

## INNOVER-EAST

Building a more effective pathway leading from research to innovation  
through cooperation between the European Union and Eastern Partnership countries  
in the field of energy efficiency

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### WP4 – Policy Dialogue and Networking

#### Deliverable D4.1

#### Strategy plan to reach and actively involve policy makers

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### Glossary

<i>Term Abbreviation</i>	<i>Meaning</i>
BZN	Bay Zoltán Nonprofit Ltd. for Applied Research
CERTH	Centre for Research and Technology Hellas
EPC	Easter Partnership Countries

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# 1. Introduction

The deliverable **D4.1: Strategy plan to reach and actively involve policy makers** within **WP4: Policy dialogue and networking** deals with the design of a strategy for contacting, informing and actively engaging all relevant stakeholders to key policy activities of the project such as:

- The validation of national studies on Energy Efficiency (EE) and Renewable Energy Sources (RES) by the policy makers, representatives of the local research and business community, innovation service providers, NGO's;
- The establishment of INNOVER-EAST service guidelines and the provision of innovation services;
- The formulation of recommendations for policy makers on how to overcome potential barriers for innovative technologies to promote the RES market penetration and the implementation of legislation supporting Energy Efficiency (EE) improvements;
- The creation of a network to promote the dialogue and encourage mutual learning on low carbon technologies as well as the establishment of long-term positive relationships between organisations with different missions and goals at regional and European level;
- The participation at the foreseen events (brokerage events, Workshops, Conferences) at which the stakeholders can exchange their experiences and best practices;
- The involvement of stakeholders in the energy policy design and implementation increasing the public awareness of the potential for green growth in Energy Efficiency (EE) and Renewable Energy Sources (RES).

The stakeholder engagement strategy would establish the objectives of stakeholder engagement through the plan preparation process and indicate how the involvement of stakeholders will be achieved at each stage of the plan preparation/dissemination process. It would indicate how the process of policy making will be undertaken and transparency delivered. As part of delivering transparency, the strategy should be made publicly available.

The strategy will include 1) the vision for stakeholder engagement and 2) the details of purpose, players, methods and responsibility. Guiding principles will include inclusivity, transparency, appropriateness, clarity and comprehensiveness.

In particular, the following steps will be followed in order an effective engagement strategy to be delivered:

**Step 1: Stakeholder identification**

**Step 2: Analysis of actor constellations related to innovation in EE and RES**

**Step 3: Set up of an involvement strategy**

**Step 4: Involvement activities using a mix of appropriate tools and techniques**



To conclude, an effective management of stakeholder involvement is crucial for the project's outcome to be achieved as stakeholders bring a wide range of skills, knowledge and experience to the project's outcome and they play a significant role in the project implementation. Ensuring that they have a good understanding of the objectives of the project they can contribute to the improvement of the quality of Recommendations for policy makers: **“How to improve innovation in energy efficiency and RES in the EPCs. Policy recommendations; 2015”** taking into account each national context.

## **2. Overview of the state of play and the prospects in the Eastern European partner countries (Ukraine, Georgia, Azerbaijan, Armenia and Belarus) and Europe concerning innovation related to energy efficiency**

Energy security is a key challenge to both the Union and EPCs. **Developing energy efficiency and promoting renewable energy sources** are major steps to response the challenge for a **sustainable, secure and affordable energy**. This section provides an overview of EU and EPCs programmes on the promotion of energy efficiency improvements and RES deployment as well as the role of policies in removing barriers for the implementation of these activities.

In particular, the emphasis is given to major barriers such as legislative and regulatory deficiencies, lack of training and capacity at country level, low public awareness among population and policy-makers, poor investment climate that altogether limit efforts in achieving energy efficiency goals in the five EPCs: Armenia, Azerbaijan, Belarus, Georgia and Ukraine.

The European 20/20/20 directive has set up a new approach to energy strategies. It also highlighted the necessity to integrate EPCs into the European energy market with the ultimate goals of strengthening energy security through the diversification of energy supplies, addressing global energy and environmental challenges, promoting an efficient exploitation of domestic resources, and developing sustainable energy sources.

One of the four multilateral thematic platform organized by the Eastern Partnership is focusing on energy security. The core objectives of the **Platform 3 - Energy Security** are to enhance framework conditions and solidarity, to support infrastructure development, interconnections and diversification of supply, to promote energy efficiency and the use of renewable resources, and to approximate regulatory frameworks and energy policies.

According to the Work Programme 2014-2017<sup>1</sup> **Platform 3** will focus its efforts, among others on **Activity 3: Energy efficiency and renewable energy**:

*“The EU will continue to share with Partner Countries the latest developments in the EU legislation on renewables and energy efficiency and promote the implementation of legislations based on EU standards and principles.*

*A large range of EU initiatives and programmes aims at promoting investments in sustainable energy. In particular, the Platform will keep supporting the participation in energy efficiency initiatives such as the Covenant of Mayors.*

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<sup>1</sup>*Eastern Partnership, Platform 3 Energy Security: CORE OBJECTIVES AND WORK PROGRAMME 2014-2017*

*The Platform will keep facilitating participation of Partner Countries in EU promoted events and seminars in this area. Furthermore, activities in this field will be supported through the INOGATE programme that includes dedicated support in the field of renewable energy and energy efficiency for the Eastern Partnership Countries.”*

## **2.1 EU Policies on energy efficiency measures**

**Directive 2012/27/EU** amended **Directive 2009/125/EC** on Eco design requirements for energy-related products and Directive 2010/30/EU on energy efficiency labelling of energy-related products, and repeals Directive 2004/8/EC on the promotion of cogeneration and Directive 2006/32/EC on energy end-use efficiency and energy services. It entered into force on 5 December 2012 and Member States have until 5 June 2014 to transpose the Directive into national legislation.

The **Directive 2012/27/EU** establishes a common framework of measures for the promotion of energy efficiency within the European Union in order to ensure the achievement of the Union’s 2020 20% headline target on energy efficiency and to pave the way for further energy efficiency improvements beyond that date. Each Member State shall set an indicative national energy efficiency target based on the parameters set in the Directive and shall notify those targets to the Commission. By 30 April 2014, and every three years thereafter, Member States should have submitted National Energy Efficiency Action Plans.

