

ENERGISE

EUROPEAN NETWORK FOR RESEARCH, GOOD PRACTICE
AND INNOVATION FOR SUSTAINABLE ENERGY 

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FRANCE

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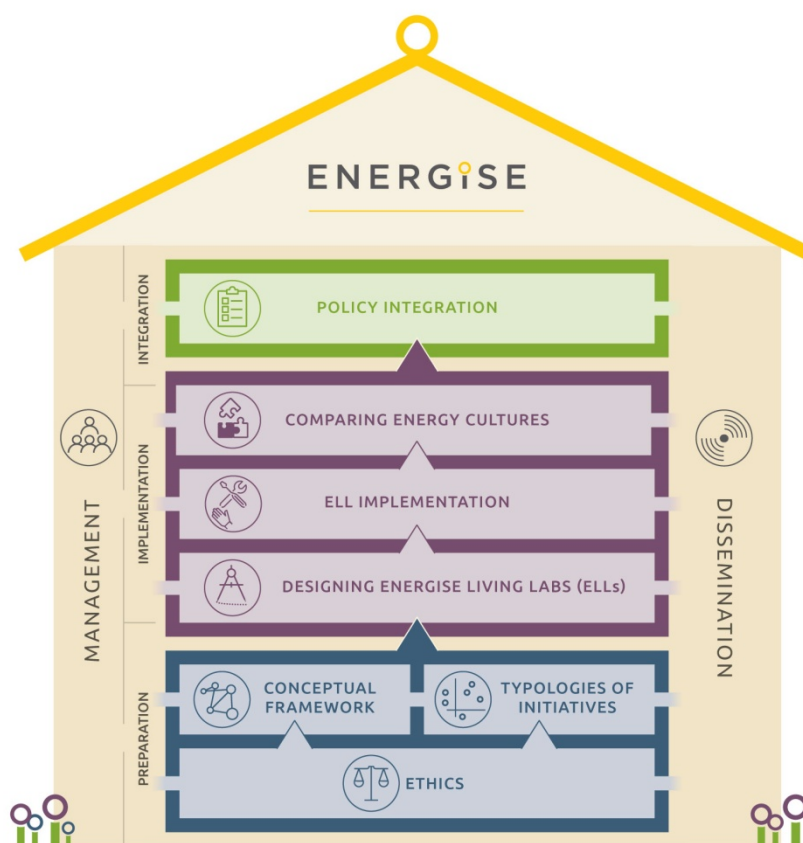
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ENERGISE PROJECT

ENERGISE is an innovative pan-European research initiative to achieve a greater scientific understanding of the social and cultural influences on energy consumption. Funded under the EU Horizon 2020 programme for three years (2016-2019), ENERGISE develops, tests and assesses options for a bottom-up transformation of energy use in households and communities across Europe. ENERGISE's primary objectives are to:

- **Develop an innovative framework** to evaluate energy initiatives, taking into account existing social practices and cultures that affect energy consumption.
- **Assess and compare the impact** of European energy consumption reduction initiatives.
- **Advance the use of Living Lab approaches** for researching and transforming energy-related practice cultures.
- **Produce new research-led insights** into the role of household routines and changes to those routines towards more sustainable energy.
- **Encourage positive interaction** between actors from society, the policy arena and industry.
- **Effectively transfer** project outputs towards the implementation of the European Energy Union.



INTRODUCTION

This document is one of 30 national briefs, demonstrating key aspects of national energy supply and demand dynamics. Each brief is comprised of five sections:

Section 1 summarises the energy profile of the country. The section provides basic quantitative information of demand demographics and usage profiles, market trends and energy supply profiles, as well as qualitative reflections on current national energy policy. ***For all the briefs, the quantitative information is derived from ec.europa.eu/eurostat (2015 data), eea.europa.eu (2015 data), and climate-zone.com, unless otherwise stated.***¹ The qualitative reflections are based on a literature reviews and desk-research. References for the literature review and the desk-research are provided in footnotes or in section five.

Section 2 summarises the nationally based sustainable energy consumption initiatives (SECI) that have been identified as part of ENERGISE WP2 framework (Jensen, 2017). Each SECI has been coded according to the Problem Framing Typology developed in ENERGISE WP2 (Jensen et al, 2017b).

Section 3 provides a *good practice* example of a national SECI that corresponds to category 3: “Changes in Everyday Life” or 4: “Changes in Complex Interactions” in the Problem Framing Typology. Please refer to Jensen (2017) and Jensen et al (2017b) for more information on the way the data for the good practice SECIs has been researched and documented.

Section 4 provides a brief summary of major nationally specific trends and their implication for energy consumption policies.

