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Review of public–private partnerships in agro-energy districts in Southern Europe: The cases of Greece and Italy

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ABSTRACT

This paper presents a review of the methodology of implementing public–private partnerships (PPPs) for agro-energy districts in two rural areas in Southern Europe (the case of Greece and Italy). We propose a comprehensive methodology to apply a PPP scheme to agro-energy districts that includes guidelines for successful application of PPPs, the rationale behind them, the benefits for European rural areas, and the success and week factors in the implementation of PPPs. We also propose an initiative to adopt a PPP scheme for a specific agro-energy district and its preparation. The approach of the Greek case is a bottom-up application, which starts from the PPP scheme and then the target area is analysed; while the approach applied to the Italian case is a top-down application, starting from the target area and then, the right PPP scheme is established. We conclude that PPP schemes for agro-industry districts can successfully be implemented in rural areas either way for the production of thermal and electrical power from biomass residues.

Contents

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1. Introduction

The European Union (EU) faces serious energy challenges concerning sustainability, security of supply, import dependence and competitiveness as well as effective implementation of the internal energy market. According to the Commission [1] energy accounts for 80% of all green house gas (GHG) emissions in the EU and commitment is needed to address this by reducing them to a level that would limit the global temperature increase to 2 °C compared to pre-industrial levels. Most of EU27 countries reduced GHG emissions in 2011 [2]; Italy for example was at the top five members to contribute to this significant change between 2010 and 2011, whereas Greece was reported in the 13th place. A European Energy Policy is acknowledged as the most effective response to these challenges, which are faced by all member states. Within this framework of energy policy the creation of a high efficiency energy economy with low CO_2 emissions is realized by setting specific renewable energy targets: by 2020 renewable energy should account for 20% of the EU's final energy consumption, while in the 2005 it was only 8.5% [3]. Despite the fact that recent reports [2] note that GHG emissions are facing a major decline, the contribution of renewables to total final energy consumption has increased due to a higher decrease in fossil fuels consumption. It is also worth mentioning according to the same source [2] that biomass combustion increased by less than 1% in the EU-27 during 2011.

The EU Biomass Policy and Action Plan [4] states that biomass is essential for environmental and competitiveness reasons, while the European Parliament recently noted that "*biomass has many advantages over conventional energy sources, as well as over some other renewable energies, in particular, relatively low costs, less dependence on short-term weather changes, promotion of regional economic structures and provision of alternative sources of income for farmers*". Hence, it is high importance in rural areas and contribution to overall rural development [5].

Within this context of contemporary environmental concerns, economic restrains and discourses for new governance in rural areas emerges the concept of building partnerships between the public and the private sector for the purpose of delivering, in a more efficient way, a project or a service traditionally provided by the former [6,7]. This mixed partnerships, known as PPPs, recognize that both parties have strengths and resources in performing certain tasks and therefore one could benefit from different capabilities and levels of expertise. On the one hand, public bodies are encouraged to adopt PPPs as a tool for sustainable development in order to protect the public interest and serve citizens currently in demand for another type of governance aiming at both social and environmental sustainability. On the other hand, private bodies find within a PPP the opportunity to use their know-how, their abundant resources and gain profits under the condition that the take up all the risks [8–10]. The transfer of the risks of an investment to the private sector is considered one of the main benefits of a PPP in addition to the ability to secure additional financial resources or finance more projects as well as the enhancement of the investment in favourable accounting rules for the private sector [11].

When it comes to the environment, there is an inclination towards taking action and making agreements between public and private bodies in renewable energy [12]. Despite the fact that there are still constraints in the application of PPPs in agro-energy districts, PPPs can provide incentive and create comfortable ground for the development of an energy production plant and promote renewable energy through the use of biomass; reducing authorization, financing and contracting risks [13,14]. The global situation, as far as PPPs in energy sector concerns, is rather interesting. In fact many international organizations, like the Asian Development Bank [15] for example, seek to forge strong internal PPPs in the countries in which they operate, as they have tested that such partnerships provide a valuable bridge between the two sectors. In addition, a European Investment Bank evaluation report on PPP projects in different regions of the EU notes that PPPs tend to be characterized by professional project management and implementation, project delivery on time and on budget, an improved asset and service quality as well as a life-cycle approach defined performance standards throughout the contract period [16]. However, the problems in PPPs in developing countries are quite different than the ones raised in Europe.

This paper follows previous work done [17] under the project *RuralE*[1]. Within the framework of the project a methodology was used for a successful application of a PPP in regions of participating countries. In this paper we try to review the application of the methodology in two Southern European countries/regions: the region of Central Macedonia (in Greece) and in the region of Umbria (in Italy). We will focus on the ways and guidelines developed in order to facilitate through the PPPs the organization of the entire "bioenergetic chain" for sustainable energy production from biomasses in rural areas in both countries. Rural entrepreneurs, local authorities, energy field stakeholders are involved in a more suitable and efficient use of local resources, by using the PPP scheme.

2. Guidelines for successful application of PPPs in agro-energy districts

Agro-energy refers to the energy function of agriculture, which can make significant contributions to achieving social and environmental sustainability at local, national, regional and global levels. Using local resources (both agricultural and livestock) worldwide and various commercially available conversion technologies one could transform current traditional and low-tech uses of these resources to modern energies [18]. One of the first issues addressed within the project was the development of a proper definition of Agro-energy District (AeD). Despite the fact that the general concept is widely used, a clear formulation of the structure of AeD was still missing. The AeD can be differently understood, according to different experiences and needs in different areas. The definition adopted in this study stems from the work of Frayssignes [19] referring to a specific geographic area bringing together a large range of specialist SMEs and characterized by an "industrial atmosphere" founded on common values and an accumulation of skills through the search and transmission of knowledge. Examples of AeD are provided by the coupling of pyrolysis/gasification plants to a biodiesel or bioethanol production plant [20–23] or even to a vegetable oil extraction plant [24].

[1] The paper has been developed in the framework of the project "RuralE (Public-Private Partnerships for RES Agro-energy districts)" of the European programme Intelligent Energy. http://eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=1838.