### **2.1.1 General Measures**

Member States shall set up measures in order to use energy more efficiently at all stages of energy chain, from the transformation of energy and its distribution to its final consumption. These measures include energy efficiency obligations schemes, the exemplary role to be played by the public sector and consumers’ right to have exact information on their energy consumption. Some of these measures are listed as follows:

- *Setting up of an energy efficiency obligation scheme ensuring that energy distributors and/or retail energy sales companies that are designated as obligated parties achieve a cumulative end-use energy savings*
- *Renovation of the national stock of residential and commercial buildings, both public and private*
- *Purchasing by public bodies of products, services, buildings with high energy-efficiency performance*
- *Obligation for energy distributors and retail energy sales companies to reduce annual energy sales to final customers*
- *Promotion of availability of cost-effective energy audits for final customers*
- *Provision of individual meters reflecting the final customer’s actual total energy consumption*
- *Give consumers access to clear and precise information on metering and billing*

- *Promotion of efficiency in heating and cooling*
- *Guarantee highly efficient energy transformation, transmission and distribution*

## **2.2 Energy efficiency programmes and activities in the Eastern Partnership countries**

A wide variety of innovative energy efficiency programmes and activities has been implemented over the past few years in Eastern Partnership countries in different sectors – industry, public, residential, etc. The four objectives of the European Union funded **INOGATE** programme reflect the commitments of the EU to creating a competitive internal energy market, increasing the use of renewable energy sources and moving towards more efficient use of energy.

Under the INOGATE programme several projects have been initiated in four main areas such as convergence of markets, energy security, sustainable development and improvement of investment climate<sup>2</sup>.

The programme **Saving Initiative in the Building Sector of Eastern European and Central Asian countries (ESIB)** helped to make a significant step forward, launching collaborative projects on energy efficiency policies, renewable energy, and sustainable development. The programme is also supporting participation of Eastern European and Central Asian countries in the Covenant of Mayors - an initiative of local and regional authorities voluntarily committing to increasing energy efficiency and use of renewable sources on their territories<sup>3</sup>.

An example of joint efforts of Eastern Partnership countries is the EU-funded MODEL project coordinated by Energy Cities (an association of local authorities in Europe), which promotes sustainable energy use among local authorities of seventeen countries. Within this project, in 2010-2013 six municipalities from Ukraine, Georgia, Armenia and Moldova came together to become models in energy management for their citizens<sup>4</sup>. The pilot project was supported by **Cooperation in urban development and dialogues (CIUDAD)** programme, which helps local governments in the EPC region enhance their capacity for sustainable, integrated and long-term urban development using good governance principles<sup>5</sup>. All these developments enhance the integration of Eastern Partnership countries to the European Union and support creating a secure and stable regional cooperation. The promotion of energy security and sustainability through development of energy efficiency, infrastructure and renewable in all Eastern Partnership countries are stated among priority actions for each partner country.

<sup>2</sup>[http://www.inogate.org/index.php?option=com\\_inogate&view=projects&Itemid=75&lang=en](http://www.inogate.org/index.php?option=com_inogate&view=projects&Itemid=75&lang=en)

<sup>3</sup> *Covenant of Mayors* [http://www.covenantofmayors.eu/IMG/pdf/covenantofmayors\\_text\\_en.pdf](http://www.covenantofmayors.eu/IMG/pdf/covenantofmayors_text_en.pdf)

<sup>4</sup> *Energy Cities*. <http://www.energy-cities.eu/-Projects,61->

<sup>5</sup> *Cooperation in urban development and dialogue* <http://www.ciudadprogramme.eu/about.php?lang=1> Retrieved 2 September 2013

The implementation of energy efficiency projects in Eastern Partnership countries requires development of the stable financial mechanisms, and improvement of investment climate. The European Union, international financial institutions and donors provide financing for energy efficiency related activities through regional loans or credit lines to local banks. Major players in these projects are the European Bank for Reconstruction and Development (EBRD), the World Bank (WB), the European Investment Bank (EIB) and the International Bank for Reconstruction and Development (IBRD). These financial mechanisms are often accompanied with grants or subsidies, and/or technical assistance. Bilateral donors are assisting governments of Eastern Partnership countries in shaping domestic energy efficiency policy, development of legislative documents and implementation of small demonstration projects.

### 2.2.1 Armenia

The primary legislation coordinating energy efficiency policy of Armenia is the **National Programme on Energy Saving and Renewable Energy**, which provides solid data on energy use and efficiency in Armenia. In 2005 the government passed a “**Law on Energy Savings and Renewable Energy and draft building codes for new buildings**”, which mandate energy efficiency<sup>6</sup>.

Armenia imports two thirds of its energy needs. The country is heavily relying on nuclear (400 MW) and fossil fuel thermal generation (1700 MW), with the rest covered by large hydropower (1000 MW). Armenia can save roughly 1 TWh of electricity and 600 million m<sup>3</sup> of natural gas through investments which are technically viable, concerning improvement of efficiency of thermal generators, reduction of electricity sector losses, and energy savings in residential sector<sup>7</sup>. The World Bank has approved the **Energy Efficiency** project in 2012-2015 through the Ministry of Energy and Natural Resources of Armenia. The country is planning energy efficiency investments for retrofitting and reduction of energy consumption in schools, hospitals, public buildings, and streetlights under the Global Environment Facility Trust Fund<sup>6</sup>. Work remains to be done in Armenia through creation of a legal framework and the establishment of energy efficiency agencies to coordinate various donor-sponsored and national programmes and policies on energy efficiency.

### 2.2.2 Georgia

Georgia is an importer and transit country of energy resources. The geopolitical location of Georgia allows the country to generate revenue from oil and gas transit and trading routes through its territory.

