



## ISAAC Project

Increasing Social Awareness and ACceptance of biogas and biomethane



biomass

clean energy

renewable energy

energy consumption

heat recovery

### PROJECT DESCRIPTION

Biogas and its purified version, biomethane, represent a sustainable alternative source for the production of electricity and thermal energy, as well as fuel for transportation, so they have an important role in the decarbonisation process of the European economy. Although Italy is the second largest European biogas producer, it still has great unexpressed potential for production and expansion of its market, especially in the central and southern regions. In fact, this sector currently encounters significant "non-technical" barriers, such as the poor public acceptance of the diffusion of plants, unlike what happens for other renewable energy sources, as well as the lack of solid coordination between the various stakeholders. Furthermore, it is observed that public opposition to the construction of plants is often determined by the poor knowledge of the technology and the lack of social awareness of the economic and environmental benefits of biogas. In order to deal with this problem, the ISAAC project set the objective of building a **communication model** geared towards the dissemination of balanced information among all the actors potentially involved in the implementation of biogas/ biomethane plants., highlighting the environmental and economic benefits. At the same time, some project actions were focused on reducing the fragmentation between farmers, foresters and other interested parties in order to achieve the minimum plant size necessary to maximize economic benefits, the penetration of biogas and biomethane into the market and reduce management costs.



A further action concerned the definition of a **participatory process model**, as the main tool for the reduction of social conflicts and the inclusion of all actors in a common decision-making process.

In order to maximize the effectiveness of the project, the actions were implemented in specific and restricted areas: the study of the unexploited energy potential deriving from the anaerobic digestion of residual biomass or organic waste was the starting point for the communication and information campaigns addressed to the local area and interested parties. The attention was focused on two areas where the diffusion of these technologies has a high potential (Municipalities of Andria in Puglia and Arborea in Sardinia). In the same areas, also an assessment was carried out of the project actions' effects on the awareness and acceptance by the population.

In particular, a specific participatory decision-making model ([D3.6 Report on the participatory process \(PP\)](#)) was implemented and applied in the two selected districts, as case studies, actively involving all stakeholders.

### PROJECT PHASES

The project consisted of several phases, among which the main ones were:

- VERIFICATION OF THE STATE OF THE ART

Exploratory study of the current scenario of biomethane production in Italy (number of plants, energy produced, quantity of biomass used and residual potential), technological aspects of the production and feed-in, participatory processes and the related



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best practices in Italy and Europe, analysis of local opposition events to plants, and financing instruments;

- OVERCOMING SOCIAL BARRIERS

Definition of a participatory model aimed at overcoming social conflicts and disseminating scientific information about biogas production projects. The main objective of the proposed participation process is to produce the most wide information/knowledge sharing on the biogas / biomethane theme and on specific projects, providing participants with the necessary knowledge to understand if a plant does have or not the environmental and economic sustainability characteristics;

This phase includes the definition of a participatory process model to be implemented in two pilot territories in Italy (Municipalities of Andria and Arborea where two biomethane production plants are under construction, fed respectively with the organic fraction of solid urban waste and agricultural waste) and the implementation of information campaigns, in the target territories and in five other regions, in order to make aware citizens, students and all the involved socio-economic subjects.

- OVERCOMING THE FRAGMENTATION

Promotion of the involvement of all the key local actors, such as farmers, breeders, investors and authorities, in the decision-making process leading to the installation of biogas / biomethane plants with the aim of fostering active cooperation among them.

During this phase, a specific **calculation tool** was also developed to assess the availability of residual biomass and the production potential of biogas/ biomethane; this tool was tested by the interested parties during the workshops carried out. The possibility to involve citizens in crowdfunding for the construction of a plant of public interest was also evaluated.

- OVERCOMING REGULATORY AND ADMINISTRATIVE OBSTACLES

Drafting of regulatory proposals in order to overcome the main administrative obstacles to the development of biogas/ biomethane production plants and to improve the awareness of administrations and local governance about them. A regulatory proposal on the participatory process was also formulated.

- SOCIO-ECONOMIC ANALYSIS

Activities focused on the formulation of socio-economic cues concerning the development, impacts and acceptability of biogas/ biomethane plants in local areas; in addition, assessments were made regarding potential financing instruments that could be used for the pilot plants studied in the ISAAC project. In this phase, the variation of the plants' public acceptance during the project implementation was also assessed. Finally, analyzes of socio-economic and environmental impacts were carried out using various methodologies (Life Cycle Assessment, cost/ benefit analysis, etc.);

- INSTITUTIONAL COMMUNICATION AND CAPITALIZATION OF THE PROJECT RESULTS

Information activities regarding the project approach and the results obtained to facilitate and foster the adoption of the methodology in different contexts, as well as promoting the project among experts and institutional stakeholders;

- CREATION OF A EUROPEAN NETWORK

Sharing problems, challenges and tools with other similar projects in order to create possible synergies. To this end, some European projects or other types of initiatives with similar study subjects were selected and their representatives were involved in ISAAC initiatives for experience sharing.

