

# ENERGISE

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

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**Title:** European Network for Research, Good Practice and Innovation for Sustainable Energy  
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## COUNTRY REPORT:

### BELGIUM

#### EXTRACTED FROM D2.5: PRODUCTION OF 30 NATIONAL SUMMARY BRIEFS

**Deliverable 2.5 description:** 30 national summary briefs of national energy supply and demand.

**Lead parties for deliverable:** AAU

**Deliverable 2.5 authors:** Charlotte Jensen, Inge Rørpke (AAU), Gary Goggins, Frances Fahy, Eimear Heaslip (NUIG), Marko Hajdinjak, Desislava Asenova (ARC Fund), Mathias Claeys Bouuaert, Tomislav Tkalec, Lidija Živčič, Renda Bellmalle, Kristjan Čoklč, Camille Gomes (FOCUS), Edina Vadovics, Kristóf Vadovics, Jozsef Slezak, Gergő Horváth, Szandra Szomor (GDI), Marfuga Iskandarova, Audley Genus (KU), Eoin Grealis, Annika Musch, Henrike Rau (LMU), Eva Heiskanen, Senja Laakso, Jari Kolehmainen, Eeva-Lotta Apajalathi (UH), Julia Backhaus (UM), Laure Dobigny, Marlyne Sahakian (UNIGE).

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ENERGISE partners	Logo
National University of Ireland, Galway (NUIG), University Road, Galway, Ireland	
Aalborg Universitet (AAU), Fredrik Bajers Vej 5, Aalborg 9220, Denmark	
Kingston University Higher Education Corporation (Kingston), River House High Street 53-57, Kingston Upon Thames KT1 1LQ, United Kingdom	
Universiteit Maastricht (UM), Minderbroedersberg 4-6, Maastricht 6200 MD, Netherlands	
Université de Genève (UNIGE), 24 rue du Général-Dufour, 1211 Genève 4, Switzerland	
GreenDependent Institute (GDI), Eva utca 4, Godollo 2100, Hungary	
Ludwig-Maximilians-Universitaet Muenchen (LMU Muenchen), Geschwister-Scholl-Platz 1, Muenchen 80539, Germany	
Focus Drustvo Za Sonaraven Razvoj (FOCUS), Maurerjeva Ulica 7, Ljubljana 1000, Slovenia	
Applied Research and Communications Fund (ARC Fund), Alexander Zhendov Street 5, Sofia 1113, Bulgaria	
Helsingin Yliopisto (UH), Yliopistonkatu 4, Helsingin Yliopisto 00014, Finland	

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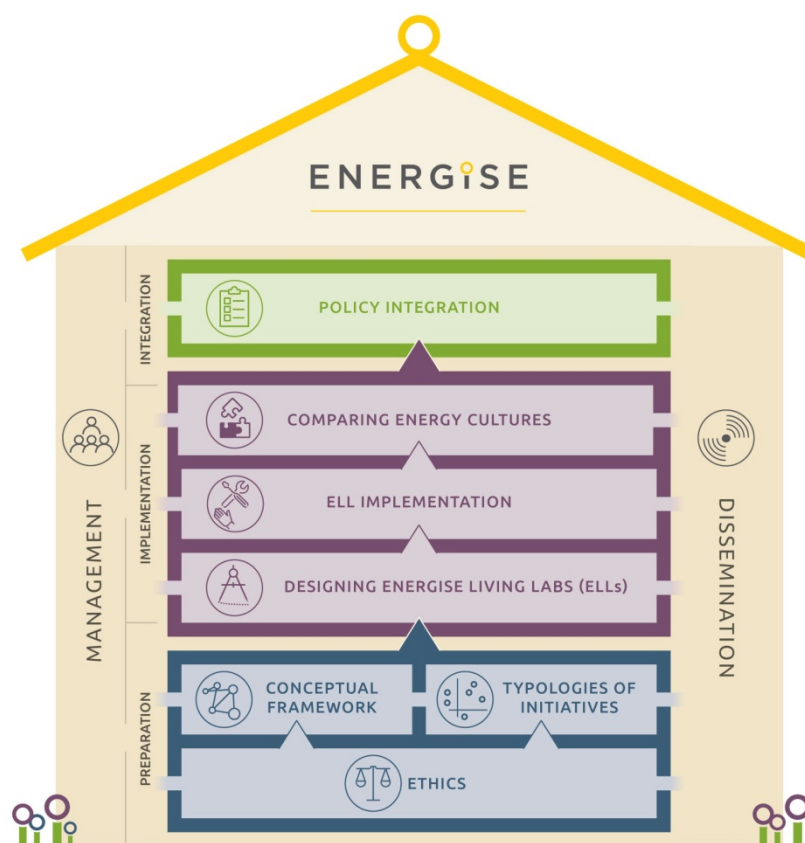
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## ENERGISE PROJECT