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<sup>6</sup> Workshop: ‘Eastern Partnership prospects on energy efficiency and renewable energy’ Directorate-General for External Policies of the Union, December 2013, **EXPO/B/AFET/FWC/2009-01/Lot1/48**

<sup>7</sup> World Bank (2008) *the Other Renewable Resource: The Potential for Improving Energy Efficiency in Armenia*. <http://r2e2.am/wp-content/uploads/2012/07/The-Potential-for-Improving-Energy-Efficiency-in-Armenia.pdf> Retrieved 7 September 2013

Around 98% of the primary energy requirement of natural gas and oil products in Georgia is imported. In 2006, 47% of energy imports accounted to natural gas and 24% to oil and oil products. The high dependence on imported energy provides the rationale for development of energy efficiency and saving policies<sup>6</sup>. Georgia invested in renewable energy, mostly hydropower and has the second largest hydroelectric resources in the world<sup>8</sup>. More than 90% of Georgia's power needs were covered by hydropower in 2010. The current generating hydropower capacity of Georgia is 1.6 GW with installed capacity of 2.7 GW. According to International Energy Agency (IEA) statistics, the electricity consumption in Georgia over the recent years shows improvement in the overall efficiency of energy use since 2003. The share of energy efficiency in the GDP of Georgia is about 0.7%, compared to world average 0.31%. The Georgian authorities also intend to develop wind power and are assessing the country's capacity at 2,000 MW<sup>8</sup>.

The energy sector's primary legislation is the **Law on Energy and Natural gas** adopted in 2006<sup>9</sup>. The energy efficiency policy of the country is defined by the resolution of the Parliament of Georgia adopted in 2006 on **Main directions of state policy in the power sector of Georgia (MDSPPS)**, stipulating improvement of energy efficiency in industrial and residential sectors, establishment of legislative basis and institutional framework, and development of renewable energy sources<sup>10</sup>.

Georgia is a party to a number of international agreements, playing important role in shaping energy efficiency approaches of the country. There are Energy Charter Treaty and Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects (PEEREA), Framework Convention on Climate Change, Clean Development Mechanism under Kyoto Protocol, and European Commission "Green Paper"<sup>9</sup>. The energy efficiency efforts of Georgia are featured with the project NATELI (New Applied Technology Efficiency and Lighting Initiative) initiated in 2009, aiming at raising public awareness of energy efficiency benefits across the country, and building capacity through training of personnel for energy audits in public and residential buildings.

The non-government Energy Efficiency Centre (EEC) of Georgia since 1998 took leading position in Georgia in promoting several international energy efficiency projects, promotion of energy efficiency concept, study and analysis of the technical and economic potential of the renewable resources available in the country, preparation of investment proposals and organization of trainings.

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<sup>8</sup>Study: *THE EU AND ITS EASTERN PARTNERS: ENERGY NEEDS AND FUTURE PROSPECTS*, Directorate-General for External Policies of the Union, February 2012  
*EP/EXPO/B/AFET/FWC/2009-01/Lot1/31*

<sup>9</sup> USAID Caucasus (2008) *Energy efficiency potential in Georgia and policy options for its utilizations*. Prepared by World Experience for Georgia for Winrock International under Sub-Agreement 5708-07-04  
<http://www.greengeorgia.ge/sites/default/files/Energy%20Efficient%20Potential%20in%20Georgia%20and%20Policy%20Options%20for%20Its%20Utilization.pdf> Retrieved 9 September 2013

<sup>10</sup> Energy Charter Secretariat. *In-Depth Review of the Energy Efficiency Policy of the Republic of Georgia*. 2012. ISBN 978-905948-102-2 <http://www.encharter.org/index.php?id=42> Retrieved 9 September 2013

Considering the increasing number of projects implemented in Georgia, the country does not have a state entity or agency for coordination and management of energy efficiency programmes. The Georgian Policy and Legal Advice Centre (GEPLAC), financed by the European Union, has assisted Georgian government with preparation of draft “**Law on Energy Efficiency**”, which is yet to be adopted<sup>9</sup>. However many energy efficiency service companies, such as Georgia Power, are operating providing energy audit, retrofitting and consultancy services.

### 2.2.3 Azerbaijan

Azerbaijan with an estimated 7 billion barrels, or 0.4% of world’s total proven oil reserves, and 1.3 trillion m<sup>3</sup>, or 0.6% of world’s total proven gas reserves, is one of the major producers and exporters of vast hydrocarbon reserves of the Caspian region<sup>6</sup>.

The total primary energy supply in Azerbaijan in 2011 was 11.5 million tonnes of oil equivalent (Mtoe), of which 0.6% is hydro power, 64% is natural gas, and 31.3% is oil. The installed generating capacity of Azerbaijan power system is 6.4 GW, of which thermal power stations operating on fuel oil and gas contribute 5.4 GW and hydropower 1 GW.<sup>11</sup> With the support of the European Bank for Reconstruction

and Development (EBRD), Azerbaijan has implemented several projects on modernization and upgrading of existing thermal power stations improving the efficiency of these stations up to 41%<sup>12</sup>.

The energy efficiency measure have been taken in a number of state documents and programmes, including the recent drafting of the **Law of Azerbaijan on Energy Efficiency and Improved Energy Effectiveness**, prepared within the framework of the **Saving Initiative in the Building Sector of Eastern European and Central Asian countries (ESIB) –INOGATE programme: Promoting reforms in the energy sector of Azerbaijan**. The draft **State Programme of Development, Technical Regulations and Standardization of Energy Efficiency**, which is currently under review by the Cabinet of Ministers, is designed to improve energy efficiency and strengthen the related legislative framework.<sup>13</sup>

The **National Programme of Azerbaijan on Use of Renewable Energy Sources** has been approved in 2004. The Programme’s implementation coordinator has become the State Agency on Alternative and Renewable Energy Sources of Azerbaijan (SAARES), established by presidential decree.<sup>13</sup>

### 2.2.4 Belarus

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<sup>11</sup> BP Statistical Review of World Energy June 2013.

[http://www.bp.com/content/dam/bp/pdf/statisticalreview/statistical\\_review\\_of\\_world\\_energy\\_2013.pdf](http://www.bp.com/content/dam/bp/pdf/statisticalreview/statistical_review_of_world_energy_2013.pdf) Retrieved 9 September 2013

<sup>12</sup> EBRD Project Summary <http://www.ebrd.com/english/pages/project/psd/2005/26891.shtml> Retrieved 9 September 2013

<sup>13</sup> Energy Charter Secretariat (2013) *In-Depth Review of the Energy Efficiency Policy of Azerbaijan* <http://www.encharter.org/index.php?id=42> Retrieved 9 September 2013

Belarus is heavily dependent on oil and gas imports, mainly from Russia. In 2012 Belarus imported 18.3 billion m<sup>3</sup> of natural gas via pipeline from Russia<sup>11</sup>. Fuel and energy imports constitute 85% of the total consumption of primary energy resources. The total installed electricity capacity of Belarus is 8.4 GW, including large condensation electric power plants (CPP) (41.9%), large cogeneration thermal power plants (TPP), generating electricity and heat (53%), and small thermal (15 MW) and wind power plants (2 MW). It is planned that total installed electricity capacity of Belarus will increase to 11.9 GW by 2020<sup>6</sup>. Primary energy consumption in Belarus in 2012 is dominated by gas and comprises 25.9 million tonnes<sup>11</sup>. The **Law on Energy Saving of Belarus** was adopted in 1998.