Section 5 provides an overview of sources used for qualitative assessments, and can be used as inspiration for further reading.

The national briefs provide contextual socio-material information for the further work to be carried out in Work Package 4, Work Package 5 and Work Package 6 in ENERGISE.

1.1 WP2: TYPOLOGIES OF ENERGY INITIATIVES

ENERGISE WP2 is a systematic criteria-guided review and classification of existing sustainable energy consumption initiatives from 30 European countries (EU-28, Switzerland, and Norway), which provides a comprehensive European database of energy initiatives involving households, and related typologies of sustainable energy consumption initiatives. This extensive synthesizing work guides the selection of Living Lab design elements for ENERGISE and future energy consumption research, policy and practice.

¹ Some piecharts will be empty, as no information is available.

This is done in order to

- Construct innovative typologies of sustainable energy consumption initiatives that can inform further research and action.
- Identify key success factors and related indicators, focusing on individual-level, collective, organizational, institutional and societal aspects of energy consumption, which will inform subsequent WP 3 (Designing Living Labs), WP 4 (ENERGISE Living Labs) and WP 5 (Capturing Energy Cultures).
- Progress the goals of the European Energy Union by creating a publicly archived open access dataset of sustainable energy initiatives across 30 countries in Europe.

Suggested further reading:

Jensen (2017) *Identification of key success factors and related indicators*. ENERGISE – European Network for Research, Good Practice and Innovation for Sustainable Energy, Grant Agreement No. 727642, Deliverable 2.2.

Jensen et al. (2017a) *Establishment of a comprehensive open access dataset of sustainable energy consumption programmes and Interventions*. ENERGISE – European Network for Research, Good Practice and Innovation for Sustainable Energy, Grant Agreement No. 727642, Deliverable 2.3.

Jensen et al. (2017b) *Constructions of typologies of sustainable energy consumption initiatives (SECIs)*. ENERGISE – European Network for Research, Good Practice and Innovation for Sustainable Energy, Grant Agreement No. 727642, Deliverable 2.4.

Sources of quantitative statistics (unless otherwise stated):

Climate data:

<http://www.climate-zone.com/continent/europe/>

Demography data:

http://ec.europa.eu/eurostat/statistics-explained/index.php/Population_structure_and_ageing

http://ec.europa.eu/eurostat/statistics-explained/index.php/Educational_attainment_statistics

Dwelling type data:

[http://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Distribution_of_population_by_dwelling_type_2015_\(%25_of_population\)_YB_17.png](http://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Distribution_of_population_by_dwelling_type_2015_(%25_of_population)_YB_17.png)

Energy demand and supply quantitative data:

http://ec.europa.eu/eurostat/statistics-explained/index.php/Energy_consumption_in_households

Final energy consumption of households per capita data: <https://www.eea.europa.eu/airs/2017/resource-efficiency-and-low-carbon-economy/household-energy-consumption>