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.***<sup>1</sup> 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 SECI 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.

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<sup>1</sup> 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 (SECI)*. 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/Population_structure_and_ageing)

[http://ec.europa.eu/eurostat/statistics-explained/index.php/Educational\\_attainment\\_statistics](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](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>

MWh conversion data:

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

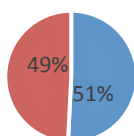
## BELGIUM

Authors: Mathias Claeys Bouuaert, Tomislav Tkalec, Lidija Živčič

### DEMOGRAPHY, ENERGY CONSUMPTION AND ENERGY SUPPLY

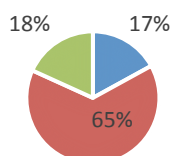
#### GENDER PROFILE

■ Female ■ Male



#### AGE PROFILE (2016)

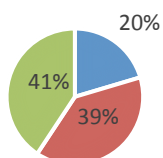
■ 0-14 years ■ 15-64 years ■ 65 - years



**CLIMATE:**  
Temperate;  
mild winters;  
cool summers;  
rainy, humid,  
cloudy.

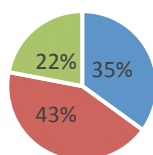
#### EDUCATIONAL PROFILE (25-54 Y, 2016)

■ Low (ISCED 0-2) ■ Medium (ISCED 3-4) ■ High (ISCED 5-8)



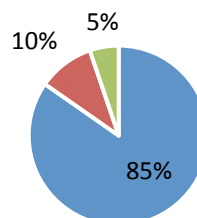
#### COMMON DWELLING TYPES (2015)

■ Detached ■ Semi-detached ■ Flat



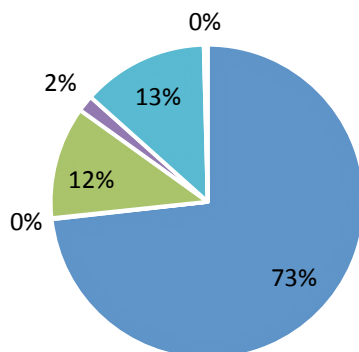
#### URBAN - RURAL DISTRIBUTION (OECD)

■ Predominantly Urban ■ Intermediate ■ Predominantly Rural



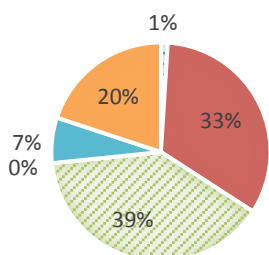
### RESIDENTIAL FINAL ENERGY CONSUMPTION BY TYPE OF END-USE (2015)

■ Space heating ■ Space cooling ■ Water heating ■ Cooking ■ Lighting and appliances ■ Other



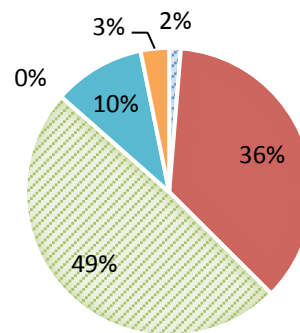
### SHARE OF FUELS IN THE FINAL ENERGY CONSUMPTION IN THE RESIDENTIAL SECTOR (2015)

