

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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Deliverable D2.2 **INNOVER-EAST service guidelines for** **the provision of innovation services**

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Glossary

<i>Term Abbreviation</i>	<i>Meaning</i>
AREA	Area Science Park, Italy
CERTH	Center for Research and Technology Hellas
CP&EE	Cleaner Production and Energy Efficiency Center
BZN	Bay Zoltán Nonprofit Ltd. for Applied Research
SDF NAS RA	Science Development Foundation / National Academy of Sciences of the Republic of Armenia
EE&EP	Energy Efficiency and Environmental Protection Centre
BELAPE	Belarusian Association of Industrial Power Engineers
SDEWES	International Centre for Sustainable Development of Energy, Water and Environment Systems
IFNTUOG	Ivano-Frankivsk National Technical University of Oil and Gas

INTRASOFT	INTRASOFT International
EaP	Eastern Partnership
EPCs	Eastern Partnership Countries
EEN	Enterprise Europe Network
SMEs	Small or Medium Enterprises
Start-up	An entrepreneurial venture or a new business in the form of a company, a partnership or temporary organization designed to search for a repeatable and scalable business model
Spin-off	Spin-offs are divisions of companies or organizations that then become independent businesses with assets, employees, intellectual property, technology, or existing products that are taken from the parent company
TO	Technology Offer
TR	Technology Request
IPR	Intellectual property rights

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1. Introduction

As it is described in the DoW, AREA as task leader of *Task 2.1 “Developing new innovation services in energy efficiency for EPCs”*, in collaboration with the EaP partners of the project and having in mind the challenges of the region, identified innovation services which can be applied in the EaP region. The list of the innovation services identified are described in *D2.1 “List of innovation services suggested for development and introduction by the project in the EPCs”* prepared by AREA.

The aim of this deliverable is to analyze more in depth the innovation services identified. For each service it will be given step by step guidelines on how to set-up (describing the necessary implementation phases) and provide effectively such services.

CERTH expects that the present guidelines will be a useful tool for the main stakeholders from EPCs for further collaborations in the energy sector with benefits for the regional development.

2. Innovation Services Guidelines

CERTH as Task leader of *Task 2.2 “Preparing the EPC partners for service provision-twinning and mentoring”*, was responsible to identify the European and EaP organizations who will collaborate as twins. During the kick-off meeting in Budapest (25-26/06/2014) a brokerage meeting took place and by the end of it, the EPCs in agreement with EU ones made the following pairs of “twins”:

- CP&EE (AZ) – BZN (HU)
- SDF NAS RA (ARM) – AREA (IT)
- EE&EP (GE) – CERTH (GR)
- BELAPE (BY) – SDEWES (HR)
- IFNTUOG (UKR) – INTRASOFT (LUX)

AREA based on Deliverable *D1.3 “Five validated National Studies about the state of innovation in energy efficiency”* and the document produced by ICEG (Innovation Supporting Services in Fostering Energy Efficiency in EPCs), prepared Deliverable 2.1 “List of innovation services suggested for development and introduction by the project in the EPCs”. *D2.1* illustrates the list of *Innovation Services* suggested for development and introduction by the project in the Eastern Partnership Countries. From these Innovation Services, 6 were selected by the “twins” as the most attractive ones to be implemented.

Therefore the present document (*D2.2*) will focus on the following selected services:

- 4.2 - Public Demonstration Pilot Projects
- 4.5 - EEN: International networking for SMEs
- 4.6 - Technology Transfer: Support Services for SMEs
- 4.7 - Technology Foresight
- 4.9 - Support to Start-Ups and Spin-Offs
- 4.11 - Training in Energy Efficiency

The aforementioned six services are described in brief in the next chapters.

2.1 Public Demonstration Pilot Projects (4.2 in D 2.1)

A pilot plant will be set up which will be characterized as a “living lab”. “Living labs” aim to promote the use of renewable energy sources, in order to decrease the cost of energy management and to reduce emissions. The service aims to test a “Demonstration Plant Laboratory” in real environment and to analyze data on different systems, to check the reliability and the actual energy efficiency of different construction types and to certify the actual balance of costs and benefits in medium/long term.

This test which will be performed in the “living lab” will be devoted to investigate the pilot performances in terms of energy saving and efficiency taking under consideration green technology requirements.