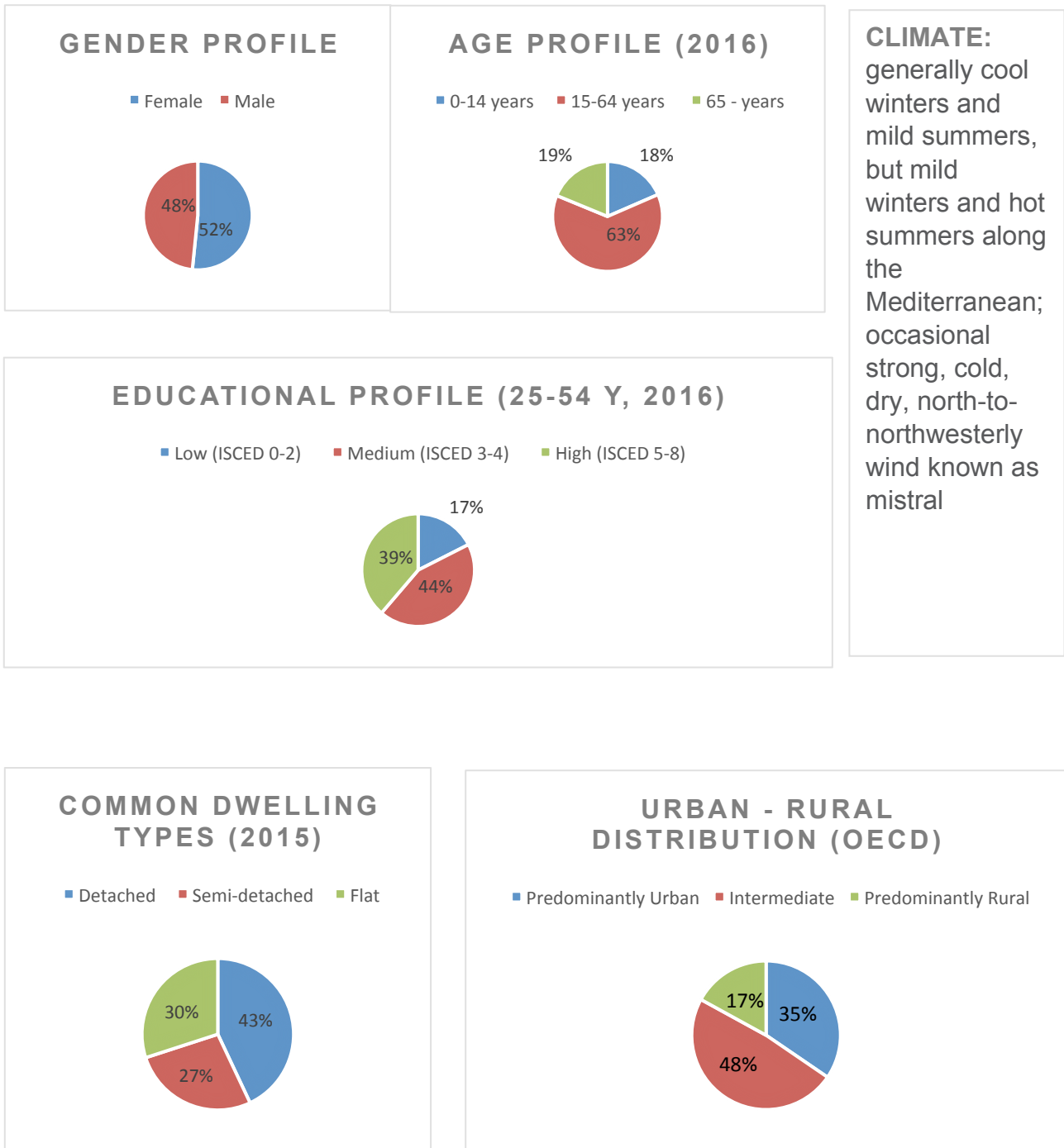
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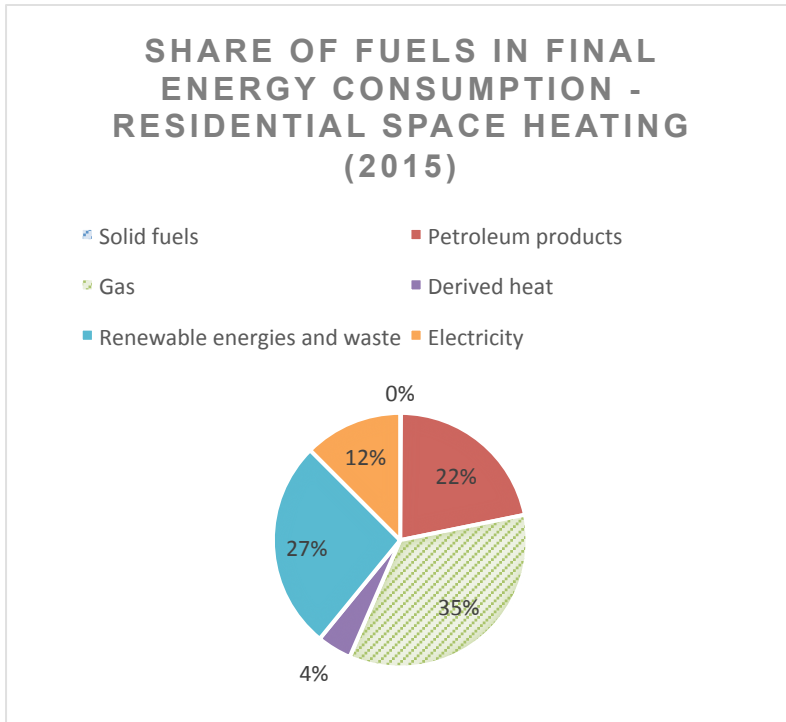