■ Solid fuels ■ Petroleum products  
 ■ Gas ■ Derived heat  
 ■ Renewable energies ■ Electrical energy



### SHARE OF FUELS IN FINAL ENERGY CONSUMPTION - RESIDENTIAL SPACE HEATING

■ Solid fuels ■ Petroleum products  
 ■ Gas ■ Derived heat  
 ■ Renewable energies and waste ■ Electricity



### FINAL ENERGY CONSUMPTION FOR HOUSEHOLDS, PR CAPITA (2015)

8.392 MWh



## ENERGY SYSTEM AND ENERGY POLICY TRENDS

### Energy system

The highest share in primary energy consumption in Belgium is secured by oil (40%), followed by gas (25%) and nuclear energy (20%). Biofuels account for 7%, coal for 5% and wind for 1%. In recent years Belgium's own energy production account for about 25%, however this is mostly due to nuclear power generation, which by convention is counted as domestic production despite the uranium being imported. Renewable energy sources account for the rest of domestic production.

Historically, up until 1992, coal was mined in Belgium, but in 2010 majority of it was imported from the US (39%) and Australia (22%). Crude oil is imported mainly from Russia (44%) and OPEC countries (23%), while Norway (37%) is the largest supplier of natural gas, followed by the Netherlands (29%) (data for 2010).

Electricity generation in Belgium by power source in 2016 was 53% nuclear, 29% fossil (26% gas, 3% coal and 0,1% oil), and 18% renewables (9% biofuels, 6% wind, 4% solar and 0,4% hydro). Belgium is a highly nuclear dependent country where the share of renewable electricity is low.

Belgium has 2 nuclear power plants (Doel NPP with four reactors and Tihange NPP with three reactors).

Electricity production is concentrated, and dominated by two main incumbents: Electrabel, owned by GDF, SUEZ, and SPE-Luminus, majority owned by EDF.

Elia, a public company is the only electricity TSO in Belgium. Publi-T, a cooperative company representing Belgian municipalities and inter-municipal companies, owns 45,2% of Elia's shares. The Belgian electricity distribution system is mostly owned by the municipalities. Only recently there have been talks about privatisation, which have been shot down by most political parties. Due to the specific political situation in Belgium there are specific differences in energy policy between the different regions. The overall energy policy is made at federal level.

Between 2000 and 2010, energy consumption grew by 3% and started decreasing in 2011 (+8% between 2011 and 2013).

Source: [https://en.wikipedia.org/wiki/Energy\\_in\\_Belgium](https://en.wikipedia.org/wiki/Energy_in_Belgium)

[https://en.wikipedia.org/wiki/Electricity\\_sector\\_in\\_Belgium](https://en.wikipedia.org/wiki/Electricity_sector_in_Belgium)

<https://www.iea.org/media/countries/Belgium.pdf>

<https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Energy-and-Resources/gx-er-market-reform-belgium.pdf>

### Particular socio-material aspects that influence energy consumption

Belgian regulation on the usage of company cars encourages individual driving and usage of the company car also for personal purposes. On the other hand that means that significant proportion of population is using cars instead of public transport, which means energy use for transport is significantly higher than it could be.

A high percentage of non-adaptable nuclear power plants have meant that the Belgian government invested in a lot of lighting along the roads.

As a critical hub for chemicals and plastics, Belgium is very attractive to the chemical industry. Its share of chemicals and plastics in the economy is almost twice the EU27 average, and its chemical trade balance increased by nearly 50% between 2002 and 2012. A developed chemical industry means high energy consumption in the industry sector.

### Current Trends in Energy Policy

Belgium is among the most energy-dependent EU countries, which means they are working on their energy security. Recently they have taken measures to enhance the security of supply in various energy sectors, particularly electricity and gas.

