

Deliverable D8.1:

Preliminary report on networking

<i>Work Package:</i>	<i>WP8 – EUROPEAN NETWORKING</i>
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<i>Responsible Partner:</i>	<i>AzzeroCO₂</i>

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Introduction

The aim of this Work Package WP8 is to share problems, challenges, tools and to create synergies where possible. Confrontation with solutions already in place is fundamental to increase the overall knowledge, to avoid repeating similar mistakes, to overcome possible issues. Other Italian and European projects and initiatives can have faced problems that can be similar to our possible local problems: to think ahead to them can reduce time and money waste.

The networking activities can also bring to broader cooperation for a long lasting pilot implementation or future activities on other new project.

The networking activities will support the project in improving its communication and information campaign through lessons learnt and best practices identified by other projects. Networking was launched since the beginning to the end of the project. This action will be carried out through:

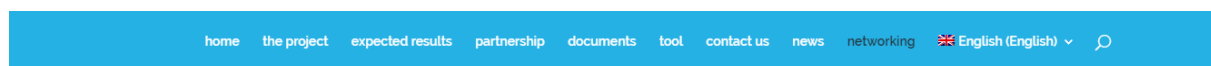
- identification of national and European projects, funded under various programs and initiatives, or other kind of initiatives working on the project's themes and create a network involving all the relevant projects on biogas/ biomethane and cooperation and more broadly on renewable energy and cooperation, in order to share problems, challenges and tools and to create synergies where possible
- sharing documents and creation of 'ad-hoc' sections in the project website for exchange of information and documents
- invitation of representative to ISAAC's meetings and workshops
- discussions and dissemination of initiatives among the various EU-funded projects on waste management and environmental sustainability
- brainstorming for solutions
- future cooperation agreement

The purpose of this document is to provide the description of the networking activities performed during the first half of the project's life. The document is updated regularly to record every networking activities performed.

1. European projects

The Isaac web site has a dedicated page for the networking activities.

<http://www.isaac-project.it/networking/>



European projects on related topics

Relevant EU initiatives

International organizations

Several project with similar scope were added in order to trigger the cross promotion. Several exchanges were made with the project leader of several projects in order to invite them to local events organised in the frame of citizen involvement. In the meanwhile, some initial research was performed in order to implement some of their recommendations.

Cross promotion was performed with other European project on the topic both exchanging the link of website with short project description and writing down some short articles with preliminary results to be publicized on projects newsletter; in particular it can be found on ISABEL¹ and Record Biomap². The first short article presented is reported in Annex 1.

Several documents available from other project's webpages were read with attention to get some learnin points, as described below:

- **ISABEL: Helping biogas energy communities to develop and thrive** (www.isabel-project.eu)

ISABEL deals with promoting, supporting and developing community biogas in Europe. The project is set on providing all the framework conditions for biogas communities to shape, develop and thrive. It works to pave the way for the transition from traditional supply chains to community ownership and take full advantage of the ample societal benefits of regional community-driven biogas systems, fuelled and inspired by Social Innovation principles.

¹ www.isabel-project.eu

² <https://biomethane-map.eu/>

ISABEL described in two recent reports³ methods and approaches that have the potential to stimulate the use of biogas across European communities; by analysing three targeted regions in Europe, with different maturity in biogas readiness (high - Germany, intermediate – UK, low - Greece), this work identifies some specific conditions that can facilitate biogas projects in the future. Bioenergy projects and community energy initiatives may vary considerably (may be organized differently, using different methods, technologies or financial models) and although **there is no “single prescription for success”** of a project, the project team highlighted that promoting engagement through communicative participatory processes can significantly raise awareness and public trust, which can thereafter lead to attracting investments for the given bioenergy community project.

Successful community energy projects include:

- Technical knowhow, “role models” and stakeholder engagement
- Methods of generating positive social responses and increasing willingness for behavioural change
- Motivation mix (environmental and ecological motives, social and anthropocentric motives as well as economic)
- Policy framework and public acceptance

Remarkably, while the availability of technical support of a bioenergy project may be necessary, it does not seem to offer a stand-alone incentive for its initiation, delivery and success. That is because community bioenergy projects target a social and environmental impact rather than just a technical proposition for an AD installation to serve a community.

The project team highlighted the importance of communication for raising awareness and engagement in the bioenergy initiatives. These methods, for instance can be based on workshops, tours, events, engagement of schools, online platforms and more. These include:

- A wide diversity of bioenergy activities
- Bioenergy-tours through excursions to existing successful bioenergy projects, which act as “role models” for future projects
- Bioenergy exhibition, local information events and articles in the press
- Conferences and workshops
- School activities (including visits to plants in order to increase understanding of key technical digester features as well as issues of bio-economy),

³ <http://isabel-project.eu/wp-content/uploads/Region-Specific-Social-Innovation-and-Community-Energy-Approaches-with-an-Application-Potential-in-Biogas.pdf>; <http://isabel-project.eu/wp-content/uploads/Social-Innovation-and-Community-Energy-best-practices-methods-and-tools-across-Europe.pdf>

- Training activities through continuing professional development (CPD),
- Showcasing “role models” of local closed-loop economies, which indicated how community AD can provide a whole new value chain with incomes beyond the energy generation.
- information on the beneficial effects of a bioenergy project (e.g. energy self-sufficiency and ownership).

It is important that its initiators are trusted and considered widely as “well-known” community members and that enough time is provided for multiple stakeholders to engage. Specific practices, which can empower the success of a project is also the combination of support from a large variety of stakeholders such as, municipalities, local councils, authorities, district administrations, the mayor cooperatives, renewable energy organizations, planning offices, funding bodies and individuals’ (e.g. inhabitants who engaged actively).

- **Bioville- Bioenergy Villages (BioVill) – Increasing the Market Uptake of Sustainable Bioenergy**
(www.biovill.eu)

The overall objective of BioVill is to develop regional bioenergy concepts in several countries up to the investment stage in order to become “bioenergy villages”. This project is based on the involvement of people for its positive outcome; even if the output is different from ISAAC’s, the methodology for people involvement can be interesting and significant.

The project team highlighted that to increase bioenergy market uptake, cooperation should be triggered with partners from countries with established bioenergy markets (Austria, Germany). Public awareness should be raised on commercial opportunities for farmers, foresters and the bioenergy value chain as a whole by means of public participation and finally will increase the public acceptance of sustainable bioenergy.

During the project implementation, a working group was formed in each partner village by interested stakeholders and citizens that are now the owners and driving forces for the development of the bioenergy villages; these working groups performed a technical and economic assessment of possible bioenergy value chains in the villages. Within citizen information days, local people are informed about the concept and the progress of the project.

The project pointed out⁴ that the first step is to establish a prospective working-group, to be the driving force of the project, and to verify the suitability of the village or district for conversion to a bioenergy village. During the initial phase, the objectives of the bioenergy village are clarified. Such objectives can be:

- Reduction of energy costs
- Refurbishment of the technical systems

⁴ http://biovill.eu/wp-project/uploads/2016/09/D5.1-Guideline-on-business-models-on-financing-options_final.pdf

- Increase in the use of renewable energies in the village and independence from fossil fuels
- Reduction of GHG emissions
- Strengthening of local economies and circuits
- Improved energy efficiency in the village

The initial group has to look for proficient and engaged people who support the idea, collect information, talk with local decision makers and relevant persons in the village and trigger the project as far as possible.

