Green Energy Policies: what type of impact for the territories? An analysis of renewable energy policy making in Basilicata

Martina Giuzio – Economic Department University of Foggia
Viola Taormina – Economic Department University of Foggia
Nicola Faccilongo - Economic Department University of Foggia

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Context

For Southern Italy, climate change represents an imposing challenge, the urgency of which has been determined in recent years not only by the multiplication of extreme natural phenomena - often the cause of irreparable infrastructural damage - but also by the succession of particular international contingencies that have made energy security a priority, even for local governments.

This study analyzes the impact of renewable energy policies in the Basilicata region, with a focus on its environmental, socio-economic and institutional implications. The methodology starts from an analysis of the regional regulatory framework, to define strategic objectives regarding natural resource management and redistribution of economic benefits among local communities.

In 2023, ISPRA published its annual report on soil consumption and territorial dynamics that shows the process of landscape transformation that Italy is experiencing. In the long run, this process will lead to a progressive loss of ecosystem services linked to rural areas, in favor of artificial land cover and ever greater urbanization. While traditionally this phenomenon is closely related to population growth, in the last period even with a negative natural balance and a decrease in the number of inhabitants, there has been a continued increase in land consumption. If we look at the problem represented by soil consumption, we can see that despite the many attempts to legislate on monitoring and protecting the health of the soil, the EU has not yet managed to issue any directives, determining in the Italian case a lack of initiative towards the creation of national measures that go in the same direction, which are necessary above all in the light of fragility and risks such as the hydrogeological one (Galimberti et al., 2023). Moreover, the Italian system is articulated in a series of decision-making centers, the regional and local authorities, which, depending on their own specificities, adopt internal rules: this is the context in which the case study that this paper proposes to analyze - Basilicata - is set, with a focus on the influence that the quality of institutions has had on two indicators of the validity of (energy) public policies, coherence and effectiveness (Lanzalaco, 2010). In Basilicata, the transition from fossil fuels to renewable energy sources began with the enactment of Legislative Decree 79/1999. Since then, constant action has been taken at the regional level to accelerate the process of moving away from fossil fuels, the main cause of the production of climate-changing gases, through the construction of micro plants for the production of energy, especially wind power, scattered here and there between the provinces of Potenza and Matera (Scotti, 2022); the number of these installations has grown exponentially, especially in the last ten years. Nevertheless, if the objective of green policies must be combined with the creation of widespread wellbeing and the improvement of the quality of life, in Basilicata, the lack of

farsightedness in planning interventions has first led to a reduction in the procedural process for obtaining the various authorizations, and then to a substantial rush towards the acquisition of territories devoted to the installation of green technologies.

The lack of attention to any urban planning rules and the absence of monitoring systems set up by the local government meant that the territory did not experience equally widespread benefits (Scorza et al., 2020). Above all, the increase in renewable installations on the territory has not also been followed by an increase in population; in the Italian context, Basilicata experiences a dramatically negative demographic trend that prompts one to reflect on the real need that local communities may have for such energy measures. This juncture is the theme that sees the efficiency of the policies developed by a government in a given area, directly influenced by the institutional quality proper to the public bodies delegated to administer those territories.

The transition to an economic model marked by the concept of sustainability, a theme in itself not without its own questions, necessarily requires a joint effort among the various parties that make up a system of government: administrators, civil society, private individuals and businesses, workers, young people, the scientific community and so on. But if the engagement of these actors with respect to political life is low, if the mechanisms of participation that would allow non-state actors to be incorporated into the policy-making process are practically inextinguishable, this, in addition to being an obstacle to the diffusion of environmentally conscious policy approaches, is a symptom of a lack of governance capacity, proper to public bodies (Hiuanhu et al., 2024).