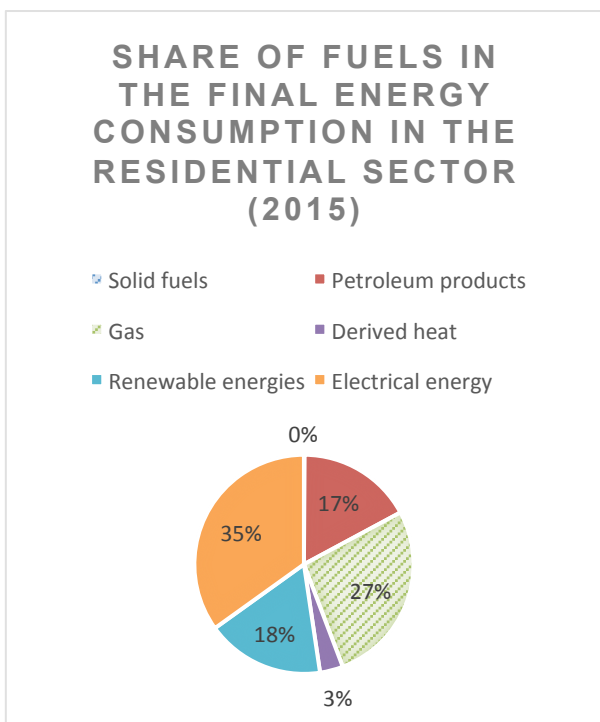
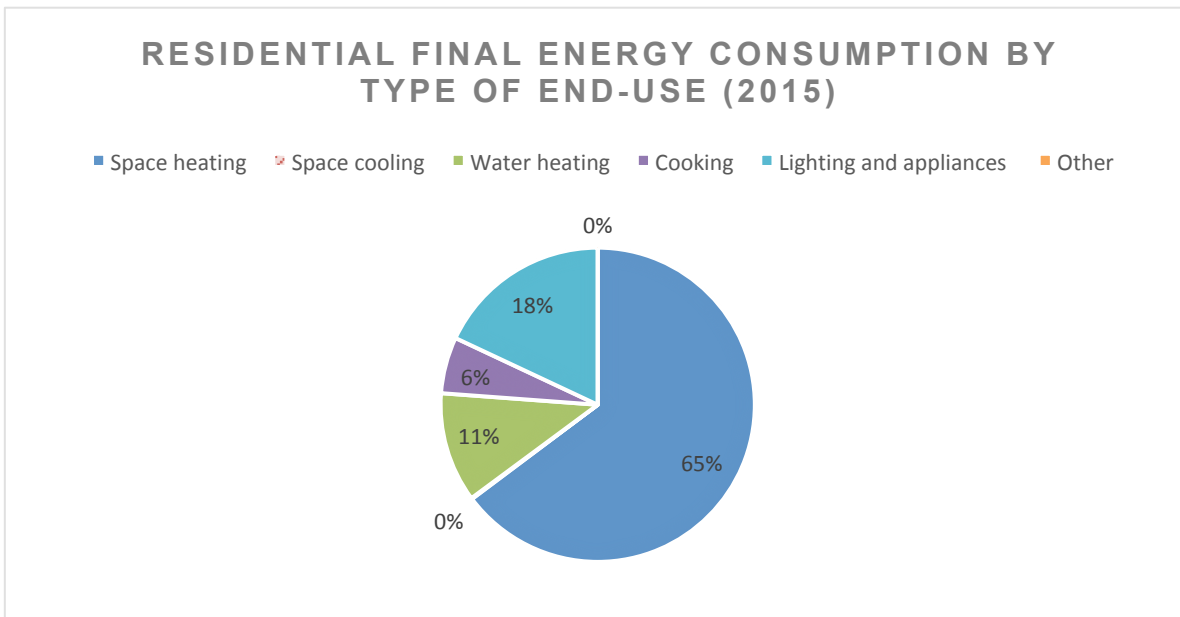
<https://www.unitjuggler.com/convert-energy-from-toe-to-MWh.html?val=893.9>