Initiators should evaluate the possibilities of bioenergy villages on the basis of the social relations in the villages that means to integrate key persons, to compile proven communication channels to think about potential customers and so on. Initiators should also be aware that a bioenergy village can only be established, if the citizens have a need for the added values produced by the measures implemented in the bioenergy village. Therefore, these values should be ascertained in the initial phase, the arguments compiled and facts that are of negative value for the bioenergy village should be checked very carefully. In the initial phase, initiators should **brainstorm** about large risks for the funding of the measures and potential obstacles. The definition of detailed financing measures will be more important in a later stage.

➤ **BIOSURF** (www.biosurf.eu)

The objective of BIOSURF (BIOMethane as SUstainable and Renewable Fuel) is to increase the production and use of biomethane (from animal waste, other waste materials and sustainable biomass), for grid injection and as transport fuel, by removing non-technical barriers and by paving the way towards a European biomethane market.

The project team assessed⁵ that the role of the biogas/biomethane associations in the countries of the project is important in order to allow bringing together as much as possible stakeholders supporting the promotion of the biomethane economy and the possibility to favour its initial growth phase. No matter the level of development of biomethane market in the project countries, all of them have to face and experience some obstacles, difficulties and uncertainties from the side of decision makers and/or business sectors. In this sense, establishing and maintaining mutual trust and enabling a constructive dialogue between stakeholders can help authorities and business to solve or anticipate a number of issues that, if not removed, could obstruct further market development. Moreover an important value is the combination of group discussions and technical visits, as opportunity to “see with own eyes” some case study demonstration or other positive examples presented during the meetings. Technical visits are important steps to increase the discussion among the stakeholders, to improve the level of contacts, to facilitate the collection of data and the exchange of opinions and approaches adopted in solving the problems and facing difficulties.

⁵ <http://www.biosurf.eu/wordpress/wp-content/uploads/2015/07/D2.2-Interim-Report-on-Networking-and-Cooperation.pdf>

- **REScoop-** European Federation for Renewable Energy Cooperatives (<https://rescoop.eu>)

Through REScoop.eu, citizens can take part in the European energy debate, being the ones who will be paying for the transition to a more sustainable energy system. REScoop.eu empowers citizens and wants to achieve energy democracy. The Renewable Energy Cooperatives model is based on energy democracy and active citizens to participate in renewable energy and energy efficiency projects.

The model has many advantages according to the project; the most important ones are listed below:

- Renewable Energy Cooperatives foster social acceptance for renewable energy

Local opposition to renewable energy projects decreases when citizens are given the opportunity to invest in and co-own the production installations. This is especially true when local citizens are involved from the very start of the project. Stakeholder involvement and direct citizen participation foster social acceptance for renewable energy. Local citizens not only share in the profits, they also have access to clean energy at a fair price.

- Renewable Energy Cooperatives keep the individual investment affordable

Not everyone has a roof suitable for solar panels, nor does everyone have the financial capacity to make such an investment. Renewable Energy Cooperatives production installations are typically owned by a large group of citizens, keeping the individual investment affordable.

- Renewable Energy Cooperatives benefit the local community

Renewable Energy Cooperatives have a clear concern for the community. They usually share part of the profits with their members and use the rest to develop new projects or benefit the local community as a whole. Some Renewable Energy Cooperatives for example have financed the construction of a local sustainable concert hall, while others erected a charging point for electric bicycles. Thus, all citizens benefit from the projects and the profits that they generate.

- Renewable Energy Cooperatives take action on energy efficiency

The revenues that result from renewable energy projects are often used to finance energy efficiency measures in public buildings. Some Renewable Energy Cooperatives have paid for insulation material for public buildings, while others pay the wage of a local energy expert who helps citizens and the local municipality improve their overall energy efficiency.

- Renewable Energy Cooperatives keep money in the local economy

Renewable Energy Cooperatives use local energy sources and include local citizens. Thus they keep money within the local community that would otherwise be lost. In addition, Renewable Energy Cooperatives stimulate local employment and boost the local economy.

- **BiogasAction** <http://biogasaction.eu/>⁶

The project aims at promoting the production of sustainable biogas throughout the EU, especially by exchanging best practice, creating new business models, and increasing investments in biogas production. The project's purpose is to serve as a vehicle for a rapid development of the European biogas/biomethane sector. This undertaking will contribute to the EU 2020 targets, by focusing on the removal of non-technical barriers to the widespread production of biogas from manure and other waste.

⁶ fedarene@fedarene.org

2. H2020 Workshop on Bioenergy Market Uptake projects (02 March 2016)

Date, venue and objective

2 March 2016 from 9h30 to 16h10, hosted at INEA premises, W910 Brussels.

The objective of the meeting was to gather together INEA/EASME staff and the contractors of ongoing non-research projects.

List of participants

The workshop was coordinated by Emilio Font De Mora and was attended by some representatives from ENER, AGRI and EASME, 15 H2020 CSA projects and 3 IEE projects, with 14 project representatives listed in the table below:

Family name	Organisation	Project(s)	
ADLER Jens	GIZ (DE)	BioVill	
ALTSITSIADIS Efthymios	WR	ISABEL	
AVENI Nino	AEBIOM	Bioenergy4Business	
BAUMGARTEN Wibke	FNR (DE)	greenGAIN	SEEMLA
BUDNIOK Marie-Alice	ELO	FORBIO	
CEMBRANO Eduardo	CIRCE (ES)	uP_running	SUCELLOG
CORNELISSEN René	CCS (NL)	BioEnergyFarmII	
FACCI Enrico	AzzeroCO2 (IT)	ISAAC	
HASEWEND Brigitte	ESEIA (AT)	BioenergyTrain	
KIES Uwe	IWH (DE)	SECURECHAIN	
KOVACS Attila	EBA	BIOSURF	BiogasAction
RODERO Pablo	AVEBIOM (ES)	Biomass Plus	
RUTZ Dominik	WIP (DE)	Bin2Grid	SRCplus
SIHVONEN Jori	AEBIOM	BioRES	

Table 1 Projects' representatives

Workshop description

The objective of the meeting was to gather together INEA/EASME staff and the contractors of ongoing non-research projects in order to:

- make contractors aware of the other EU supported projects in the field of bioenergy;
- explore and trigger potential collaboration within the projects;
- share experiences and knowledge on how to reach the project impacts and to enhance communication.

18 projects were represented.

The participating project were selected considering that they have a large potential of collaboration. Indeed they:

- work in the same field, with the same target groups, have similar objectives;
- have similar timing;
- in some case share target countries.

After presenting the objective and the scheduling of the meeting, Emilio Font De Mora showed some data and figures on Bioenergy projects in general and on the ones present at the meeting: type (CSA, RIA, IA), sub-topic (i.e. solid biomass, biogas, etc.) end date and geographical distribution.