Methodology

A review of the existing literature on renewable energy sector assessment frameworks will be carried out, the starting point being the new assessment framework published by the International Renewable Energy Agency (IRENA) that provides more analysis of the socio-economic implications of renewable energy value chains, linking the energy sector. This framework represents a first step towards recognising the importance of the socio-environmental externalities of renewable energy sectors, Koundouri et al. (2024) emphasises the instrumental role of these valuation frameworks, which involve the integration of social and economic parameters and methodologies and underline the crucial role of policymakers who have to design effective strategies to maximize the positive effects of renewable energy systems. The governance at multiple levels is a crucial aspect for the quality of energy policies implementations, with a key role of the administrators at local level who are pivotal actors in shaping socio-economic impact of renewable energy projects. The degree of efficiency of public policies can be directly influenced by the institutional quality that characterizes the public bodies entrusted to administer a given territory. This integration facilitates a more territorially sensitive approach, allowing for an improved understanding of how renewable energy initiatives influence local communities.

Assuming that the transition to an economic model based on the concept of sustainable growth is not in itself free of contradictions, in order to capture the territorial dynamics and impacts of the

renewable energy policies implementation and the key role of local governments, a quali-quantitative framework will be implemented to identify the effects that the Basilicata region's renewable energy policies have on territorial health and socio-economic dynamics.

The first step of the work will be the construction of a general framework to frame the Basilicata region's policy objectives in this field. The analysis of the regional regulatory framework will map the existing energy policies, with particular attention to the regulations governing concessions for the installation of photovoltaic panels and wind power (considering aspects such as plant location, land consumption, and economic incentive regulations). The qualitative framework will also include the main actors involved in the solar and wind energy production chain using the ORBIS platform, it will be possible to get a picture of the different companies involved in the production, distribution or sale of electricity. This data will provide an overall picture of the type of companies most present in the region and in the relevant economic sector.

Finally, a more quantitative approach will be implemented in order to build a multi-dimensional analytical framework. The composite index will be built, with the aim of evaluating regional policies in the field of renewable energy in a multidimensional approach. The composite index will be an assessment tool that aggregates multiple indicators into a single numerical value to provide a comprehensive measure of policy effectiveness. To ensure comparability between the variables, which have different units of measurement, a normalisation methodology will be applied using the Min-Max method.

The formula used for normalisation is as follows:

$X' = X - XminXmax - Xmin$

- X’ represents the observed value of the variable (energy produced or land consumption)
- X - Xmin e X - Xman indicate the minimum and maximum values of the variables in the dataset, respectively.

After normalisation, the variables will be correlated to construct the indicator, the method chosen to integrate the different dimensions of the index will be the Pareto-Mazziotta Index that provides strong statistical coherence.

The central element of the study is the construction of a composite index that integrates three key dimensions:

- environmental, crucial for analyzing efficiency of land use, essential in territorial areas such as Basilicata, badly affected by land consumption (ISPRA, 2020). The relationship between energy produced per unit of land consumed reflects the balance between the need to increase renewable energy production and the obligation to preserve land resources. (IRENA, 2014).

- socio-economic, aims to highlight the benefits of energy policies in terms of job creation and energy self-sufficiency. The ability of the PV and wind sectors to generate employment along the entire value chain is widely documented (IRENA, 2014). In parallel, the measure of energy self-sufficiency - the ratio of energy produced from renewable sources to total energy consumption - reflects an area's ability to reduce dependence on external sources.

- government, reflects the crucial role of institutions in implementing policies that are efficient, transparent and consistent with national and international sustainable development strategies (Ram & Montibeller, 2013). The variables selected are: territorial governance capacity and the involvement of the locals in decision-making processes.

Conclusions

The study offers an analytical model that can be replicated for other regions (NUTS2), highlighting the central role of local government action in guiding the energy transition towards a development paradigm that aims at regeneration, self-sufficiency and well-being of terrors.. By refining the framework to account for these localized dynamics, the studies can contribute to a more nuanced and context-sensitive evaluation of renewable energy projects, ultimately supporting more effective and inclusive energy transitions.