The **Law on Renewable Energy Sources** passed in 2010, and the draft **Law on Energy Savings and Law on Heat Supply** are in preparation. The **National Energy Saving Programme** has through implementation over the period of 2001-2010 Belarus achieved reduction in energy intensity of GDP by 50.4%, and 13.87 Mtce saving on fuel and energy<sup>6</sup>. The **National Energy Saving Programme** for 2011-2015 has a goal of 50% reduction in the energy intensity of GDP from the level of 2005 by 2015<sup>6</sup>.

The energy efficiency and energy saving priorities are also included in the **State Social and Economic Development Programme** of Belarus for 2011-2015. Belarus has clearly defined its energy efficiency targets in the **Concept of Energy Security** approved in 2007, where reduction of energy intensity of GDP is expected to be 50% in 2015 and 60% in 2020, of 2005 level, overall increase in fuel and energy saving in 2011-2015 up to 7 Mtce. By 2020 Belarus targets to cover 32% of its energy demand from renewable sources<sup>14</sup>

The biomass, biogas, municipal waste, wind and hydro energy are estimated to be economically feasible for future development of renewable energy sector of the country. The development of renewables in Belarus is seen as a major step to withstand unstable energy prices and diversify energy supply. In July 2013 another programme titled **Mitigation of Climate Change Aftermath 2013-2020** has been adopted aiming at development of renewable sources<sup>14</sup>.

Belarus is actively collaborating with international organizations, funds, and financial institutions, such as the World Bank, the UN Economic Commission for Europe (UNECE) and the UN Development Programme (UNDP). In 2013 the World Bank has approved the Additional Financing Belarus Energy Efficiency project. Two projects of UNDP are successfully progressing to improve energy efficiency in residential sector (2011-2015) and develop wind energy potential (2011-2015)<sup>15</sup>.

## 2.2.5 Ukraine

<sup>14</sup> Linas Jegelevicius. *Belarus Pushes Renewable Investment, But Urges Everyone to Play by Its Rules*. 6 August 2013. <http://www.renewableenergyworld.com/rea/news/article/2013/08/belarus-pushesrenewable-investment-but-urges-everyone-to-play-by-its-rules> Retrieved 9 September 2013

<sup>15</sup> [40] World Bank in Belarus. <http://www.worldbank.org/en/country/belarus> Retrieved 9 September 2013

The country plays an important role for European energy security and benefits from substantial transit revenues. Ukraine has a huge potential of hydrocarbon energy resources, such as natural gas, shale gas and coal. The proven reserves of natural gas comprise 0.6 trillion m<sup>3</sup> with the production of 18.6 billion m<sup>3</sup>; proven reserves of coal 33,873 million tonnes with production 45.9 million toe. The primary energy consumption comprise 125.3 million toe, of which oil comprise 13.2 mtoe, natural gas 44.6 million toe, coal 44.6 million toe, nuclear energy 20.4 million toe, and renewables 0.1 million toe.<sup>6</sup>

The State Agency on Energy Efficiency and Energy Saving of Ukraine is a main institution coordinating and managing energy efficiency policies of the government. The Agency is working on drafting the **National Action Plan for Energy Efficiency and Renewable Energy by 2020**, according to which Ukraine is expected to reduce energy consumption by 9%, and increase the share of renewables up to 11% [43]. In 2013 Ukraine signed protocol of cooperation within **INOGATE** programme of technical support for implementation of Baku Initiative and the Eastern Partnership energy objectives. The major objectives are improvement of legislative framework for the development of renewable sources, raising public awareness and capacity building for stimulation and monitoring of energy efficiency<sup>16</sup>

It is suggested that Ukraine has a good potential for biomass energy from wood waste, agricultural waste and energy crop<sup>6</sup>. The updated **Energy Strategy of Ukraine** until 2030 sets a number of objectives that would address energy security and reliability, energy efficiency improvements and reduction of environmental impacts.<sup>17</sup>

## 2.3 Major barriers to energy efficiency policies in Eastern Partnership countries

### 2.3.1 Legal, regulatory and policy framework

The implementation of existing legislation supporting energy efficiency is hindered by the lack of appropriate funding mechanisms as well as motivating and monitoring systems in some EPCs. Various economic tools such as incentives, standards, secondary regulations, prices, tax credits, and fines could improve behavioural attitudes of the consumer. The legal motivating conditions for implementation of energy efficiency activities have not been established yet in most Eastern Partnership countries<sup>6</sup>.

In addition, in the majority of EPCs the industrial sector implements small renewable energy development projects instead of investing in energy efficiency activities. Although the area of renewable energy development appears to be more and more attractive in all EPCs, the legislative and regulatory framework is

<sup>16</sup> [43] *The State Agency on Energy Efficiency and Energy Saving of Ukraine*  
<http://sae.gov.ua/en/archives/4760#more-4760> Retrieved 9 September 2013

<sup>17</sup> [42] *International Energy Agency (2012) Energy policies beyond IEA Countries. Ukraine 2012.*  
<http://www.iea.org/publications/freepublications/publication/name,33305,en.html> Retrieved 9 September 2013

incomplete, and does not fully address financial mechanisms such as feed-in tariffs for electricity generated from renewables, procurement and distribution of electricity through the national grid, etc.

### **2.3.2 Local capacity and public awareness**

Although all countries have a promising energy efficiency potential, the implementation of energy efficiency projects depends on governments' political will to provide an adequate environment for the implementation of such projects, as there is a limited awareness of the potential energy savings and an underestimation of its benefits. In addition, public agencies lack skills and knowledge to prepare fundable energy efficiency projects.