All the represented projects were briefly presented and then participants were divided in three working groups: a) projects focused on biogas; b) on solid biomass; c) on degraded lands and land planning.

The groups held two working session:

- one on impacts and outputs;
- one on communication.

ISAAC took part to the group on biogas with 4 Horizon projects (BioenergyTrain, Biosurf, BiogasAction and ISABEL) and an IEE (BioEnergyFarm).

During the first session representatives described in detail each project focusing on the subject/objectives, on the main impact foreseen, on the activities and outputs developed towards the impact and on how projects can collaborate to obtain impact or share outputs.

The second session focused on the projects' communication and dissemination activities, on the possibility to give visibility each other and on the importance of multipliers.

Main outcomes

During the first session (impact and outputs) some opportunity for collaboration between the projects were evident:

- The project BiogasAction has a task in the DoA to gather the knowledge generated from past biogas/biomethane projects. The outcomes of this task will be shared with the other biogas projects. The possibility to have a complete review of previous work on the AD technologies, on biomethane and on the treatment of digestate as well as the collection of case studies and best practice will be very helpful for the realization of ISAAC's awareness events.
- Public acceptance of biogas plants is one of the most relevant barriers targeted by ISAAC but all the projects will have to face it. Thus ISAAC will share its material and outcomes with other projects.
- The project ISABEL will introduce the innovative concept of RES cooperatives or communities (also linked to the concept of prosumer) in the field of biogas investments, which could counteract the NIMBY effect.
- The 'community plant' concept has something in common with the aggregation of small farmers and biomass producers that is encouraged in ISAAC (WP4). Moreover Isaac's participatory process and Isabel's aggregation/development of the community could have many common issues.
- BioEnergy Farm II produced an online feasibility calculation tool for biogas plants. This tool and related documents will be shared with the other projects, especially with ISAAC which aims at creating a similar tool but much simpler.
- BiogasAction will support the realization of 50 plants (in 9 target areas excluding Italy) and it is possible that they will face some of the barriers identified by ISAAC.
- BioenergyTrain will organize a master course on bioenergy and thus it will produce a lot of training material that can be useful for other projects. BioenergyTrain will also organize next summer a camp for bioenergy students during which they will foresee a study visit to a successful example of bioenergy supply chain establishment.

The second session was useful to pinpoint how to strengthen the communication:

- Sharing the links to the other projects in our websites
- Promote the other projects through social media (Blogs, LinkedIn, Facebook, Twitter, Instagram, etc.)
- There were different opinions on whether holding a shared final conference was beneficial or not for the concerned projects, but it is something to explore on a case-by-case basis

- Exchange information on experts to participate in final conferences (well-known panellists in the bioenergy sector)
- Writing joint articles for example at partner-to-partner level or at national/regional scale
- Joint webinars
- projects' representatives shared some lessons learnt:
 - while EU level multipliers are important to communicate the project at EU level, sometimes that wide scale is not the most appropriate one and therefore national/regional multipliers should be the ones pursued.
 - Having too many workshops in the same target area and for the same target group could be counterproductive to communicate and disseminate the project.
 - When using social media one person in the consortium should be nominated to work continuously on them so that the project social medial portal does not become obsolete, which gives a poor image.

Moreover Emilio Font De Mora mentioned two initiatives that could help communicating the projects:

- The European Commission support Services for Exploitation of Research Results (SSERR) for completed and ongoing research projects in the field of energy, which can include CSA type of projects
- The INTERREG supported initiative "Biorefine Cluster Europe" which is a voluntary initiative for communication among different EU projects www.biorefine.eu.

To foster the interaction between the projects all the participants agreed to share the contact data. Furthermore the INEA will evaluate the possibility to set a shared calendar of events online via google analytics or smartsheet.com.

Future steps

INEA will be informed of actual collaborations with other projects.

3. Solid urban waste management; XXI IUPAC Chemrawn conference (06-08 April 2016)

Data, venue and objective

The conference was held in Rome, at CNR premises. The website of the event: <http://www.iupac-rome2016.it/>. The objective of the conference was Solid Urban Waste management: it is a problem of utmost importance when addressing both scientific and social impact.

Conference description

Huge amounts of wastes are produced yearly all around the world annually on an urban scale. Due to the growing trend of urbanization on a global scale, future forecasts are even more dramatic. The amount of Solid Urban Waste, one of the most important by-products of an urban lifestyle, is growing even faster than the rate of urbanization. Poorly collected or improperly disposed waste and lack of enforced regulations, mainly in low and middle-income countries, can have a detrimental impact on the environment due to contamination of groundwater and surface water by leachate, as well as air pollution from burning of waste.

Scientific and technological research can - and must - give a decisive contribution to create a virtuous circle based on the so-called "4Rs" (Reduce, Re-use, Recycle, Redesign).

The aim of the conference was to present a comprehensive perspective on the current challenges of Solid Urban Waste management and new directions for their exploitation, especially through a 'from waste to resource' approach. The Conference brought experts from the urbanized world together, as well as experts from developing countries, giving an opportunity not only to scientists from many disciplines, but also to other organizations, policy makers and groups involved in control and certification, to meet and discuss future trends and action required. During the conference, several speakers presented new strategies on biogas and Anaerobic Digestions, the problem faced and the advantages achieved, mostly from the scientific point of view. Those speakers were contacted in order to implement a networking and investigate the possibility to intervene to future ISAAC's events.

Main outcomes

During the 3 days of the conference several contacts were made in order to establish some opportunity for future collaboration and possible presence for ISAAC local events.

- **Professor H el ene Carrere** (INRA, UR0050, Laboratoire de Biotechnologie de l'Environnement, 11100 Narbonne, France) showed her interest in the project and she would be delighted to

participate; she has been working for many years on the topic of anaerobic digestion of organic residues and she could explain the most advanced results of her studies and describe the actual situation in France.

- **Paolo Pavan**; University of Venice Ca' Foscari (Italy) and Francesco Fatone, University of Verona (Italy) have been working together for several European project on AD and biogas, and they were pleased to have the possibility to spread their positive results obtained in north Italy with organic separate collection and anaerobic transformation.
- **Bruno Mattheeuws** of OWS NV (<http://www.ows.be/>), a company based in Gent (Belgium), was interested in the possibility of describing his company and the state of the art of anaerobic digestion of municipal solid waste in Europe. According to their Webpage, OWS can be considered as a pioneer in biogas from municipal solid waste. OWS constructed the first biogas plant treating municipal residual waste (in 1997 in Bassum, Germany) and the first continuous dry digestion plant working on energy crops (in 2006 in Nüstedt, Germany). In 2013, construction started of the first plant making high quality compost out of MSW by means of the SORDISEP process (in Bourg-en-Bresse, France). The activities from OWS range from design to turnkey construction and start-up, including operation and maintenance, and sometimes the financing of anaerobic digestion plants. OWS also has a very extended and well-known lab for performing tests concerning biogas potential, composting & biodegradation.

Future steps

As soon as local ISAAC events, workshops or other opportunities will be prepared, we will contact and invite the abovementioned academics for possible talks.