For the implementation of the pilot plant, the following steps could be followed:

1. Identification of universities and schools, research centers, private and public sector actors interested to participate in the development of the “living lab”
2. Mapping exercise for the identification of buildings where the “living lab” could be developed
3. Set up the criteria for the evaluation criteria to identify the appropriate building. The following criteria for the building could be used:
 - a. ownership (public building or owned by the collaborating universities or research centers)
 - b. age (age should be in the age range of the majority of the buildings of the country)
 - c. orientation (sun or wind orientation)
 - d. location (easy access, parking spaces, possibility for group visits)
 - e. size (big enough for the necessary installations)
 - f. availability (date that will be available to start the constructions)
4. Identification of the most appropriate building through a selection procedure based on evaluation criteria
5. Market search in order to identify the tools that could be used for the monitoring activities and the creation of a database of functioning performance
6. An appraisal of the required investment to implement the pilot plant based on techno-economic assessment (feasibility study)
7. Identification of the parameters and data to be registered and monitored during the operation based on the modelling of the pilot plants operation in terms of mass and energy balance, life cycle analysis, and the optimization of the potential configurations. These data must be integrated with local climatic data and any other relevant data.
8. Launch of the pilot plant commissioning resulting in signed contracts or tendering procedures as appropriate related to e.g. construction works,

- energy performance contracts (in the definition of the contracts attention should be paid to the access to energy performance data).
9. Commissioning of the pilot plant including the evaluation of structural components, devices, the layout within the material, environmental conditioning systems, equipment, as well as the constraints of mass, volume and energy power consumption.
 10. Gathering of the data from the monitoring activities will be stored in the above mentioned database of functioning performances in order to identify bottlenecks and analyze the pilot performances in terms of energy savings and efficiency fulfilling the green technology requirements.
 11. Testing and validation of the prototypes thus assuring the dissemination of technical, environmental and economic impacts of the proposed innovations to research institutions, businesses and governments, general public promoting a behavior change.
 12. Preparing of a techno-economic feasibility study based on the first results for the provision-viability of the pilot plant. The study should outline clearly which are the conditions where the pilot technology performed best and when it would be advisable to adopt other technological solutions.

For this service investments could be targeted with the participation in European Competitive Projects like HORIZON2020 or from public funds like National R&D programmes. Of course there is the option the service be funded by investors (like banks or other private investors). Finally, there is no need to be a single funding mechanism, so a combination of the above mentioned funding is possible.

2.2 EEN: International Networking for SMEs (4.5 in D 2.1)

The Enterprise Europe Network (EEN) is the largest European network for innovation and entrepreneurship, supporting SMEs to enhance their competitiveness through innovation. It consists of about 600 partner organizations, including chambers of commerce, regional development agencies, research and technological centres. The participating bodies employ about 4,000 specialized staff with experience in providing support services to businesses, and 17 groups of experts in industrial sectors. The local contact points of the network are located in over 40 European countries.

The Enterprise Europe Network operates as a single point of contact for businesses, providing specialized services to develop new products and access new markets, and providing information on EU activities and opportunities that might arise.

The Enterprise Europe Network reports about 1,000 technology audits annually and organizes 4,000 local events and seminars on topics related to small businesses. The

network supports more than 2 million businesses per year (in matters of international trade, technological cooperation and access to finance) and, having all this experience accumulated from the older members, is a guarantee for the success and viability of the National Networks which will be set up in the EPCs.

Taking into consideration all the above, it is important for the EPCs to setup a National Enterprise Europe Network as part of the wider Pan-European one, which could play a catalytic role for collaboration enhancement among main stakeholders at national level.

In order to organize and implement such a Network, it is very crucial to have the team of skilled people who will implement these activities.

The identification and the selection process is really important in order to set-up an experienced team capable to achieve all targets coming from its mission.