Capacity building activities; trainings and public awareness activities are required to promote energy efficiency projects. For instance, the important aspect of implementation of energy efficiency projects is availability of energy audit systems that would help private and public sector in evaluation of energy saving potential and undertaking appropriate measures to fully exploit that potential within a particular project<sup>6</sup>.

### **2.3.3 Investment climate**

Poor legislative and regulatory environment and lack of awareness of economic benefits of energy efficiency are major obstacles of investments to the energy efficiency. Low public and private sector interest in investing into energy efficiency projects also stem from low awareness of benefits of energy efficiency projects. The lack of interest is caused by the low economic viability of these projects and the high risk for companies and banks, considering low energy tariffs (electricity and heating).

### **3. Overview of the state of play and the prospects in the Eastern European partner countries (Ukraine, Georgia, Azerbaijan, Armenia and Belarus) and Europe concerning innovation related to renewable energy resources**

#### **3.1 Renewable energy policies in Europe**

Renewable energy - in all its forms - has gradually covered more ground in the overall European energy mix the last couple of decades. In the EU-27 alone, renewable power capacity accounted for 71.3 % of the total power capacity added in 2011, and subsequently set a record high. With 32 GW of added capacity, the installation increased with 37.7 % compared to installations in 2010<sup>18</sup>.

The implementation of a large share of national support schemes has to a large extent been driven by EU initiatives. Following the proposition and implementation of EU's **Renewable Energy Directive** in 2008-2009, the share of RES-E in the EU-28 energy mix is increasing at an unprecedented rate. Unlike its 2001 predecessor, the **Directive 2009/28/EC** imposed legally binding 2020 targets for the Member States, which have had significant impact on the deployment of renewable energy. The overall target set in the second RES directive was that by 2020 20% of gross final energy consumption in the EU was to be met by renewable energy sources. National targets were allocated on the basis of a flat rate approach modulated by each Member State's (MSs) per capita GDP. To reach the targets set out in the directive, the 28 Member States are planning to increase their renewable electricity generation by more than 550 TWh between 2010 and 2020. Reaching these targets will for most European countries necessitate an acceleration of RES deployment, and thus improvement of the effectiveness and efficiency of RES promotion policies<sup>19</sup>, investment support programmes, tax deductions and RD&D support programmes. All of these initiatives resulted to cost reduction of different technologies through market introduction and adoption of policy instruments for RES promotion.

#### **3.2 Potential of renewable generation capacity in the EPCs**

##### **3.2.1 Armenia**

According to the "**Energy Law of the Republic of Armenia**", all electricity generated by renewable sources including hydropower shall be purchased at special tariff for the first 15 years after obtaining the license.

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<sup>18</sup> EWEA (2012), *Wind in power: 2011 Statistics*, accessed April 2012 at:

[http://www.ewea.org/fileadmin/ewea\\_documents/documents/publications/statistics/Stats\\_2011.pdf](http://www.ewea.org/fileadmin/ewea_documents/documents/publications/statistics/Stats_2011.pdf)

<sup>19</sup> *Renewable energy policies in Europe - A mapping of existing and planned support schemes for renewable energy development in 31 European countries, 2012 by the Bellona Foundation*

Green electricity in Armenia is generated by hydroelectric resources, with no significant input as yet from non-hydro renewable energy. The share of renewable resources in the total energy production accounts for 23 percent with expectation to exceed 50 percent by 2020<sup>20</sup>.

Economically feasible hydropower potential of Armenia is about 3.6 billion kWh, with 1.5 billion kWh already utilized (Renewable Energy Armenia webpage). However, 70% of the installed equipment at hydropower plants had been in operation for more than 30 years. Now Armenia has 95 small hydropower plants with total capacity of 124 MW and plans to extend it during next 10-15 years to 164 MW<sup>6</sup>.

Although having made preliminary estimation of the wind power potential for the country, it is still a source for prospective utilization in Armenia. Main problems are equipment delivering and construction difficulties due to generally mountain areas rendering the project non-economic attractive. Therefore, not more than 300 MW of wind-generated capacity in 2020 would be a realistic number, using turbines that do not exceed 1.5 MW per unit<sup>6</sup>.

Biomass in Armenia has the potential to provide alternative energy for thermal plants and transport, if utilized from agricultural residues and municipal waste. However, it needs governmental support, to become commercially attractive in comparison with wholesale cost of gasoline.

Despite of very favourable climatic conditions (nearly double scope of annual solar radiation in comparison with the average European level 1,720 kWh/m<sup>2</sup> - 1,000 kWh/m<sup>2</sup>), solar energy in Armenia is not widely utilized. Little projects of water heating are ongoing with wide potential still undeveloped even for biggest cities. Armenia does not have own capacities for photovoltaic solar panels production.

### 3.2.2 Azerbaijan

In 2011, alternative energy sources accounted for 10% of the nation's electricity generation (nearly all of it from hydro power plants) and 2.3% of all energy consumption. Having large oil and gas deposits, the country is very slowly moving to alternative sources, with generally governmental funding of renewable energy projects. Initial estimates are showing that 280 small hydro power plants could be built country wide, providing 28 billion kWh of power<sup>6</sup>.

The country has a large potential for renewable energy power generation in the areas of wind, hydro and biomass. Total wind power technical potential is estimated to be 1,500 MW. Biomass and hydro also have substantial potential for power production.<sup>21</sup>

### 3.2.3 Belarus

Belarus has currently about 6% of renewable and local energy resources in its energy mix. It is planned by the government to increase this level up to 28% by 2015 and 32% by 2020<sup>22</sup>

<sup>20</sup> <http://www.renewableenergyworld.com/rea/news/article/2013/07/renewable-resources-will-help-armenia-avoid-energycrisis>

<sup>21</sup> The European Bank for Reconstruction and Development, "Azerbaijan: Country Profile", 2009

The country has also big potential for biomass utilization, from 7.5 to 9 million tons of oil equivalent annually, which corresponds to 25-30% of country's demand. The **National programme on development of local and renewable energy sources 2011-2015** foresees construction of 440-460 MW wind power capacities.

The solar power potential is for Belarus comparable with those of Germany in terms of solar radiation intensity. Moderate growth is also expected in utilizing solar power for water heating and electricity generation. Hydro energy potential is estimated officially at 250 MW preliminary as small and medium scale projects<sup>6</sup>.