4. REGATEC (10 May 2016)

Data, venue and objective

REGATEC 2016 took place on 10-11 May at Scandic Triangeln, Malmö, Sweden. 3rd International Conference on Renewable Energy Gas Technology: REGATEC has a technical and industrial focus and revolves around anaerobic digestion, gasification and Power-to-gas.

Conference description

The conference has been characterized by 25 oral presentations, 2 poster sessions (41 posters), an exhibition (28 exhibitors) and a networking session. The networking session (the “Network Plus”) consisted in a large number of face-to-face meetings. They had been previously scheduled according to the participants’ requests.

Main outcomes

POSTER SESSIONS: AzeroCO2 at REGATEC 2016, where a poster on ISAAC was presented. This was the occasion to talk about the project, its main aim and foreseen measures to overcome the non-technical barriers that hinder a more widespread diffusion of biogas plants in Italy. A special focus was given to the calculation tool and its ability of fostering aggregation among farmers, breeders and the other involved stakeholders to reach the minimum facility dimension needed and thus maximize economic advantages. During the two sessions, AzeroCO2 has got in touch with some companies/institutions. Below a brief description of information exchanged:

- **Yara International ASA, Norway (Dr. Ing. Wolfram Franke):** Yara converts energy, natural minerals and nitrogen from the air into essential products for farmers and industrial customers. The main application is fertilizers, while industrial uses and environmental solutions are also important growth segments. AzeroCO2 presented ISAAC and Yara was interested in the project since farmers are going to be involved and several activities are dedicated to spread knowledge on anaerobic digestion efficiency and use of digestate as fertilizer in Italy.
- **Istituto di Studi per l’Integrazione dei Sistemi (ISIS), Italy (Dr. Stefano Proietti):** ISIS is an independent Italian research institute supporting international, national and local public bodies for the analysis, the design, the implementation and the evaluation of sustainable policies in the fields of energy, environment, transport and mobility, urban planning, and knowledge society. It is the coordinator of the project BIOSURF (BIOMethane as SUstainable and Renewable Fuel), funded under the Horizon 2020 programme (grant agreement No 646533), whose main objective is to increase the production and use

of biomethane (from animal waste, other waste materials and sustainable biomass), for grid injection and as transport fuel, by removing non-technical barriers and by paving the way towards a European biomethane market. One of the partners is CIB - Consorzio Italiano Biogas e Gassificazione, partner of ISAAC too. AzzeroCO2 has presented ISAAC and the main activities the company deals with. BIOSURF shares with ISAAC many challenges and objectives. AzzeroCO2 had known the BIOSURF project at the event "H2020 Contractors' Workshop on Bioenergy Market Uptake projects" (Brussels, 2 March 2016), represented by Attila Kovacs of EBA - European Biogas Association. On-going networking is essential to share problems, tools, results and to create synergies.

- **Lund Institute of Technology, Sweden (Laura Malek):** it was there with a poster called "Renewable gas in the grid - Challenges in heating value determination and policies", showing the problem connected with allocation of the heating value of the gas when different feeding points are present or gas is a mix. AzzeroCO2 provided information on the actual Italian regulation on biomethane injection into the national gas grid. Results of the study of Lund Institute of Technology could be useful in the ISAAC phase of formulation of proposals for improvements (WP5.4).
- **DH Industries BV, The Netherlands (Francesco Dioguardi):** DH Industries Group is a holding company focused on Cryogenic services, engineering and equipment. Francesco Dioguardi provided information on the proposed technology (liquefaction systems based on Stirling Cycle Cryogenerators) pointing out its strength points. AzzeroCO2 presented ISAAC and talk about the willingness to produce liquid biomethane in the Arborea project (one of the pilot cases of the project).
- **Chalmers University of Technology, Sweden (Alberto Alamia):** he deals mainly with gasification. AzzeroCO2 presented ISAAC, focusing on the calculation tool and its purpose, according to the poster structure. The fact that in Italy there is often a strong opposition to the construction of new biogas plants has caused interest and surprise. Questions on pay-back times of biogas/biomethane plants have been asked.
- **Purac Puregas AB, Sweden (Rolf Håkansson):** Purac Puregas is specialised in delivering efficient and reliable biogas upgrading solutions; they are manufacturers with an internal Research & Development unit. The company was interested in ISAAC project also because spreading the biomethane in Italy (as ISAAC's target) could increase their market in Italy.
- **Biogas Syd, Sweden (Desirée Grahn):** Biogas Syd is a regional non-profit organisation for and by stakeholders within the biogas field in southern Sweden. It is managed by the Energikontoret Skåne (Skåne Energy Agency), which promotes the efficient use of energy and the increased use of renewable energy in the region of Skåne. The main aim of Biogas Syd is to promote the production, distribution and use of biogas through networking, information campaigns and technical research. Biogas Syd was involved in the Life Project BIOGASSYS - Biogas Skåne - an energy system creating sustainable development by fighting climate change (2010-2015), whose main aim was to demonstrate the potential

of biogas to become a major contributor to energy production in Europe and an important tool in mitigating greenhouse gas (GHG) emissions. AzzeroCO2 presented ISAAC and made questions about BIOGASSYS. Desirée Grahn has taken notes about ISAAC and shown her willingness to work together in the future. BIOGASSYS shares with ISAAC many challenges and objectives. It could be interesting to exchange information and results. Project representatives can be invited to participate in ISAAC's local events as experts. They can be involved in future projects on biogas.

- **Institute for Biogas, Waste Management & Energy, Germany (Johan Grope):** Based on its many years' experience, the Institute for Biogas, Waste Management & Energy conducts scientific analyses, provides expert advice, undertakes development work, compiles appraisal reports on technical and economic concepts, as well as engaging in knowledge transfer. The institute indicated his willingness to participate in ISAAC's local events as expert: the Institute can offer consultancy, knowledge transfer, international cooperation and help for public authorities with formulating regulations for biomethane grid injection. The involvement of the German Institute for Biogas, Waste Management & Energy can give added value to the project, both in the phase of preparing and presenting law proposal (WP5) and during the awareness events (WP3).
- **TNO, The Netherlands (Dr. Marco Linders):** TNO is an independent research organisation that focuses on transitions or changes in these five social themes: Industry; Healthy Living; Defence, Safety & Security; Urbanisation and Energy. Marco Linders deals mainly with biogas upgrading and CCS (Carbon Capture and Storage). He was interested in ISAAC project and could participate as a technical expert in some local events or as an international supporter.
- **Natural Resources Institute Finland (Saija Rasi):** The Natural Resources Institute Finland offers its customers research and development services based on its biological and technological expertise and using high-quality experimental research environments and extensive data resources. Its main research focus areas are: Boreal Green Bioeconomy, Blue Bioeconomy, Innovative Food Chain and Natural Resources Economy in the Society. The institute was interested in ISAAC project and could participate as a technical expert in some local events or as an international supporter.

Follow up

- Mail exchange with Johan Grope (Institute for Biogas, Waste Management & Energy): he has come back to the idea of reporting about the experiences in different countries of overcoming challenges with regard to grid injection of biomethane. AzzeroCO2 has confirmed interest in involving the Institute, proposing to him to participate in ISAAC's events also to talk about his association, experiences, projects, case studies, best practice examples (during the participatory processes and awareness campaigns).