The process of selecting the team members could include the following steps:

- Describe the needs and prepare the jobs description
- Publish them and collect the applications
- Interview the candidates
- Select the top candidates and prepare a practical exercise in order to evaluate them
- Hire the best candidates based on general accepted evaluation criteria

Another important step towards success is to ensure coherent teamwork. In order to achieve it, some actions should be applied, such as:

- Setup “let us know meetings” where everyone will present his\her expertise
- Organize weekly meetings, setting priorities for the week
- Distribute the tasks and promote collaboration between the members
- Provide regular training to all team members

This national network will be designed as an integrated businesses network. It will provide international business cooperation services, information on European policies, innovation and technology transfer services as well as services for encouraging Small and Medium Sized Enterprises' (SME) participation to the European me for Research, Innovation and Technology. It will comprise of research and technology organizations, industrial associations, chambers of commerce and industry, governmental SME agencies and established innovation players with long experience of cooperation at national level.

The businesses will be able to participate in the following ways:

- Exploit for their own benefit the services of the network
- Establish Business Partnerships
- Establish Research Collaborations
- Achieve Technology Partnerships
- Participate in brokerage events focusing to increase all the partnership/collaborations

This service could be financed by private or public funds, by fees of the participants or by combining the above mentioned sources.

2.3 Technology Transfer: support services for SMEs (4.6 in D 2.1)

Technology transfer is a substantial tool in order to support innovation services to the SMEs. The aim of the service is to support small or medium enterprises to facilitate the matching of demand and supply of innovation in the field of energy issues.

This technology transfer service will provide:

- Support for the evaluation of energy consumption reduction
- Verification of the energy efficiency processes and systems
- Introduction of renewable energy sources

More specialized tools will be provided for the manufacturing:

- Support the companies in all the phases of the implementation of a new product or technology
- Guidance on how to present an idea to market
- Support in the step of industrialization of a prototype product
- Information for the current and future trends in the markets

Taking into consideration the funding of the service, one of the best mechanisms to support the setup of the service are EU Research projects. By implementing such projects the following opportunities can be offered:

- Development of innovative products
- Gaining experience from managing large and complex collaborative projects
- Create collaborations with universities, research organizations, private sector
- Effectively disseminate research results in Europe and abroad

Additional services provided to support technology transfer could be:

- Inventory of Technology Offers and Technology Requests: Mapping and characterization of all the innovative resources, in terms of innovative companies, innovation projects and technology offers/requests supporting their effective interaction in the field of energy issues.

- Matching between Technology Offers and Technology Requests: Matching and analysis of the technology transfer opportunities through assessing SMEs needs, promoting the development of industry networks, encouraging the participation to EU Programmes and proposing brokerage and consultancy services to innovative companies.
- Fostering meetings between universities/research centers and companies: The methodology used for identifying common interests such as requests of specific innovative technologies (on behalf of enterprises / private sectors) and technology offers (on behalf of research institutes)
- Giving advice in IPR and contractual issues

In order to organize and implement such a service it is crucial to have a team of properly trained people who will implement these activities.

The process of selecting the team members:

- Describe the needs and prepare the jobs description
- Publish them and collect the applications
- Interview the candidates
- Select the top candidates and prepare a practical exercise in order to evaluate them
- Hire the best candidates based on general accepted evaluation criteria

The chosen candidates should possess the skill to work as technology brokers. Their job description should include:

- Visits to companies
- Identification of their needs
- Provide fast the most appropriate solutions

The funding of the setup of the service could be based on European Projects. However the operation phase is better to be supported by regional/national funds or by fees to be paid by the beneficiaries.

2.4 Technology Foresight (4.7 in D 2.1)

Globalization in the last decades led to transformation in technological base of our societies accompanied by extended dramatic changes in aims and means of science and technology policies. Therefore, in a rapidly changing environment, it becomes extremely important to anticipate future. It is substantial for decision makers in order to design any strategic action and policy to recognize the possibility of alternative futures, and to adopt policies that fit the best for different alternative scenarios.