### 3.2.4 Georgia

The country is endowed with a huge potential for renewable energy development (32 TWh or 7.27 MWh per capita)<sup>23</sup> in comparison with total running generation level at circa 10 TWh annually. The hydroelectric power station capacity of 2,843 MW is shared between 20 large-scale plants and about 30 small generating plants of less than 10 MW each<sup>24</sup>.

Geothermal energy is well researched and widely used in Georgia, notably for heating greenhouses and households. Wind and solar power are not well developed so far in Georgia as there are no legislation in force and no greenhouse gas reduction obligations under the Kyoto Protocol. Development of wind, despite estimated achievable potential of 5 TWh is not among top priorities for Georgia. Currently there is no special tariff on green energy as the government is reluctant due to the increase of electricity price.

Georgia has considerable potential of biomass utilization (3-4 TWh), given share of forests and agriculture in national patrimony. It accounts in total energy consumption for around 15%.

### 3.2.5 Ukraine

Excepting hydro power, renewable energy is still not so developed source of energy in Ukraine, providing less than 1% of annual generation. Given the expected rapid growth of renewable energy projects, in particular in the southern and eastern parts of Ukraine, problems will arise to cope with the distribution of the produced energy, unless the united power grid of Ukraine will be modernized.

Wind energy could be effectively utilized in southern part on Azov and Black Sea coasts with the highest capacity factor of about 30%.

Solar power generation could be particularly effective in southern part of Ukraine with highest capacity factor of 14% and gradual slowdown until 8% in northwest. Biomass production potential is being equally distributed over the whole country<sup>6</sup>.

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<sup>22</sup>[http://energobelarus.by/articles/alternativnaya\\_energetika/shest\\_vozobnovlyaemykh\\_istochnikov\\_energii\\_dlya\\_belarusi\\_mnenie\\_ispolnitelnogo\\_direktora\\_assotsiatsii\\_vozobnovlyaemaya\\_energetika\\_vladimira\\_nistyuka/](http://energobelarus.by/articles/alternativnaya_energetika/shest_vozobnovlyaemykh_istochnikov_energii_dlya_belarusi_mnenie_ispolnitelnogo_direktora_assotsiatsii_vozobnovlyaemaya_energetika_vladimira_nistyuka/)

<sup>23</sup><http://www.east-invest.eu/en/Investment-Promotion/georgia-2/GE-alternative-energy>

### 3.3 Incentives for investors in ECPs

With exception of Georgia, where free market conditions exist, the rest of the EPCs have up to now included financial incentives to promote RES deployment such as feed-in tariffs, quota obligations, tax exemptions and taxation of traditional electricity generating utilities<sup>19</sup> but without effective framework for implementation.

Green tariffs should be applied in EPCs during weighted average investment payback periods, given long-term development strategies of renewable energy in every country, standing market monitoring and evaluations, made by independent regulators, which so far exists only in Georgia<sup>6</sup>

In most cases the EPCs have defined national programmes, supporting development of renewable energy with not so clear terms and conditions for their implementation and little responsibilities of respective public bodies and insufficient public funding.

An overview of the energy mix, regulatory framework and potential for efficiency improvements and promotion of RES deployment in EPCs is provided in Table 1 below:

**Table 1: Energy mix, legal framework and prospects for energy efficiency and renewable energy in the EPCs**

EPCs	Legal Framework	Energy resources importer	Energy mix	Energy efficiency potential	RES Potential
<b>Armenia</b>	1. National Programme on Energy Saving and Renewable Energy, 2. Law on Energy Savings and Renewable Energy	YES/ Natural Gas	Nuclear, Fossil Fuels and Hydropower	High	High/ mainly Hydro and Solar energy
<b>Georgia</b>	1. Main directions of state policy in the power sector of Georgia” (MDSPPS)  2. Law on Energy Efficiency/to be adopted	YES/ Natural Gas and Oil	Natural Gas, Hydro and Wind power	High	High/ mainly Hydro, Geothermal energy, Biomass
<b>Azerbaijan</b>	1. Law of Azerbaijan on Energy Efficiency and Improved Energy Effectiveness  2. National Programme of Azerbaijan on Use of Renewable Energy Sources 3. State Programme of Development, Technical Regulations and Standardization of Energy Efficiency	NO	Natural gas, Oil and Hydropower	High	High/ Wind, Hydro energy and Biomass
<b>Belarus</b>	1. The Law on Renewable Energy Sources 2. The Law on Energy Savings and Law on Heat Supply are in preparation	YES/ Natural Gas	Natural Gas	High	High/Biomass, Wind, Solar, Hydro energy
<b>Ukraine</b>	1. Law on Energy Saving 2. Law on Electricity Industry 3. Law on Alternative Energy sources 4. Law on Combined Production of Heat and Electricity and Waste Energy Potential 5. Law on Heat Supply 6. Law on Coal bed methane (2009) 7. The National Action Plan for Energy Efficiency and Renewable Energy by 2020	YES/ Natural Gas and Oil	Natural Gas, Shale Gas and Coal	High	High/Hydro, Wind, Solar energy and Biomass

## 4. Goals, starting points, message definition & connection per stakeholder

The output of the inventory in relation to the data collection and assessment of available studies/reports related to innovation for improving energy efficiency and RES penetration and the relevant national strategies in the EPCs will be the basis to formulate the approach for achieving an effective engagement of the involved stakeholders in the national workshops and regional/international policy events foreseen within INNOVER-EAST Project. The aim is: a) to provide a context for the start of a dialogue between R&D organizations, policy makers, representatives of the local research and business community, innovation service providers, NGOs in each EPC and the further long term establishment of collaboration between the relevant actors related to RES deployment and energy efficiency improvements, b) to lead to increased understanding and decision-making capacity among energy stakeholders and those affected by producing legitimate, credible and well-understood decisions on the development of clean energy technologies, enhancing the ability to implement those decisions, once made.