FRANCE

Authors: Laure Dobigny, Camille Gomes, Tomislav Tkalec, Lidija Živčič

DEMOGRAPHY, ENERGY CONSUMPTION AND ENERGY SUPPLY





FINAL ENERGY CONSUMPTION FOR HOUSEHOLDS, PR CAPITA (2015)

6.574 MWh

ENERGY SYSTEM AND ENERGY POLICY TRENDS

Energy system

French electricity production and distribution were originally developed and led by local actors (municipalities, group of local stakeholders, businesses or farmers, cooperatives, etc.). After the Second World War, there has been the nationalisation of energy production and distribution (electricity and gas) under the nationalisation Law of April 8th 1946. Only companies who decided to keep their independence in 1946 have the right to produce and distribute energy, since 1946 until today. 158 local companies of energy distribution still exist today (in which all or a majority of the capital is publicly owned), but they distribute only 5% of electricity in France. The monopoly of energy production is led by two national companies (one originally): Electricity of France (EDF) and Gas of France (GDF). Nevertheless, the Law of February 10, 2000 (according to the liberalisation of energy decided in the EU in 1996) allows municipalities or company to produce, sell and distribute energy. In fact, a new company or municipalities can only produce and / or sell energy. While the energy grids are owned by municipalities, the creation of a new company for energy distribution isn't possible. So, since 2000 the energy sector is liberalised (for energy production and sale) but the monopoly of state companies is still high. The gas and electricity distribution is always a state monopoly; nevertheless the implementation of new local grids like district heating (with biomass or methane energy) led by public or private actors is possible. The French energy system is a poly-centralised system (mostly large energy production units, like nuclear plants or hydroelectric plants) and characterised by a large nuclear production (almost 77% of electricity production). EDF generation capacity is higher than the needs in the country, so France is exporting a lot of electricity to neighbouring countries. EDF was partly privatized in 2004, but the French state still possesses 85% of the capital.

Sources: Laure DOBIGNY, 2016. "Quand l'énergie change de mains. Socio-anthropologie de l'autonomie énergétique locale au moyen d'énergies renouvelables en Allemagne, Autriche et France", Thèse de doctorat de sociologie, Université Paris 1 Panthéon-Sorbonne.

Pauline GABILLET, 2015. "Les entreprises locales de distribution à Grenoble et Metz: des outils de gouvernement énergétique urbain partiellement appropriés", Thèse de Doctorat en Aménagement de l'espace, Urbanisme, Université Paris Est.

Pauline GABILLET, 2013. "Les entreprises locales de distribution d'énergie, construire des organisations pour être représenté dans le champ décisionnel national et européen", *Annuaire des collectivités locales*, 33 : 125-135.

Particular socio-material aspects that influence energy consumption

The state monopoly in the energy sector, the centralisation, and the large nuclear programme developed in the mid 20th century have a great influence on energy practices and representations in France. Due to the large nuclear production, the consumption of primary electricity represents 42.50% in France and is frequently used for heating space and water, cooking, final electricity, etc. Because of over capacity of generation units, the French government encouraged end consumers to heat their home and businesses with individual electricity heaters.

Energy bills are always individualised (heating and electricity, but in some case electricity could be the only energy provides at home). Due to the share of electricity heating, and the bad efficiency of this energy to provide heating, combined with low energy efficient buildings (insufficient insulation),

energy poverty is a real concern in France.

Source: http://www.statistiques.developpement-durable.gouv.fr/fileadmin/user_upload/Datalab-13-CC-de_l-energie-edition-2016-fevrier2017.pdf

Current Trends in Energy Policy

Despite the announcements of previous and current government, the share of nuclear in the French energy production hasn't diminished, and not one nuclear plant has been closed. And while there is development of renewable energies, its share in the final consumption is only 9%. Energy policy promotes efficiency: since the thermal regulation 2012, all new buildings must be an efficient building ("Bâtiment Basse Consommation d'énergie" (BBC) label). French energy policy also promotes energy refurbishment, with financial aids and incentives for owners (like RE feed-in tariffs, tax credit, etc.), or regulations and legal obligations to renovate social housing buildings, for example. The French energy policy and vision stay centralised and systemic with adoption of legal regulations in favour of refurbishment, energy efficiency and efficient buildings, the development of large RE plants in some areas (and not small, local and decentralised plants), and smart energy system to regulate energy consumption (e.g. electric peak demand, due to a large use of electric heating).

Source: http://www.statistiques.developpement-durable.gouv.fr/fileadmin/documents/Produits_editoriaux/Publications/Datalab/2017/Datalab-8-CC-des-energies-renouvelables-edition-2016-fevrier2017.pdf














Trends in national campaigns
















National campaigns reflect current energy policy and mainly focus on energy efficiency: efficient appliances (like led bulbs, efficient gas boiler, etc.), refurbishment (promotes by financial aids, tax credit, etc.) and individual "eco-actions". To a lesser degree, RE plants for households are also promoted (help by tax credit and financial aids). National campaigns are mainly led by the French Environment and Energy Management Agency (ADEME).