## PROJECT RESULTS

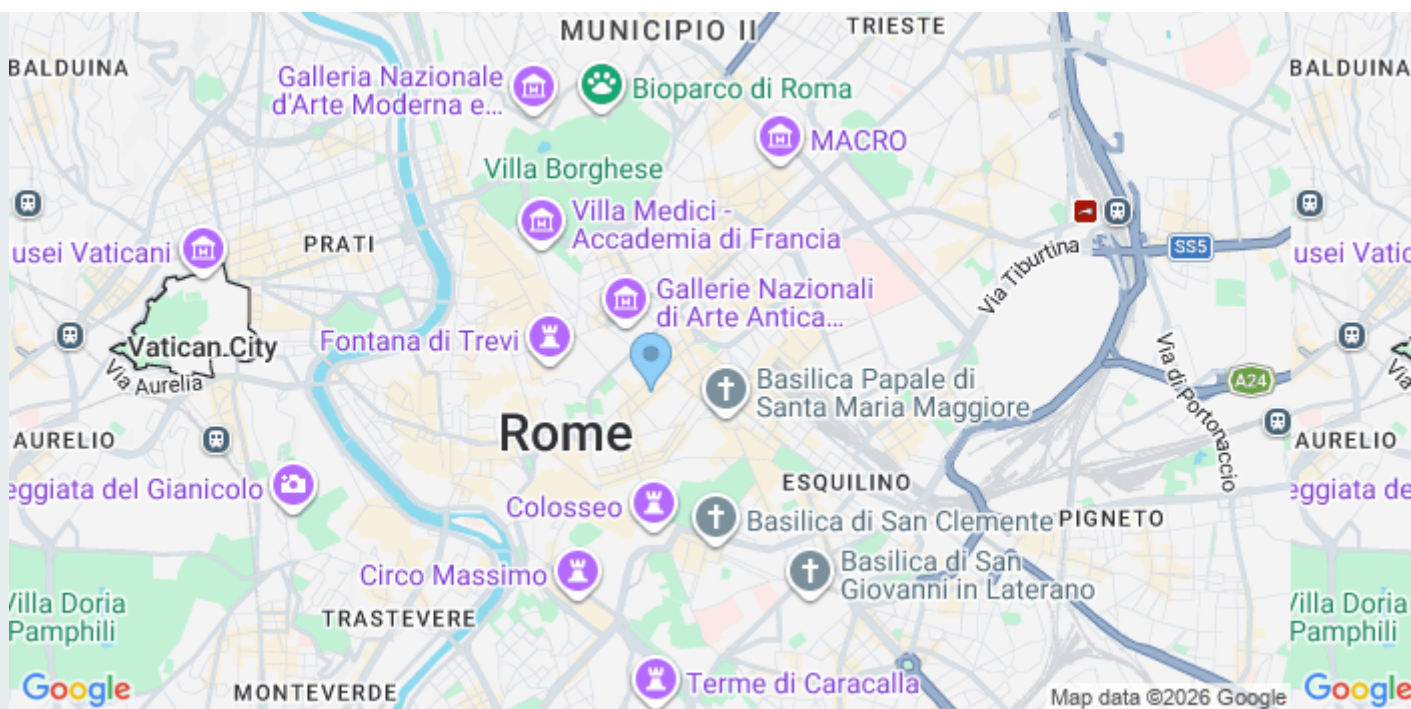
The above described activities led to the development of initiatives and the drafting of supporting documentation for knowledge dissemination and awareness raising about biogas plants.

- The first investigation phase had as output the **Report (D2.1)** on the state of the art of the biogas sector and related good practices: this document includes plant engineering aspects (exploratory study of the installed plants and assessment of the potential growth of the sector in function of the exploitable residual biomass, in addition to the state of the art of the technological aspects of biogas production and subsequent feed-in), economic and environmental aspects (impacts on the climate, on emissions into the atmosphere, and use of digestate etc.), **collection of the best practices** (anaerobic digestion, biogas upgrade, digestate management etc.), analysis of Italian and European regulations regarding participatory processes and evaluation of the public opposition phenomena;



- As regards overcoming social barriers, a fundamental goal of the project, a **participatory process model (D3.1)** was defined, which was tested in the pilot areas. The process led, among others, to the creation of two websites for the two municipalities involved in the experimentation: <https://andrianeparla.it> and <http://biometano-arborea.it>, where it is possible to find information and supporting documentation such as the **brochure on participatory processes** and the **educational brochure on biomethane**. Training and information campaigns were held in the two pilot areas and in 5 other regions (mainly for students from technical and agricultural high schools). As support for the training activities, a small scale prototype (**D3.9**) was created for the demonstration of the biogas production process;
- In order to overcome the divisions between the different local actors (farmers, breeders, food industries, citizens, etc.) and to provide support tools, **Guidelines on the construction of "well done" biogas / biomethane production plants (D4.3)** have been drawn up, and an **IT tool** was also developed and applied for the calculation of the biogas/ biomethane production potential in the different territories. The results of the tool's application were gathered in the related **Report (D4.4.)**; a specific **technical information document (D4.5)** was also prepared. In addition to the technical aspects, the possible financing mechanisms (D6.3) were also assessed with particular attention to innovative forms (eg crowdfunding);
- In relation to the administrative and regulatory barriers, specific **Harmonization guidelines (D5.4)** were drafted, which include the description of the authorization procedures in Italy and Europe and simplifying proposals. **Training activities** for public officials were also held within the project. Related support material (including the **training course for government employees**) is available at <http://www.isaac-project.it/formazione>;
- The socio-economic and environmental analysis led to the preparation of a **Methodological report (D6.2)** which presents the elements of the socio-economic analysis of investments in the biogas/ biomethane field, including the life cycle study tool (LCA) for the assessment of the environmental aspects.

The networking activity led to the selection of **European projects** with similar study subjects to that dealt with by ISAAC, as well as to the project's inclusion into the "bioeconomy network" (more information at [www.eubionet.eu](http://www.eubionet.eu)).



#### Acronym

ISAAC

#### Number of reference

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#### Reference Programme

[HORIZON 2020](#)

#### Beneficiary Coordinator



AZZERO CO2 s.r.l.

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**EU contribution**

1.480.535

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2015

**Start Year**

2016

**End Year**

2018

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