Current nuclear plans include phase out of nuclear power by 2025. Several scenarios exist on how this phase-out can occur, but it is also possible that the government will replace the law as Belgium Commission for regulation of Electricity and Gas, as well as other authorities, concluded that Belgium faces security issues due to low electricity production capacity in the face of rising demand.

According to the National Renewable Energy Action Plan Belgium has 13% RES target for 2020, up from 2% in 2005. In 2016 share of RES in the energy mix was around 8%. Electricity from RES will represent the largest share of RES in 2020 (20,9%). Even if the 20-20-20 European targets apply to Belgium, climate and energy policies are mostly implemented at the regional level.

The overall targeted primary energy savings fostered by existing and planned policies amount to 9,6 Mtoe by 2020 (18% reduction in primary energy consumption by 2020, compared to a baseline projected scenario for 2020 in PRIMES 2007), but it is not clear whether Belgium will be able to reach its 2020 energy efficiency target.

There has been a previous incentive scheme by the government for renewable energy which led to a deficit. After a few years the government stopped with this scheme. Instead Belgium implemented a system of green certificates, which can be traded on a dedicated market. Electricity sellers are required to have a share of their sold electricity produced from renewables.

On energy efficiency the Belgian government has started a policy that all new public buildings have to be passive buildings.

Source: <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Energy-and-Resources/gx-er-market-reform-belgium.pdf>













### Trends in national campaigns
















National programs and campaigns focus mainly on energy efficiency measures for various target groups. Non-state actors are running campaigns for energy transition and there is a strong grass-roots movement of community energy initiatives and energy cooperatives.














As the last coal power plant has closed there are no campaigns against coal use. Most of civic society campaigning is on the 2 nuclear power plants. There is, among others, pressure from the Netherlands and Germany to close them. There were a few plans for large-scale biomass plants, but these have mostly been stopped by public opinion. There is not a lot of campaigning on gas, which is an important economic sector. Belgium has a habit of a strong civil society, so campaigning is done by local, regional and national NGOs. Most NGOs only operate within their specific language area.







## OVERVIEW OF NATIONAL SECIS

Below please find a list of Belgian 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
REScoop Wallonie		Changes in Technology
Wikipower		Changes in Individuals' Behaviour
Rues en Transition (Streets in Transition)		Changes in Individuals' Behaviour
Power4you : A pooling of consumers to benefit from advantageous energy tariffs		Changes in Individuals' Behaviour
Michamps4b : To become an active participant in one's energy consumption		Changes in Individuals' Behaviour
CLEAR Consumers to Learn about, Engage with and Adopt Renewable energy technologies		Changes in Individuals' Behaviour
Energy Challenge		Changes in Individuals' Behaviour
Le Prêt vert bruxellois		Changes in Technology
B.L.E.D.		Changes in Everyday Life Situations
Energic'a brac: an educational and playful tool to better understand the energy market in Belgium.		Changes in Individuals' Behaviour
FRCE Fonds de Réduction du Coût Global de l'Energie (French: Global Energy Cost Reduction Fund; Belgium)		Changes in Individuals' Behaviour

Les passeurs d'energie Network		Changes in Individuals' Behaviour
About EnergizAIR The renewable energy weather forecast - Europe		Changes in Technology
ecobuild.brussels THE NETWORK OF BRUSSELS' SUSTAINABLE CONSTRUCTION AND RENOVATION ACTORS		Changes in Complex Interactions
La maison de l'habitat durable		Changes in Individuals' Behaviour
Energivores		Changes in Individuals' Behaviour
TRIME		Changes in Individuals' Behaviour
SMARTER TOGETHER		Changes in Complex Interactions
EEPLIANT : Energy Efficiency Complaint Products 2014		Changes in Individuals' Behaviour
STEP_BY_STEP		Changes in Individuals' Behaviour
iBROAD : Individual Building (Renovation) Roadmaps		Changes in Technology
SAVES2 : Students Achieving Valuable Energy Savings 2		Changes in Individuals' Behaviour
2gether4vulnerability		Changes in Complex Interactions
START2ACT		Changes in Everyday Life Situations
TOPTEN ACT : Enabling consumer action towards top energy-efficient products		Changes in Individuals' Behaviour
DOMINO - Connecting Europe, Saving Energy		Changes in Individuals' Behaviour