The aim of this service is to introduce a bottom-up approach to collective intelligence. The operation of this service overcomes the linear view of the individual researcher/research group to develop a systemic, collective and integrated vision, essential in dealing with complexity and multifactor scenarios. To achieve all these goals decision makers should adopt an approach include steps/recommendations as follows:

- Mapping of scientific and technological areas addressing problems related to energy, health, food, environment, transportation, safety and security and decision of the most critical taking into account the regional/national socioeconomic framework
- Creation of a forum of experts by identification and engagement of relevant stakeholders (scientists and experts from academia, government and the private sector assuring their input in communication platforms such as website)
- Design and operation of the tool to perform forward-looking analysis to outline scientific futures and "reliable" scenarios of scientific and technological development integrating as well socio-economic and political variables
- Implementation of a "Foresight web platform" facilitating the interaction among the participants and allowing the introduction of an innovative approach to foresight, capable of enhancing the excellent skills of each scientist participating in the project
- All the engaged scientists will formulate a network, of adequate size, dynamic and interactive enough in order to become capable of contributing with continuity, creativity and reliability
- Implementation of face to face workshops in order to involve a large number of researchers in the network with "variable geometry" that connects different individuals and groups in each case

The funding of this service could be supported via public funds, European projects or the combination of both. The possibility of requiring a fee from the company benefitting from the service should be also considered.

2.5 Support to Start-Ups and Spin-Offs (4.9 in D 2.1)

EPCs have a significant and high level human resources research potential. The problem is that in most cases researchers have great ideas but they are missing the suitable mechanisms to introduce them in the market. Start-Ups and Spin-Offs can provide opportunities, specifically for younger researchers, to implement their ideas.

To setup this service it is crucial to have a team of experienced people. The appropriate process of selecting the team members includes the following:

- Describe clear the skills and qualifications and prepare the jobs description
- Publish them and collect the applications
- Interview the candidates
- Select the most suitable candidates and prepare a practical test in order to evaluate them
- Hire the best candidates based on general accepted evaluation criteria

The chosen candidates should possess the skill to follow the procedure for the implementation of the start-ups or spin-offs step by step. Their job description should include:

- Often meetings with the researchers or new entrepreneurs
- Identification of their needs
- Provide fast the most appropriate solutions
- Step by step support

The proposed steps to a researcher or entrepreneur on how to setup a start-up company could be:

1. Market research

Conducting market research is the first step to determine if the idea worth pursuing. Applied research always is linked with problems to be solved. Therefore, contact with people who have this problem the idea addresses is a necessity. This communication could be followed by a good feedback for potential "customers" to exploit it in a proper way. If there are businesses in the same area check out the competition and figure out if the idea is really innovative.

2. Secure intellectual property

It is very important to map the current state of art regarding new ideas or products and secure Intellectual property (IP) rights (patents, copyright, and trademarks). Usually this is conducted by the national patent offices.

3. Decide on branding

Choose a brand name that will identify better the idea. The name should convey the experience of using the product and the problem that it solves.

Having the brand name is needed to secure also a website domain name and other associated marketing materials.

4. Incorporate

Turn business into a legal entity deciding how it will be structured. Choose the most appropriate corporate type.

Between the corporate types there are important differences which are very crucial (tax differences, equity compensation, etc.).

5. Choose a co-founder

Having in mind time or funding restrictions, it is a good idea to consider a co-founder. Founding team who will support the investment will be crucial for the implementation of the idea. Another important aspect is to consider the teamwork with the people who will be working alongside every day and need to know that they can accomplish goals as a team.

6. Write a business plan

Based on the market research of step 1, create a business plan. The aim will be to decide next moves and identify the targets. It is very helpful to include in the business plan smaller goals and milestones, since it will become a step to step guide to achieve these targets.

7. Pick a workplace

Having in mind what a business needs, choose the appropriate working environment. In case of low budget it is good to try to find a workplace in an incubator for new companies. In this first steps the most important issue is to put your work in move and not search for the perfect space.

8. Find a mentor

The experience of other people who already implemented their start-up will be very valuable. Having a mentor can provide deep industry insight and wisdom to help to navigate some of the challenges that come in the way. Of course it is not always easy to find the right person.

9. Apply for an accelerator program

If you need some additional resources and expertise, consider applying for an accelerator. An accelerator is a short implementation period program for startup businesses that helps speed the growth of the company by providing a mentor network and mostly demands a small investment. However, most of these programs require equity share of the company.

10. Raise capital

For many startups, taking it to the next level requires a financial investment in the company. The resources can be an enormous help. If you need to raise capital for the business, you should begin by deciding how much money to raise and how it will affect your startup.