- Mail exchange with Francesco Dioguardi (DH Industries BV): he has sent technical specifications and further information on their products.
- Mail sent to Desirée Grahn (Biogas Syd): AzeroCO2 has given further information on ISAAC and invited her to participate in ISAAC's public events to present their BIOGASSYS project, problems, challenges, tools and lessons learnt.



Figure 1 - A face-to-face meeting for networking

5. Crowdfundres: workshop and CrowdCamp on crowdfunding (24 May 2016)

Data, venue and objective

A conference and a workshop on crowdfunding was organised by the CrowdFundRES project in Brussels on the 24th of May 2016. The website of the event: www.crowdfundres.eu

Conferences description

a) CrowdFundRES workshops for renewable energies⁷

A workshop, within the scope of CrowdFundRES project, dedicated to crowdfunding platforms that are active or are planning to be active in renewable energies. The project partners shared their experience through case studies, presented the results of the project's EU wide survey as well as discussed crowdfunding regulation and renewable energy market developments in Europe. The participants shared their insights and provided input to the development of guidelines and recommendations for project developers and crowdfunding platforms in using crowdfunding for renewable energy projects.

b) 2nd ECN CrowdCamp on Crowdfunding for renewable energies⁸

The second edition of CrowdCamp with a special focus on crowdfunding for renewable energies, energy efficiency and clean-tech. The event involved various stakeholders, including crowdfunding platforms, renewable energies project developers, EU policymakers, clean tech and energy efficiency entrepreneurs, etc. to discuss crowdfunding as an enabler of a more sustainable planet.

Main outcomes

a) CrowdFundRES workshops

The workshop was organized in order to discuss the needs of RES projects and their requirements on the use of crowdfunding platforms; the presence of the organizers (Horizon2020 project CrowdFundRes), of university researchers and platform holders assured an equilibrated analysis of the topic.

The main points discussed during the workshop dealt with the potential of crowdfunding for financing project on renewable energy sector with the goal to support easier, more effective and more widely accepted practices. Actually the renewable energy sector still represents an area where considerable potential

⁷ <http://www.crowdfundres.eu/news/2nd-ecn-crowdcamp-crowdfunding-renewable-energies/>

⁸ <http://eurocrowd.org/2016/03/09/2nd-ecn-crowdcamp-crowdfunding-renewable-energies/>

remains untapped and a deceleration of uptake could be witnessed in some country due to challenging access to finance and restriction on renewable energy support schemes. In this frame the alternative source of finance such as crowdfunding represents an interesting solution. Moreover crowdfunding has the potential to offer a unique channel of engagement of community and citizens.

The funding instruments used through crowdfunding platforms are numerous; recently there has been a trend towards security (equity and debt based platforms). The regulatory context in each country shapes the prospect and feasibility. Regulatory issues are actually critical for RES projects developers seeking capital. There are various policy changes that are being discussed at a country – and European – level, but at the moment some countries are more closely aligned than others. Changes in public policy for renewable energy are another challenge in various countries.

Tom Harwood, Operations Manager at Abundance Investments, explains that “crowdfunding can be a competitive financing option for many renewable energy projects, but it also typically fills a gap in the market for small-to-medium-sized projects which struggle to get funding through traditional sources like the banks.” Furthermore, he says that crowdfunding gives people a direct connection to renewable energy projects, increasing local support for them.⁹

Successful crowdfunding campaigns rely on effective engagement of the crowd with the project to be funded and there are some evidences that the public is favourably inclined to energy renewable projects; this positive attitude needs to be balanced with the limited national market for renewable.

According to Harwood¹⁰, “there are a good number of projects available but a lot of work is required to complete the due diligence and ensure that the project is suitable for investment before it can be opened to the public” and “there is still work to be done to expand the number of investors interested in renewable energy investing”. But there is a whole host of different reasons why investors find the sector attractive. For example, low interest rates across Europe, desire to support renewable energy and environmental causes, and interest in new alternative finance options.

During the workshop, the main issues highlighted were the lack of legislative harmonization in Europe (both on RES and CF) and the instability of some regulations in some countries; other topics were the difficulties on the access to transnational crowdfunding. A detailed report on the European regulations on the topic was published by the project:

http://www.crowdfundres.eu/wp-content/uploads/2016/05/CrowdFundRES_D3.1_Regulatory_analysis.pdf

⁹ <http://www.crowdfundres.eu/news/energy-crowdfunding-the-new-way-to-boost-renewables/>

¹⁰ ibidem

b) 2nd ECN CrowdCamp

The 2nd annual European Crowdfunding Network (ECN) CrowdCamp has been focused on crowdfunding for clean tech and renewable energy projects.

At the conference attended several owners and representatives of crowdfunding platforms active in renewables, institutional investors, renewable energy experts, project developers and EU policymakers, like Mr. Claude Turmes, Member of the European Parliament, which were divided into four panels to discuss about clean-tech, energy efficiency and the role of crowdfunding as an instrument for increasing citizens involvement in the transition to sustainable energies.

The European Union, by 2030, wants to be the worldwide leader in renewable energies with 27% of the energy consumed by EU citizens coming from renewable energy sources generated by wind turbines, solar panels and biomass. One statistic states that \$1 trillion in investment is needed by 2030 to achieve the objectives set.

The first panel concerned on how crowdfunding interacts with other financing methods for renewable energies; it was stated that Crowdfunding has gained importance in recent years (20% - 30% of projects on renewable is funded through crowdfunding platforms), acquiring a complementary role to traditional forms of funding:

- 1) As a connecting bridge between the public and the projects;
- 2) As an instrument of cooperation with banks and institutions;

From the point of view of citizens, it is a way to get in touch in the renewable energy sector, that has always been inaccessible to them for the high costs of the projects and, also, because it can be a way to compose their private investment portfolio independently and without intermediation of a bank or other financial advisor.

From the point of view of the projects it is a way to have access to funding, usually difficult for this kind of projects because of their high risk and with a high cost of capital.

The role of the banks could be the support to the project's financing, but actually it could also be in charge only for mere assurance and reputation for platforms that, with this support, will become more credible and solid for their investors.

Hence, through cooperation between banks, institutions and crowdfunding platforms it is possible to allow the access to the market to highly risk projects, extremely useful in the renewable energy sector; in addition, crowdfunding platforms can increase their reputation if in partnership with a bank and citizens can cooperate for the realization of a more sustainable future and to manage their savings autonomously and in a supportive ways rediscovering the concept of community.

In fact, the concept is perfectly summed up by the quotation of Coenraad de Vries, Startgreen: "Let's come back to the people!".

In the second panel called "crowdfunding for renewable energy sector: business models, cases and best practices", the first speech was done by Alex Raguét, the ECN Chairman and founder of Lumo, the biggest French crowdfunding platform for renewable energies; he stated that crowdfunding may be the solution to attract investments for renewable energies and make people more responsible for this theme: crowdfunding campaigns can have an educational and sociological influence, increasing the awareness on environmental issues and the knowledge of renewable energy, engaging citizens towards sustainable lifestyle and empowering them to become active market players.