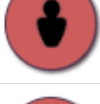
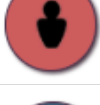

Source: ADEME : <http://www.ademe.fr>

















OVERVIEW OF NATIONAL SECIS

Below please find a list of French SECIs that have been researched and documented through WP2 of ENERGISE. The SECIs are researched, selected and documented based on a set of requirements and research interests (please see Jensen 2017 for details). *The list should not be regarded as exhaustive or representative of all kinds of energy initiatives carried out in the country.*

POWERHOUSE NEARLY ZERO CHALLENGE (POWER HOUSE NZC)		Changes in Technology
ACHIEVE		Changes in Individuals' Behaviour
TicElec « Technologies de l'information pour une consommation électrique responsable ».		Changes in Individuals' Behaviour
Thermo'Kit		Changes in Individuals' Behaviour
Smart-up project		Changes in Individuals' Behaviour
Ideas Laboratory		Changes in Individuals' Behaviour
Au bon logement		Changes in Individuals' Behaviour
Ma maison pour agir		Changes in Technology
CONSOTAB		Changes in Individuals' Behaviour
participatory workshops in Pyrenees Orientales		Changes in Individuals' Behaviour
SLIME (Service Local d'Intervention pour la Maîtrise de l'Energie) du département du Lot		Changes in Individuals' Behaviour
ClimaKit		Changes in Individuals' Behaviour
Pacte énergie solidarité		Changes in Technology

Energy solidarity		Changes in Complex Interactions
La Réunion: Awareness-raising in SIDR neighborhoods equipped with solar water heaters		Changes in Individuals' Behaviour
Synergie Habitats		Changes in Technology
The Eco-gestes workshops of the town of Aubervilliers		Changes in Individuals' Behaviour
EMPOWERING, how to better involve citizens in collective efforts to control energy demand		Changes in Individuals' Behaviour
"Réfelxénergie" Project in the Urban Community of Dunkirk		Changes in Technology
Visits to "example houses"		Changes in Technology
Energy Apertifis For Energy Sobriety		Changes in Individuals' Behaviour
Mission Bud-G: a guide to a fun awareness campaign on energy saving		Changes in Individuals' Behaviour
ECO-LOGIS Project: Experiment with a participative, collaborative and innovative process		Changes in Individuals' Behaviour
Guide to inform young tenants on the use of energy in their homes		Changes in Individuals' Behaviour
CoachCopro: a web platform to help property co-owners with the process of energy renovation work		Changes in Technology
Famille à energie positive		Changes in Individuals' Behaviour
Appart'éco et Maison'éco		Changes in Individuals' Behaviour
Strengthen the commitment of a group of exemplary citizens		Changes in Complex Interactions

ELIH MED - A EURO-MEDITERRANEAN PROGRAM TO FIGHT ENERGY POVERTY		Changes in Technology
ASSISTING CONDOMINIUMS ENERGY RENOVATION IN FRANCE		Changes in Technology
ENERGY INFORMATION CENTER - MARSEILLE PROVENCE		Changes in Individuals' Behaviour
FINANCIAL AND SUPPORT INSTRUMENTS FOR FUEL POVERTY IN SOCIAL HOUSING IN EUROPE (FINSH) FRANCE, UNITED KINGDOM, GERMANY, ITALY, POLAND		Changes in Individuals' Behaviour
positive energy operation 54-unit pilot project in Brétigny-sur-Orge		Changes in Individuals' Behaviour
Chanteloup-en-Brie (77): A pilot operation of 35 houses in wood and hemp		Changes in Complex Interactions
Workshop to raise awareness of energy saving among public in precarious energy		Changes in Individuals' Behaviour
TRIME		Changes in Individuals' Behaviour
SMARTER TOGETHER		Changes in Complex Interactions
STEP_BY_STEP		Changes in Individuals' Behaviour
Creating liveable neighbourhoods while lowering transport energy consumption (PRO.MOTION)		Changes in Individuals' Behaviour
Energy, Education, Governance and Schools. A European school panel for involving local communities in energy efficiency programs (EGS)		Changes in Complex Interactions
TRIBE : TRAlning Behaviours towards Energy efficiency: Play it!		Changes in Individuals' Behaviour
TOPTEN ACT : Enabling consumer action towards top energy-efficient products		Changes in Individuals' Behaviour
Rescoop		Changes in Technology

Boosting efficiency in electricity use in 8 European regions (EL-EFF REGION)		Changes in Individuals' Behaviour
Persuasive force of children through education (FEEDU)		Changes in Individuals' Behaviour
Eco n' Home or how to reduce energy consumption in Household (ECO N' HOME)		Changes in Individuals' Behaviour
European Network of Information Centres promoting Energy Sustainability and CO2 reduction among local COMMunities (ENESCOM)		Changes in Individuals' Behaviour
European Solar Days II (ESD II)		Changes in Technology
FRESH		Changes in Technology
Promotion of energy efficient appliances (PROMOTION 3E)		Changes in Individuals' Behaviour
SAVE@Work4Homes - Supporting European Housing Tenants in Optimising Resource Consumption (SAVE@WORK4HOMES)		Changes in Individuals' Behaviour
SPIRIT - Energising Faith Communities (SPIRIT)		Changes in Individuals' Behaviour
Evaluation of Energy Behavioural Change Programmes (BEHAVE)		Changes in Individuals' Behaviour
Integration of Active Learning and Energy Monitoring with School Curriculum (ACTIVE LEARNING)		Changes in Individuals' Behaviour
Residential Monitoring to Decrease Energy Use and Carbon Emissions in Europe (REMODECE)		Changes in Individuals' Behaviour
The Energy Path: an e-learning platform for education of the new generations in the sustainable energy field (ENERGY PATH)		Changes in Individuals' Behaviour
European Fuel Poverty and Energy Efficiency (EPEE)		Changes in Technology
EPORE - Energy Poverty Reduction in Eastern Europe		Changes in Individuals' Behaviour
Loos Rehab		Changes in Individuals' Behaviour