Boosting efficiency in electricity use in 8 European regions (EL-EFF REGION)		Changes in Individuals' Behaviour
Energy Check for Low Income Households (EC-LINC)		Changes in Individuals' Behaviour
Persuasive force of children through education (FEEDU)		Changes in Individuals' Behaviour
Common appliance policy – All for one, One for all – Energy Labels (COMEON LABELS)		Changes in Individuals' Behaviour
Eco n' Home or how to reduce energy consumption in Household (ECO N' HOME)		Changes in Individuals' Behaviour
European Solar Days II (ESD II)		Changes in Technology
Sun chart Flanders		Changes in Complex Interactions
Renovation bonus		Changes in Technology
Frigoslag - Fridge event		Changes in Technology
SPIRIT - Energising Faith Communities (SPIRIT)		Changes in Individuals' Behaviour
Creating Actions among Energy Conscious Children (KIDS4FUTURE)		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
TOGETHER on the move - Energy Efficient Transport training for immigrants (TOGETHER)	 Changes in Everyday Life Situations
Adopt your LED lamp	 Changes in Technology
European fuel Poverty and Energy Efficiency (EPEE)	 Changes in Technology
EPORE - Energy Poverty Reduction in Eastern Europe	 Changes in Individuals' Behaviour
Refurb	 Changes in Technology

## ‘GOOD PRACTICE’ EXAMPLE OF BELGIAN SECI

### Together on the move – Energy efficient transport training for adult immigrants

#### Introduction

Working with specific target groups and stakeholders to deliver tailor-made training that seeks to enhance the quality of life of immigrants, to facilitate social inclusion as well as conserving essential energy sources for future generations. TOGETHER has a sharp focus on the community added value of setting up, implementing and promoting energy efficiency training and learning material for immigrants.



#### Brief Description

Together on the move (an IEE project) offers energy efficient transport training for adult immigrants through the development and promotion of ‘ready to use’ teaching and training materials for walking, cycling, public transport and greener car use. The training is to be delivered by language teachers and professionals who work in the field of education, transport and energy. Furthermore, opinion leaders from immigrant institutions and associations will be encouraged and trained to implement the issue of mobility in their formal and non-formal integration courses and activities. These project activities seek to enhance the quality of life of immigrants, to facilitate social inclusion as well as conserving essential energy resources for future generations.

#### Contextualization

In times of globalization and increasing immigration, sustainable mobility and access to different transport modes is a precondition for finding work, feeling socially included and successfully integrating into a new society. This growing importance of social equity and equal access to transport systems is a driving force for the project consortium to develop new, but necessary support for immigrants.

#### Aims and objectives

The initiative offers more than raise awareness of the applied target groups. It develops and applies existing knowledge in a way that motivates, facilitates and reinforces rational and responsible mobility behaviour. Together on the move:

- developed, adapted and implemented energy efficient transport modules for immigrants and accompanying didactical tools for teachers of adult education,
- establishes successful mobility training in formal and non-formal adult education,
- generates a broader awareness raising and learning process through widely disseminated learning materials targeting additional immigrants,
- wants to change attitude towards and to increase use of more sustainable modes,
- raises awareness on energy efficient mobility behaviour and its impact on integration and social inclusion to a wide and diverse target group, stakeholders and key actors,
- exchange experiences and good practices between countries,
- formulates policy recommendation.

### **Methods for intervention**

The initiative tries to develop and implement energy efficient transport training for immigrants. The training focuses on providing immigrants with advice on energy efficiency in transport as well as providing them with essential skills in how to travel using sustainable modes.

### **Steps of implementation**

Initiative offers mobility trainings for immigrants related to the five training modules:

- energy saving and sustainable transport
- safe walking
- safe cycling
- public-transport use
- eco-driving.