"Most of our energy projects are already financed, they don't need money in terms of capital, they need backers" he said.

However, the renewable market is not easy because of it operates in a context subjected to significant and continuous changes in technology, energy prices, regulation and policies, so that the most important factor for this kind of projects to be successful with crowdfunding is an in-depth due diligence.

As Maarten de Jong of OnePlanetCrowd puts it: "We are building longer-term partnerships with high quality renewable energy project developers. It costs a lot of time, as we first have to create a level of transparency about their business model that these developers don't necessarily have at the onset."

For that reason, platforms such as Lumo, GreenChannel, Abundance and OnePlanetCrowd, leaders of crowdfunding specialized in renewable energies, approached this market after years of experience in funding energy projects; so that they can provide assistances for project management, which is important to build a supportive community for the project, along with advisory services to choose to the best type of crowdfunding tailored for the project.

Moreover, all platforms provide legal and technical support for the required due diligence and insurance coverage.

During the third panel the financial potential impact on private investors and cases studies were discussed: investments in renewable energy, if duly controlled, allow a constant financial return at a relatively low level of risk. The debt securities are the preferred instruments to raise funds for these long-term projects with interest rates ranging from 3% to 12% depending on the risk and duration of the project.

Lumo, for example, launched a crowdfunding campaign that combines 15-year senior bonds with 3.1% interest rate and 9-year junior bonds with 4.5% interest rate; this method can pay back investors in year one.

Abundance, the most important UK platform, offers bonds with a maturity period of 15 or 20 years and, in order to mitigate the liquidity risk of the investors, and a notice board that allows them to sell their bonds.

Yannig Roth, marketing director at Wiseed, gives to the investors the possibility to diversify their investments while remaining on the platform.

In the last panel, experts told that through crowdfunding the range of stakeholders has been expanded and diversified during the years and better economic results have been achieved in shorter time.

In EU, 15 platforms exclusively dedicated to renewables energies projects are active and 1 of them is present in Italy, Ecomill (interested in the project) and in recent years were achieved two important results:

1) A strong market integration and a risk reduction from the point of view of the project promoters and investors who, increasing in number, have spread their investment risk.

2) A great reduction in the cost of capital

In conclusion, renewable energy crowdfunding has a huge potential for several factors among which the political agenda of reducing the greenhouse effect and of democratizing the energy; the platforms can build the required link between the capital intensive nature of renewable energy projects and the propensity of retail investors for significant investment with a lower risk.

In fact, in its speech, the politician Claude Turmes, member of the Green Party at the European parliament, stated that crowdfunding contributes to the necessary democratization of the energy sector which has been dominated until now by very large energy groups such as EDF, RWE and EON. The next European Renewable Energy Directive, currently in preparation, will “enshrine in law the right of citizens to produce their own energy” (Cit. Claude Turmes).

Networking

Marteen De Jong, founder and director of One Planet Crowd, currently active in Netherlands and Germany and focused on sustainable and social business, was really interested in ISAAC project; he was willing to collaborate and to send us good practices on the use of crowdfunding of renewable energy projects.

Web site: www.oneplanetcrowd.com

Address: Mauristskade 63, 1092 AD Amsterdam

Sam Manaberi, founder and CEO of Trine, investment platform specialized in solar energy, was interested in the project, even if dealing with a different market, and in future collaboration for other projects.

Web site: www.jointrine.com

Chiara Candelise, researcher in Energy and Environmental Economics and Policy for the Bocconi University and founder of Ecomill, the only Italian platform dedicated to renewable projects, was very interested in ISAAC; she asked for more information about it and she is available to give us a European and worldwide report on crowdfunding for renewable projects.

Web site: www.ecomill.it

Address: Via Stradivari,3 20131 Milan

Follow up

Several platforms were interested to Isaac Project and were contacted for initial information; as soon as the details on the crowdfunding project for ISAAC are defined, those will be called again for further details. Between those platform, the UK platform WALACEA¹¹ was particularly interested.

In addition to that, also the moderators of the conference organization expressed their willing to have constant update on the project and asked to stay in touch to be informed on the output of the CF.

¹¹ www.WALACEA.com

6. EUBCE 2016 – 24th European Biomass Conference & Exhibition (6-9 June 2016)

Date, venue and objective

The European Biomass Conference and Exhibition (EUBCE) is a world class annual event which, since 1980, is held at different venues throughout Europe.

The EUBCE covers the entire value chain of biomass to conduct business, network, and to present and discuss the latest developments and innovations, the vision is to educate the biomass community and to accelerate growth.

EUBCE took place on 6-9 June 2016 at the RAI Exhibition and Convention Centre, Amsterdam .

The conference was organized by Etaflorence Renewable energies with the support of WIP renewable energies

Characteristics

The conference lasted 4 days and there were:

- 2 plenary sessions
- 270 oral presentations subdivided in 4 parallel sessions
- 750 visual presentations/posters
- 40 stands of exhibitors
- 3 parallel events
- 8 workshops
- 1 networking event

The detailed program can be downloaded at: <http://programme.eubce.com/>

More information available at <http://www.eubce.com/home.html>

AzzerCO2 at EUBCE 2016

A poster of ISAAC (Figure) was exposed for the whole duration of the conference. On Monday afternoon the project was presented during a session dedicated to posters. In this occasion the Eng Facci talked about the aims of the project and the importance of non-technical barriers to the diffusion of biogas. A rapid overview of project actions and foreseen results was given; more details were given to the reduction of social barriers. The audience asked some more information on the participatory process and crowdfunding.

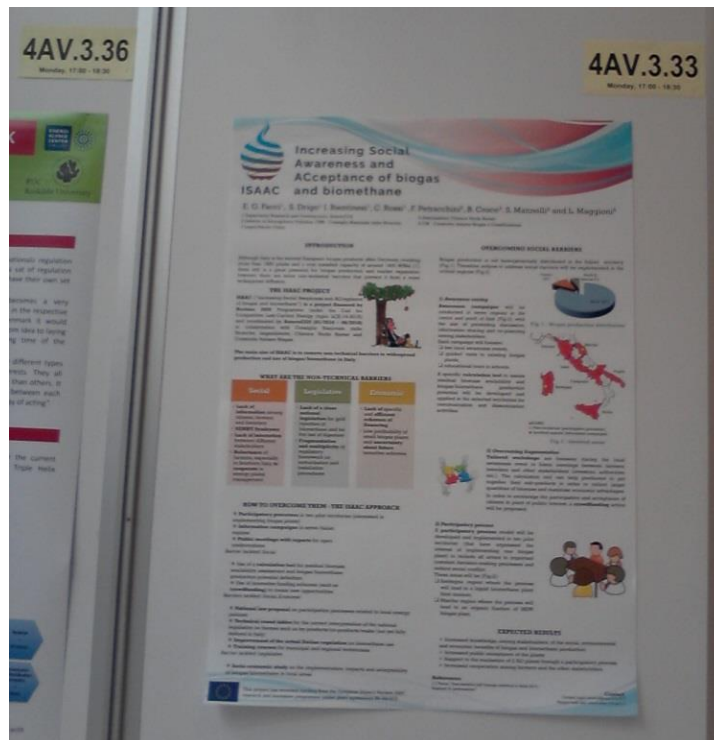


Figure 2 ISAAC posters at EUBCE 2016

Networking session

On the 3rd day a meeting room was reserved for a networking session and ing. Facci was involved in 5 bilateral meetings.