‘GOOD PRACTICE’ EXAMPLE OF FRENCH SEC



SMARTER TOGETHER

Smart and Inclusive Solutions for a Better Life in Urban Districts

Introduction

The European lighthouse cities Vienna, Munich and Lyon, the follower cities Santiago de Compostela, Sofia and Venice, and the observer cities Kiev and Yokohama come together to improve citizens' quality of life. The project is preparing ground for large-scale replication and ensures an in-depth knowledge transfer about setting up of smart city business models and user-centric innovation in order to contribute to positive societal dynamics.

Brief Description

SMARTER TOGETHER's overarching vision is to find the right balance between smart technologies and organisational/governance dimensions in order to deliver smart and inclusive solutions and to improve citizens' quality of life. It is focusing on citizens & stakeholder engagement, data management platform & smart services, electric-renewable energy sources, holistic refurbishment projects, and e-mobility projects.

Contextualization

Sustainable development builds on people in integrated, inclusive societies that develop in partnership and foster dialogue among all parties – being 'smarter together'. It equally builds on modern technologies and constant innovation as key ingredients at the service of people, societal development and economic transformation.

Sharing these fundamental values and philosophy, SMARTER TOGETHER is a joint project that aims to improve citizen's quality of life in nowadays transforming cities. The project will focus on finding the right balance between ICT technologies, citizen engagement and institutional governance to deliver smart and inclusive solutions.

Aims and objectives

The initiative will deepen the knowledge and know-how in the fields of data management, eco-refurbishment and e-mobility through large-scale demonstration activities, user-centric innovation and sustainable smart city business models. Research and business stakeholders will benefit from the in-depth transfer of the results, which will prepare the ground for a large-scale replication of successful solutions in other cities, contributing to positive societal dynamics in European countries and beyond.

Large-scale replication will be prepared; 1) in the Lighthouse cities; 2) the Follower cities, which already selected their target area; 3) A Club of 15-20 cities, associate to intensify its roll-out, ensuring a broad geographical and climate coverage. Commercial exploitation is enhanced by the development of new business models for widespread use by the stakeholders. Contributions to open data are expected to create business opportunities as well as inputs to standardization work.

Methods for intervention

Together, Lyon, Munich and Vienna aim to adopt a pioneering role for many critical issues relating to the future of cities – by implementing urban labs as testing grounds to think about how technological innovation should be managed for the benefit of the citizen and with the citizens. Six neighbourhoods in different European countries will experiment with

innovative smart city components, including co-creation processes and high-quality refurbishment measures to explore new ways of adding value in urban societies.

The initiative strives to:

- demonstrate large-scale smart city solutions in six districts under various urban and governance conditions covering the European diversity
- develop new business models to turn the demonstration activities into economically sustainable and replicable solutions for other cities
- foster user-centric innovation by involving even more people and stakeholders in the co-creation and design of new services and solutions
- experiment with low energy districts providing energy-efficient buildings with local renewable heat and electricity

integrate existing data networks into citizen-oriented open data platforms to deliver new services to locals

implement new e-mobility solutions for local citizens and companies.

Steps of implementation

Munich, Lyon and Vienna (the three lighthouse cities) will implement the main demonstration activities in specific districts, monitor the results and up-scale solutions at city level. Santiago de Compostela, Sofia and Venice (the three follower cities) will replicate the key findings from lighthouse cities in targeted areas, implementing them in different urban and institutional environments. Kiev and Yokohama (the observer cities) will increase the outreach of the project whilst bringing in the perspective of cities from East Europe and Asia.

Results/outcomes

Expected results are: 1) >143,067 m² of refurbished housing estate with an energy and CO₂ reduction of 50%; 2) 17.2 MW of newly installed renewable capacity in the districts; 3) 15 new e-mobility solutions for saving 95,5 T/year of CO₂; 4) 1,500 newly created jobs, 130 M€ investments, all deployed with support of integrated ICT solutions and in dialogue with the inhabitants.

