign the network and promote the self-consumption of electricity.**



*The promotion of self-energy consumption cannot result only from bottom-up initiatives. It should also be supervised through a directive. The purpose of such regulation aims at integrating energy self-consumption in national energy mix. The Directive should provide an objective of self-energy consumption as well as a guideline for their integration in the energy network.*

€ (MEDIUM)

**APPROACHES**

-  Top-down
-  Bottom-up
-  Hybrid

**POLICY INSTRUMENTS**

-  Communication & marketing tools
-  Guidelines
-  Regulatory frameworks
-  Collaboration platforms
-  Fiscal measures

**IMPLEMENTATION COST**

- € Low
- €€ Low-medium
- €€€€ Medium-high

**SUSTAINABLE BENEFITS**

- (LOW)
- (MEDIUM)
- (MEDIUM-HIGH)
- (HIGH)

## About the ENTRUST Project

ENTRUST is mapping Europe's energy system (key actors and their intersections, technologies, markets, policies, innovations) and aims to achieve an in-depth understanding of how human behaviour around energy is shaped by both technological systems and socio-demographic factors (especially gender, age and socio-economic status). New understandings of energy-related practices and an intersectional approach to the socio-demographic factors in energy use will be deployed to enhance stakeholder engagement in Europe's energy transition.

The role of gender will be illuminated by intersectional analyses of energy-related behaviour and attitudes towards energy technologies, which will assess how multiple identities and social positions combine to shape practices. These analyses will be integrated within a transitions management framework, which takes account of the complex meshing of human values and identities with technological systems. The third key paradigm informing the research is the concept of energy citizenship, with a key goal of ENTRUST being to enable individuals overcome barriers of gender, age and socio-economic status to become active participants in their own energy transitions. Central to the project will be an in-depth engagement with five very different communities across Europe that will be invited to be co-designers of their own energy transition. The consortium brings a diverse array of expertise to bear in assisting and reflexively monitoring these communities as they work to transform their energy behaviours, generating innovative transition pathways and business models capable of being replicated elsewhere in Europe.

For more information see <http://www.entrust-h2020.eu>

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