- **Emanuela Melis (University of Cagliari)**

Melis is a PhD working as a research associate at the University of Cagliari. Her expertise is related to woody biomass supply chains, sustainable production and consumption, Life Cycle Assessment, Water Footprint Assessment and other environmental tools. Her main expertise is desertification. She collaborates with the MEDSEA Mediterranean Sea and Coast Foundation, a non-profit organisation for the protection and the development of the Mediterranean Sea and of its coastal territories. It works in collaboration with the DICAAR Department of Civil, Environmental Engineering and Architecture of the University of Cagliari (Italy). She is in charge of the preparation of new proposals for research funding and is looking for possible effective partnerships to start new cooperation, in order to contribute to produce advances in the biomass sector.

University of Cagliari aims creating a synergy between a unique technological environment in Sardinia (Italy), represented by the former Faculty of Engineering, with its laboratories and rich relations with the regional industrial system, and the historic and quality cultures of the architectural project.

The areas of interest are: - Biofuels - Biogas and biomethane -Biomass feedstock -Biomass production - Energy crops -Short rotation forestry -Waste management.

Main outcomes: One of the pilot areas for ISAAC actions is in Sardinia. Melis and the research institutes she represents could be invited to local workshops and debates. Moreover there is a general interest in collaborating to develop research projects on biomasses and their sustainable exploitation.

- **Alper Oncul (AKSA Acrylic Chemical Company)**

AKSA is the world's greatest producer of acrylic fiber with approximately 300 customers in over 50 countries across 5 continents. With more than 1200 employees, Akxa is the world's largest and Turkey's only acrylic fiber producer with premises of 502 thousand square meters and a capacity of 315,000 tons per year.

Recently AKSA decided to evaluate the possibility to diversify their products and enter in the market of bio-based chemicals/products. At the moment they have no project or experiments ongoing on this issue and they are looking for ideas and proposals

Main outcomes: there is a general interest to collaborate considering the ability of AKSA to develop industrial processes and their will to develop bio-refineries and to participate to EU projects.

- **Margrethe Balling (Aarhus University, Denmark)**

Aarhus University has state-of-the-art research and technology platforms for biomass production, bio-refining and LCA, including fully working pilot plants for biogas, HTL and green protein from grass and other biomass. AU has a long tradition for close collaboration with the industry and is looking for research and industry partners for future collaboration.

Aarhus University has research and technology platforms for biomass production, bio-refining and LCA, including pilot plants for biogas, HTL (Hydro Thermal Liquefaction) and green protein from grass and other biomass. AU is looking for partners for future collaboration.

In particular they are interested in two issues: the green biomass conversion to protein and the biomass conversion to bio-oil.

Main outcomes: There is the possibility to collaborate in research projects. An example could be the use of green wastes from urban areas or park to produce proteins. A possible limitation is the presence of heavy metals and other pollutants in the grass.

- **Fabian FISCHER (University of Applied Sciences Western Switzerland)**

The Institute of Life Technologies in Sion offers a range of services, which include chemical, microbiological and molecular-biological testing of food, packaging and organic compounds. The know-how and equipment enable to develop -at various scales- processes such as production of biomolecules and biomass, plant extracts, bioenergies, fertilizers and food products. Research sectors of interests are: -Algae production systems -Bio-fertilizers -Biofuels -Biogas and biomethane -Energy storage -Waste management. At the moment they are looking for partners for projects on Microbial fuel/electrolysis cell to produce hydrogen, methane and other fuel vectors.

Main outcomes: even if there is a common interest in developing projects on biomass and bio-energy, it was not possible to find a common issue in the short period. Nevertheless Fischer appreciated the ability of AzzeroCO2 and other ISAAC partners to involve citizens.

- **Beatriz FIDALGO FERNANDEZ (Cranfield University)**

Cranfield University is a postgraduate-only institution focussed on applied research sectors including energy and bioenergy. The Bioenergy and Resource Management Centre (BRMC) aims to overcome the challenges in managing biomass and waste as valuable resources, and producing affordable and sustainable bioenergy and biofuels. The experimental facilities within the BRMC include lab and pilot scale thermal conversion facilities and a wide range of analytical equipment. The main research sectors of the group are: -Biofuels - Bioliquids -Biomass feedstock -Bio-plastics -Bio refineries -Gasification -Waste management

Main outcomes: Cranfield developed CL4W project (EPSRC) an English project on the recovery of heavy metals from polluted land through biomass cultivation. A follow up project could be possible.

Moreover they have experimental plants of anaerobic digestion, gasification, pyrolysis.

Exhibition, poster session and presentation outcomes

The Conference was the occasion to get in touch with enterprises and researchers in the field of bioenergies and bio refineries. In particular:

- Fraunhofer UMSICHT, one of the exhibitor, presented a Thermo Catalytic Reforming (TCR^R) technology. TRC is an intermediate pyrolysis combined with a unique integrated catalytic reforming step. The technology can efficiently process various biogenic and industrial residues and convert them into valuable storable products. The Inlet biomass should have a dry content of 70% or more and undergoes through a 2 steps pyrolysis (at about 400°C and 700°C); the coal (bio-char) is separated and the steam (500°C) is cooled to separate syngas from a high quality oil with a low acid number (comparable with vegetable oil). The proportion (slightly dependent on the operating temperature and on the biomass) between the three phases are: 15% liquid, 35% syngas, 50% biochar. About 75% of the chemical energy

of the feedstock is transferred to the products. Considering the heat used to dry the biomass this figure rises to 90%. This technology could be interesting to treat digestate from AD plants. It can also be an option to exploit cellulose mixed to sodium polyacrylate from the treatment of nappies.

- Neus Puy Marimon a researcher at the Institute of Environmental Sciences and Technology (ICTA), Autonomous University of Barcelona. During a networking lunch she discussed with Facci about participatory process applied to biomass management. In 2006 she participated to a project on development of sustainable forest biomass energy systems in large forested areas of the Mediterranean basin. In order to understand and analyse the enhancing factors, as well as the constraints, they applied a participatory integrated assessment focus group (IA-FGs) methodology. One of the key point to develop a successful participatory process is the selection of the moderator that facilitates the discussion. In the following days she mailed a paper on this work that will be useful to design the ISAAC participatory process in the two pilot territories.
- Diego Piedra Garcia- project ISABEL. After the conference Diego wrote to stress the common issues between ISAAC and ISABEL and the possibility to collaborate. Contacts with ISABEL were already established during "H2020 Contractors' Workshop on Bioenergy Market Uptake projects" last march.
- Professor Harald Weigand of the Technische Hochschule Mittelhessen - University, Giessen presented a paper on recycling and Energy Recovery Incontinence Waste (adult diapers). In Germany, the incontinence waste stream is currently estimated as 200.000 tonnes/year (appr. 1.4 % of annual residual waste and about 60 to 80 % of the residual waste of aged care facilities). The INKOCYCLE project aims at the development of a cost effective and ecologically sound alternative to the conventional disposal of diapers. Energy recovery is pursued by anaerobic digestion of the biodegradable fraction of the incontinence waste, including cellulose. Prof Weigand is interested in a collaboration to extend the research to other areas or target (e.g. kids nappies), to develop processes to separate the cellulose from the super absorbent material and to test the anaerobic co-digestion of cellulose under different conditions.