Stakeholder engagement-dialogue is proposed as a method of responding to the sustainable energy challenges at global level. Establishing the clean energy sector requires constructive engagement of consumers, energy suppliers, regulators, policy makers and NGOs. Partners of the Project as research organizations and trusted actors, will play a key role by providing the necessary co-ordination and networking to achieve stakeholder participation including consultation, communication, dialogue and exchange of values, perspectives and experiences. The overall aim, other than that of building trust and increasing public awareness, is to provide insights that enable policy makers to make choices for a future low-carbon economy in an argued and informed fashion. Thus, the stakeholder engagement process will be based upon the following principles:

- Inclusion: All relevant stakeholders will be included in the dialogue;
- Openness: Dialogue will be structured around open questions/problems/issues and stakeholders will be free to make their own judgments and express their opinions;
- Tolerance: New, alternative and critical voices will be respected and probably incorporated;
- Empowerment: Freedom and equality in dialogue and decision making. The purpose is for stakeholders to believe that they are able to influence the structure, process and outcome of the dialogue. They then feel that they can contribute and participate in a meaningful way;
- Transparency: Full access to the information about the process and outcomes of dialogue.

The message for the outreach will be tailored to the interests and concerns of the different groups of stakeholders covering the following aspects:

- The establishment of an interactive dialogue and long-term collaboration between the involved stakeholders towards the low carbon vision in each EPC's national context. The project will provide a platform for companies, innovation providers, investors, governmental and regional energy authorities, NGO's, R&D institutions to share the efforts required to promote clean energy technologies;
- The creation of new forms of public-private partnerships, public policy measures, and associated business and development opportunities to overcome the market, administrative barriers and reduce the risks associated with the investments on energy efficiency and RES deployment through the promotion of innovative services and solutions;
- The active engagement of civil actors in the dialogue towards the sustainable development by incorporating their knowledge and perceptions into national and local energy planning for the implementation of green technologies;
- The up-date of the current RES and energy efficiency policies in order to strengthen the weak links in the innovation chain, which is particularly challenging and represents a serious bottleneck to the commercialisation of these energy technological options;
- The support of **networking** with other **R21 Cluster East projects** such as the **ener2i and NOGAP**, through invitation to the partners to attend the events foreseen to be held within INNOVER-EAST project.

## 5. Stakeholder definition & order in approach and frequency of communication effort

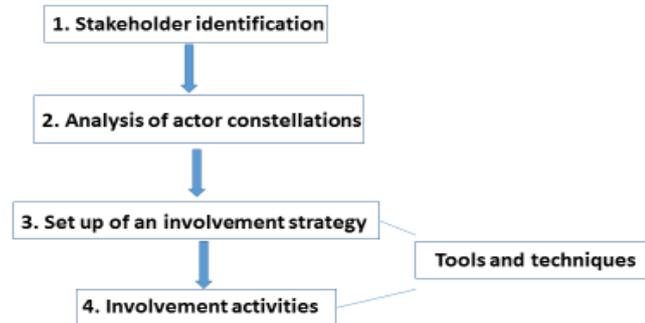
Stakeholders are actors with a specific interest - articulated or not - in the development of energy policy or measures. This implies a broad range of public and private organisations (authorities, universities, chambers, associations, enterprises, etc.), individuals (experts, politicians), the media as well as citizens. Stakeholders can be organisations or individuals.

The efficiency and effectiveness of any given policy implementation largely depends on the level of agreement between the stakeholders concerned, which makes cooperation a necessary condition for success.

The **Database on EPC stakeholders in energy efficiency, RES and innovation** (Task 1.2) will include the following actors:

- Research/academic organisations;
- Business (by size of companies: total, large-medium-small-micro firms; special attention to young or new innovative companies and spin-offs; by sectors: identification of main energy intensive industries, main sectors to produce energy efficient products and processes or being active on the RES development and market penetration);
- Business and innovation promotion service providers (non-profit and for profit sectors; science and technology parks, incubators, business development agencies, innovation centres, etc.);
- Public authorities (national and regional/local governments in energy efficiency and innovation as well as in the RES deployment and RES RD&D (energy regulators, policy and strategy makers, financial organisations, National Contact Points etc.);
- Key actors in forming public opinions on innovation and energy efficiency (mostly media actors and NGO's);
- Young professionals in public sector, business sector and research organisations;
- Local champions (key individuals who may play a significant role in mobilizing resources, creating alliances, etc. due to their personal skills and the recognition they receive among local actors).

Four steps are described that are considered to be crucial for an appropriate involvement as shown in the figure below. The first two steps deal with the question “Whom to involve?” while the rest answer the question “How to involve?”



**Step 1: Stakeholder identification:** organisations or individuals ultimately affected (positively or negatively) by energy efficiency measures and RES implementation, organisations or individuals with a strong power position and major influence due to their political responsibility, financial resources, authority, skills and/or expertise (e.g. policy makers, private sector).

**Step 2: Analysis of actor constellations related to innovation in EE and RES** based on the different criteria or attributes (interest, power, influence on each other, coalitions).

**Step 3: Set up of an involvement strategy** drawing on different techniques in order to target public authorities, research organisations, private businesses, civil society organisations, or all of them together. This requires a well-structured involvement of all stakeholders throughout all stages of the process based on regular communication, mutual consultation and cooperative decision-making.

**Step 4: Involvement activities using** a mix of appropriate tools and techniques to communicate the objective of the project to different stakeholder groups at each step in the process, adopting a pro-active exchange of information and views.

In particular, the process of stakeholder's approach will include:

- a) An initial focused **identification of individuals** and groups that could be affected by the decisions linked to the implementation of each type of technologies and sectors related to energy efficiency improvements and RES implementation as well as the diffusion of innovative technological solutions and services by using the existing communication channels of the involved EPC's partners as well as contacting the national offices, **Associate Members and Affiliates** of the Enterprise Europe Network. The next step will involve personal, in-depth interviews with selected stakeholders addressing the energy efficiency and RES programmes and activities in EPCs, and the role of policies in removing barriers for the implementation of low carbon energy technologies. The emphasis is given to major barriers such as legislative and regulatory deficiencies, lack of training

and capacity at country level, low public awareness among population and policy-makers, poor investment climate. This direct communication will enable a further elaboration of some answers by obtaining more details and data as well as an understanding of the various stakeholder’s perceptions and attitudes. These interviews will also feed into the national analysis on the present state of innovation in energy efficiency and RES market penetration.