The training is held by mobility experts.

### **The role of the households**

The initiative is focusing on adult immigrants and through them on their families. They are to attend the training activities in formal or non-formal adult education and learn about energy efficient transport.

### **Location**

Initiative was implemented in Flanders, Belgium.

### **Textual and communicative aspects of initiative:**

The initiative has developed textual teaching and training modules that are accessible also on-line.

### **The physical/technological aspects of the initiative:**

The initiative is focusing on soft measures in order to support migrants and all stakeholders in being able to develop sustainable mobility behaviour.

Source: <http://www.together-eu.org/index.php?id=50>



## CONCLUDING REMARKS AND POLICY IMPLICATIONS

Belgium is among the most energy-dependent EU countries, depending mainly on oil and gas imports. Electricity is mainly produced by nuclear power plants, while share of renewable electricity is low. As current nuclear plans include phase out of nuclear power by 2025, government tried to incentivise renewable energy, but the scheme lead to budget deficit. On energy efficiency the Belgian government has started a policy that all new public buildings have to be passive buildings. National programs and campaigns focus mainly on energy efficiency measures for various target groups.

These trends are to some extent reflected in the identified SECIs. The most visible link of policy and SECIs in in the field of sustainable construction and renovation of buildings. There are rather numerous SECIs working on sustainable buildings, ranging from promotion of nearly zero energy buildings among housing professionals, to networks of sustainable construction and renovation actors, renovation bonuses and zero interest rate energy loans, information centre for sustainable housing and general awareness raising on (zero) energy renovation. There are also numerous SECIs oriented towards energy efficiency awareness raising and change of behaviour, from e-tools and games (energy consumption platform, visualizing the path of energy, calculation module, e-learning platform) to eco-labelling of products or energy audit systems. Energy behaviour SECIs work with a variety of target groups, for example students, faith communities, offices/workplace, families, neighbourhoods. The identified SECIs actually have a rather strong community element and quite a few of them focus on groups of people/families, streets and neighbourhoods, local communities. Such SECIs try to work in peer-to-peer manner mostly, but sometimes they are also based on challenges and competitions or pooling people's power for benefiting from advantageous energy tariffs. This might be the result of non-state actors running campaigns for energy transition and community energy initiatives and energy cooperatives.

Another prominent place is reserved for energy poverty SECIs, all of them targeting energy poor households, be it by home audits and advising or by offering financial support or policy change. A notable share of SECIs also focuses on children, from educating them, to using them as a channel that reaches out to wider circles.

In the field of renewables SECIs are rather scarce, mainly focusing on general awareness raising (e.g. Sun chart Flanders, renewable weather forecast, European Solar Days, raising consumers capacity to take informed decisions). This might be related to the fact that governmental program for support of renewables provided a strong stimulant, so citizens needed more information on renewables, which SECI provided.

In terms of targeting particular socio-demographic profiles, or specific aspects of energy use, the identified SECIs almost completely fail to address the major challenge, which is the Belgian regulation on the usage of company cars that encourages individual driving and usage of the company car also for personal purposes. There was only one identified SECI focusing on sustainable mobility, for the rest the issue of transport sector is not tackled.

The majority of identified SECI focus on changes in individuals' behaviour (28), then some on changes in technology (10), while focus on changes in complex interactions and changes in everyday life situations is scarce (4 and 3 respectively). Majority of SECIs (29) are run at a cross-national level. In spite of Belgium's strong division into regions, the SECIs do not reflect this regional focus as only 6 of the identified SECIs are focused on regional level. 7 SECIs are national level oriented and 5 local.

The emphasised SECI provides energy efficient transport training for adult immigrants. Its focus on a enhancing the quality of life of immigrants and facilitating social inclusion is the most interesting aspect of the SECI, which is also an important lesson of this SECI in terms of informing energy policy: working with immigrants call for different awareness raising approaches, but on the other hand has the additional positive side-effect, which is to facilitate social inclusion.

## REFERENCES

For references, please see individual sections.