7. Preliminary results

Most of the activities foreseen by ISAAC and the ones already in place are on line with the results coming from the study of the outputs of other European projects, such as the organization of local events, school activities (including visits to plants, or the use of small demonstrative models), participative processes with experts.

By all the projects analysed is underlined the importance of the participative process in order to increase the awareness and to involve citizen with a decrease of the NIMBY effects. Mutual trust should be established and maintained to enable a constructive dialogue and to solve or anticipate issues that, if not removed, could obstruct further market development.

In addition to that, it is stressed that all the related activities should be well shaped in order to make balanced events, with focus on technical, environmental and economic aspects of the project implementation. It would be important to include citizens and other stakeholders in the economic investments and revenues of the project; if not possible, some form of inclusion and social profits should be described and prospected, such as increase of job, decrease of tax or reduction of energy costs.

Bioenergy projects and community energy initiatives may vary considerably (may be organized differently, using different methods, technologies or financial models) and although there is no “single prescription for success” of a project, in different way, all the project analysed highlighted that promoting engagement through communicative participatory processes can significantly raise awareness and public trust, which can thereafter lead to attracting investments for the given bioenergy community project. Successful community energy projects include:

- Technical knowhow, “role models” and stakeholder engagement
- Methods of generating positive social responses and increasing willingness for behavioural change
- Motivation mix (environmental and ecological motives, social and anthropocentric motives as well as economic)
- Policy framework and public acceptance

From the analysis of other European projects, it is evident that the availability of technical support of a bioenergy project does not seem to offer a stand-alone incentive for its initiation, delivery and success, even if it is required.

The importance of communication for raising awareness and engagement in the bioenergy initiatives is underlined by all the projects analysed. These methods should include a wide diversity of activities based on workshops, tours, events, engagement of schools, online platforms to name a few.

In addition to that, it is important that trusted and “well-known” community members trigger the activities with enough time to engage stakeholders. In this frame, the role of the biogas/biomethane associations is important in order to support the promotion of the project and of the events and to gather possible supporter stakeholders.

Some project pointed out that the first step for effective communication is to establish a prospective working-group, to be the driving force of the project. During the initial phase, the objectives of the energy project should be clarified; such objectives can be:

- Reduction of energy costs
- Refurbishment of the technical systems
- Increase in the use of renewable energies and independence from fossil fuels
- Reduction of GHG emissions
- Strengthening of local economies and circuits
- Improved energy efficiency

Other projects added that to increase bioenergy market uptake, cooperation should be triggered with partners from countries with established bioenergy markets (Austria, Germany). Public awareness should be raised on commercial opportunities for farmers, foresters and the bioenergy value chain as a whole by means of public participation and finally will increase the public acceptance of sustainable bioenergy.

When it is possible (not all the project can follow the principles below, due to the investment required, but the values depicted are still valid on an higher level), the involvement of citizens in the economical part of the energy project should promote several advantages, such as foster social acceptance for renewable energy, especially if the benefits remain in the local community with affordable individual investment.

Annex 1

Short article presented on ISABEL Project and Record Biomap Project on June 2017.

Although Italy is the second European biogas producer after Germany, a great potential for biogas production and market expansion still endures, especially in central and southern regions. Non-technological barriers prevent a more widespread diffusion, in fact they are still critical.

ISAAC is a project funded by the European Horizon 2020 program whose main purpose is to remove non-technological barriers, such as low public acceptance, insufficient coordination for biogas facilities diffusion, regulatory inadequacies to support biogas/biomethane market penetration in Italy and to make plants implementation easier within the national context. In details the identified barriers were divided into SOCIAL (lack of information among citizens, farmers and breeders; NIMBY syndrome; fragmentation among different stakeholders), ECONOMICS (lack of specific and effective funding schemes; low profitability of small biogas plants and uncertainty on incentives) and LEGISLATIVE (lack of clear national legislation on biomethane and digestate; fragmentation of regulatory frameworks on permissions and installation procedures)

ISAAC's approach to overcome non-technical barriers:

- Organization of **participatory processes** in two pilot territories (interested in the realization of biogas plants) to build a common decision-making paradigm and prevent social conflicts. Plant visits will also be organized as well.
- Organization of **information campaigns** and public meetings in seven Italian regions with experts to disseminate the correct information on the biogas production process and its environmental and economic benefits.
- Organization of **educational tour**, activity for high school students using an anaerobic digestion prototype and the release of a **video game** on environmental topics.
- Use of a **calculation tool** to evaluate the availability of residual biomass and define the potential for biogas / biomethane production to **reduce fragmentation** between biomass and biomethane producers and highlight the benefit of **collaboration** to reach adequate plant size to maximize economic benefits
- Organization of **training courses** for municipal technicians to provide insights into technological, regulatory and authorization issues.
- Proposals of **regulatory improvements** on participatory processes, on by-products / co-products / waste exploitation and on biomethane use.

- **Socio-economic studies** on the development, impacts and acceptability of biogas and biomethane plants in specific territories.

The project will contribute to:

- The increase of the biogas share in the final energy consumption by reducing NIMBY conflicts and fragmentation among stakeholders, as non-technical barriers to the installation of new anaerobic digestion plant;
- The spread of balanced information on the biogas production process and related environmental and economic benefits among the stakeholders potentially involved in plants construction.
- The development of a more effective policy at national and regional level by producing clear and concrete proposals for law improvements and harmonization of authorization procedures;
- The assessment of socio-economic and environmental impacts through surveys, cost/benefit analysis and other methodologies;

The results obtained so far are:

- **Local events** organized in Campania and Sicily (Salerno, Ragusa and Eboli); many others are in program.
- The specific **calculation tool** is available on the website.
- The first public **participation process** started in Puglia (Andria) at the end of May.
- The "**Educational Tour**" with the **anaerobic digestion prototype** has already involved students in Marche (Macerata and Ancona), Campania (Castel San Giorgio and Capaccio-Paestum), Calabria (Catanzaro) and Sicily (Ragusa), for a total of 11 schools and about 900 students.
- An **Interactive Comic Adventure**, "Buck Bradley comic adventure", was developed: an app is available for android and IOS (soon in English as well).
- **Training courses** have been organized for local technicians and administrators in Marche and Puglia, foreseen before the end of the year.

All the upcoming events are available on ISAAC's website; please check for further information!

<http://www.isaac-project.it/en/news/>



In the picture: the educational tour with the anaerobic digestion prototype