- b) Clustering of the stakeholders** identified in the **Database of EPC stakeholders** based on their involvement in the planning of the energy policy. Who possess information, resources and expertise needed for policy measures formulation and promotion of clean energy technologies? The cluster analysis can be also carried out by creating an Influence-Interest Matrix showing possible gaps in the stakeholder selection. Most important is to involve stakeholders who have a high influence and a high stake, while stakeholders with low influence and a low stake have lower priority.

**Influence-Interest Matrix**

	<b>Low Influence</b>	<b>High Influence</b>
<b>Low Stake</b>	Least Priority Stakeholder Group	Useful for Decision and opinion formulation
<b>High Stake</b>	Important stakeholder group perhaps in need of empowerment	Most critical stakeholder group

- c) Obtain cooperation** for the dialogue initiative from the stakeholders surrounding the innovation aspects on EE/RES deployment. In some countries it might be useful to request a formal expression of their appreciation of a dialogue during the foreseen workshops.
- d)** For each of the EPC’s the establishment of an **informal network** (Task 4.2) balanced in terms of scientific and technical relevance, populated by a “coalition of the willing”. It should be noted that “willing” in this respect refers to their willingness to engage in a dialogue.

The level up to which each of them will be engaged depends on their field of expertise (technical, social, political, legal and regulatory, financial etc.) and their availability. However, the expected goal will be stressed as to ensure their commitment and also the proper situation will be created providing them an environment where they would feel respected and trusted. Since the public authorities are the group that has the final word to the decision making, it should be wise to be the first to come in contact with. Second in rank would be research organisations and universities that could contribute with scientific results and facts regarding the state-of-the-art, development and implementation of EE measures and RES technologies in EPC’s. NGOs, CSOs and other potential groups will be contacted at the end. A strong effort to bring all of the respective players will be made as to form a unified and fully committed National Council. All of the above mentioned stakeholders will be addressed in regular basis as to establish a constant and trustful



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relationship. However, the frequency of communication effort is something that will have to be modified according to their availability and their willingness to pledge. In general, at the beginning the communication is advised to be more frequent and then to allow them time to elaborate their contribution to the validation of the National studies, the innovation services to be developed by INNOVER-EAST. It is recommended for the established Network in each EPC to meet at least every six months.

## 6. Tools & communication instruments to be used

To promote the communication with the identified stakeholders, a comprehensive strategy will be implemented, aiming to approach them in ways that their interest is strongly captured, taking into consideration that no major economic benefit is anticipated by their side.

It is very important that the stakeholders will be engaged into the project right from the start. This is not only influenced by the objectives and actions of the project but to a large extent by the way the project is presented to the stakeholders. The major communication channels to the stakeholders that need to be addressed are:

- the consortium partners that directly engage with them;
- the general communication tools that will be deployed by the project, most importantly the website;
- the events that are organized in the frame of the project, in particular the workshops and the policy conferences and the national brokerage events.

These communication channels will be addressed by the following tools:

### 6.1 Positioning of the project

At the start of the project, on the basis of information obtained from the inventory (Task 1.1), the draft national studies will be developed and posted on the project's web portal outlining the concept of the project, its importance and added value on stimulating innovative services to foster EE and RES in each EPC's energy policy. The consortium partners will use these draft national studies to attract stakeholders and increase their interest from the beginning of the project.

### 6.2 Personal contact

Personal contact is an important communications medium, allowing for higher levels of tailoring of messages than other techniques. In addition, higher levels of context can be established through personal contact. This significantly increases the levels of trust and the probability for further involvement.

### 6.3 Branding (development of website and graphic design)

At the start of the project a website was set up. For many stakeholders the INNOVER-EAST project will be unknown. They will refer to the website to collect information about the project and to communicate with the consortium. For that reason the website has an external part, publically accessible. It is essential that the website provides the information that visitors need to be reassured about the project, the consortium and the process, in a professional way. In addition, a uniform branding with a recognizable identity and style (logo) will be used by the partners for the standardized PowerPoint presentation at several national events and the

newsletters, brochures, press releases and poster to introduce the aims, activities, expected results of the INNOVER-EAST project. The branding will create high visibility facilitating the engagement of the various energy-related actors in the dialogue.

## **6.4 National communication strategy**

Each EPC partner is required to develop and use a communication strategy that is tailored to each national situation. This strategy needs to be aimed at maximizing the participation of stakeholders in the national events and will be based on the analysis of the national scene concerning the relevant actors.

## **6.5 Workshops, brokerage events, policy conferences**

The **tools** for each step of the dialogue with the respective stakeholders will be focused, in particular on the format for envisaged generic and dedicated workshops and the software tool developed for the brokerage events. These workshops will be designed for participation of all stakeholders where they can share their specific knowledge, listen to others and discuss the different perspectives. The format of these events is designed to provide politicians, the academic community and experts with an opportunity to share knowledge, experience and lessons learnt about the implementation of energy efficiency and policy and the development of renewable energy sources, as well as on identifying the necessary legal, regulatory and fiscal reforms and facilitating collaborations of research organisations and businesses.

At these events energy policy contributors, high-quality energy research performers and innovation services providers will be invited to participate in the organizing committee and to chair or moderate the events as well. The principal benefit that will be offered to them so to convince them to participate without offering some kind of direct economic reimbursement but feeling as integrated actors in the EE, RES policy development.

## 7. Recommendations & concluding remarks

Based on the overview of the current policies and programmes and the prospects to promote the implementation of energy efficiency and RES projects through innovative solutions in EPCs and analysing the existing relevant priorities and R&D Initiatives in Europe, the EU and EPCs share the objective of ensuring a **sustainable, secure and affordable energy by developing energy efficiency and promoting renewable energy sources**. Although EPCs have proceeded with the establishments of some uncoordinated policies to foster energy efficiency and increase local renewable energy sources, there is still a necessity to improve the policy framework, the skills of the energy agencies as well as the investment climate.

They also face similar challenges in saving energy, e.g. the lack of capacities and investments.

Based on the shared vision for greening the growth and moving towards a low carbon development in the EPCs the establishment of the **informal network** (Task 4.2) should try to maintain steady and increasing contact with policy-makers and stakeholders both directly and indirectly by organizing a dialogue and identifying actions to improve the dialogue based on trust and associated mutual learning. The network should address the need to build communications capacity within member networks as well as to harmonize their collective engagement efforts gradually moving stakeholders from being recipients of information to being participants in the process of developing new solutions for a sustainable energy system.