The role of the households

Households are included in different phases and activities of the initiative. They are included in co-creation and design of new services and solutions for better living in the cities, in projects of energy refurbishment of multi-apartment buildings, in providing input in the phase of development and testing of citizen-oriented open data platforms to deliver new services to locals in the cities, and in project of implementation of new e-mobility solutions for local citizens.

Location

SMARTER TOGETHER gathers the European Lighthouse cities Lyon, Munich, Vienna, the Follower cities Santiago de Compostela, Sofia, Venice and Kyiv and Yokohama as observer cities bringing the perspective of East Europe and Asia.

The physical/technological aspects of the initiative

SMARTER TOGETHER is demonstrating how the European 2020 targets on energy and climate protection can be achieved in an integrated way in three urban districts with

specific contexts, by using modern technologies, on one hand, and fostering cross-sectoral governance approaches and learning, on the other.

The initiative includes various aspects: data management, eco-refurbishment, e-mobility, large-scale demonstration activities, and sustainable smart city business models.

Shared understandings related to initiative:

Cities included in the project are complemented by business partners from energy, mobility and ICT sectors, leading European research and academia organizations, and the European city network. From the various combinations of the different selected Light House areas, multiples opportunities to learn are offered.

Source: <https://www.smarter-together.eu/>

CONCLUDING REMARKS AND POLICY IMPLICATIONS

The French energy system is characterised by a large share of nuclear electricity production, which, in spite of governmental announcements about reducing it, remains the core of national energy policy. Apart from that, the energy policy promotes renewables and energy efficiency through a variety of measures, such as standards for efficient building, energy refurbishment with financial aid and incentives for owners, legal obligations to renovate social housing buildings, development of large RES production and smart energy system to regulate energy consumption. These measures are to a good degree reflected in the identified SECI. Many of the identified SECI target building refurbishment, especially with a focus on social housing and energy poor households, while there are also plenty of SECI promoting energy efficient and nearly zero energy buildings. The refurbishment programs can be general (e.g. platform on energy renovation) or focused, for example thermal renovation programs. The energy efficient buildings are mainly promoted through sample houses, which can be visited. One visible characteristic of SECI is targeting energy poor households, as many of them work with such households in variety of manners, from working towards energy retrofits, to providing home audits, energy advising, awareness raising, understanding of energy and heating bills, participatory workshops on energy saving, providing financial support and other support measures. One SECI is even working towards improving the situation of energy poor households through smart metering. The later, smart metering, is also a focus of several SECI, from studying smart metering's impacts on energy consumption to providing kits for monitoring real-time consumption. There are also several, although not plentiful, SECI focused on renewables. They offer general awareness raising on renewables, but also offer specific measures, such as installing solar water heating systems or showing renewables potential along with the weather forecast. One of the SECI focuses on renewables cooperatives.

There are many SECI dealing with awareness raising on energy efficiency, such as energy measurement kit provision, provision of advice and tips, booklets and guides, family challenges for reducing energy use, energy information centres, energy certificates, e-learning platforms and education in schools, through which also the wider community is reached. Mobility SECI are rare, only two of the identified SECI are working on

sustainable mobility issues. There is some attention paid in SECIs to the socio-demographic specifics of energy use. For example, as due to the large nuclear production, electricity is frequently used for heating space and water, cooking, etc., so several SECIs address specifically electricity consumption and use of smart metering to manage peak demand. Also energy poverty, which is an outstanding issue in France due to high share of electricity heating and low energy efficiency of buildings, is visibly addressed by the identified SECIs.

The majority of the identified SECIs focus on changes in individual behaviour (41 of them), while changes in technology (13 SECIs) and changes in complex interactions (5 SECIs) are less represented. Many SECIs work at a cross-national level, the national level actions are rather rare (only 5 of the SECIs), but then there are more activities focused on local and regional level.

The highlighted SECI is focusing on setting up of smart city business models and user-centric innovation. It aims to find the right balance between smart technologies and organisational/governance dimensions in order to deliver smart and inclusive solutions and to improve citizens' quality of life. It tries to deepen the knowledge and know-how in the fields of data management, eco-refurbishment and e-mobility through large-scale demonstration activities, user-centric innovation and sustainable smart city business models. The important lesson from the initiative is the looking for the right balance between smart technologies and organisational/governance dimensions, which is something that is generally not linked (technology experts tend to focus on technology, while organisational aspects tend to be ignored, or vice versa). This is a relevant input for policy making, as linking the processes of introducing new technologies and governance of those attempts is of utmost relevance.

REFERENCES

For references, please see individual sections.