More specifically, for spin-off companies expect from the idea, the funding and the business plan some additional steps are needed to make a spin-off company successful. The proposed steps to a researcher or entrepreneur on how to setup a spin-off company could be:

1. Set up a Venture Capital oriented commercialization process

A step by step production control process to keep costs low and to be able to react to a strategy change on short notice could be life-saving.. Research and development results should be enough flexible to continuously evaluate current market developments.

2. Comprise Commercialization Competence for transferring the technical to the market domain

- By using people with experience in the commercialization procedure who are able to think beyond the limits of the parent company.
- Training and Support: Regularly involve all parties to be able to detect alternative realization options and adopt easier innovative methods in their production.

3. Build up an Entrepreneurial Mindset

- Form a strong management team from internal or external sources
- Assemble team early and let them work together, promote teamwork

4. Establish and Support Infrastructure within the company

- Funding the pre and post spin-off-phase
- Buy-in from top management of the parent organization or company
- Build up an external network in order to get access to expert knowledge

5. Show Perseverance

Timeline for a technology commercialization is about 1 to 3 years, depending on the technology’s maturity. Keep or update accordingly the timeline identified in the business plan.

The funding of this service could be supported via come by public funds, European projects or the combination of both.

2.6 Training in Energy Efficiency (4.11 in D 2.1)

One of the most effective methodologies to educate all kind of people is to organize training sessions. In each training subject it is crucial to identify the best thematic topics, the appropriate training beneficiaries but also the best trainers.

More specifically for energy efficiency trainings:

Energy Efficiency Thematic topics	Target groups
Industry	Industry representatives, Private sector, Policy makers, Research Institutes, Universities

Transportation	Policy makers, Car/Motorbike companies, Research Institutes, Universities
Residential	Policy makers, Research Institutes, Universities
Tertiary Building	Policy makers, Research Institutes, Universities
Renewable energy sources	Private sector, Research Institutes, Universities, Policy makers
Energy as a global issue	Policy makers, Private sector, Industry representatives, Research Institutes, Universities, Public

During the preparation phase of the training these steps could be followed:

- Identification of the subjects
- Identification of the beneficiaries-target groups
- Communicate with the collaborating Universities, Research Centers and Energy Agencies in order to setup meetings (physical or virtual) in order to express your ideas and discuss the structure of the trainings
- Identify the venues (collaborative Universities, Research Centers and Energy Agencies)
- Prepare and disseminate the invitations to your mailing lists depending the target group
- Promote the trainings (mailing lists, websites, newsletters. etc.)
- Identify and invite the appropriate trainers (people with experience and the ability to transfer their knowledge)
- Prepare the training material (training should be practical and interactive)
- Prepare the certificates that you will provide to the trainees by the end of the training (provide all the information regarding the training, ask trainers to originally sign the certificates)
- Prepare feedback form to collect feedback for the quality of the training, the interests of the trainees and proposals for improvement.

During the Implementation phase:

- Provide support to trainers (be always there to solve any possible organizational issues that could arise)
- Provide support to trainees (assist trainees moving from other places to attend your training)

- Distribute and collect feedback forms. This feedback will be very useful for future events
- Distribute certificates
- Family photo (a photo of trainers and trainees, as a memory of the training)

After the training the feedback forms should be analysed by the organizer. The results of this analysis could be helpful in the organization of future training sessions.

The experience gained for the organizations could be the best advisor of the organizer, in order to overcome the weaknesses and to make trainings more attractive.

The funding of this service could be supported via come by public funds, European projects or the combination of both.

In case of training targeted to company offering training courses on commercial level could be an option. It must be considered also that the training offered for free could be considered by company as low quality training.

3. Conclusions

The experience gained so far from the INNOVER-EAST project implementation gave the opportunity to identify, evaluate and collect the most appropriate proposed services in order to contribute to establish a viable and sustainable cooperation between EC and EaP countries in the sector of energy and more particular of energy efficiency.

The selected 6 services are concluded from the twinning activities carried out during the project implementation and selection of good practices from other projects funded by EC or by national/regional funds coming from EPCs.

It is strongly believed that in order to apply these services at regional level and establish a cooperation mechanism linking all the countries of the region with EC in terms of efficiency a strong political will is needed by all sides. This will allow the establishment of an institutional framework that will encourage involvement and collaboration of all main stakeholders in the region by adopting the application of these services.