

Ugo Farinelli and Federico Santi

THE LONG-TERM PROMOTION OF RENEWABLE SOURCES OF ENERGY IN ITALY

The Italian Association of Energy Economists, Roma, Italy
E-mail: ugofarinelli@yahoo.it

Overview

The Italian system of Green Certificates to promote the production of electricity from Renewable Energy Sources (RES) has a number of peculiar features that differentiates it from those of other countries. This paper briefly presents these characteristics, and attempts to answer two main questions:

- Is this system likely to encourage the diffusion of RES to the extent envisaged by the Italian and the EU energy policies?
- Does this system effectively use market forces to obtain this goal?

Methods

In order to answer these questions, the present study starts from the perspective of an entrepreneur considering an investment in a RES power plant in Italy. Its first concern would be to establish what are the projected revenues of the plant during its lifetime. The revenues (per kWh generated) will depend on the sum of two terms, the paid by the grid for the electricity produced by the plant, and the market value of the Green Certificates (GC) thus generated. These revenues will be compared with the costs of the generating plant in order to establish a business plan and assess its rentability.

The evaluation of these two terms in the Italian legislative context is far from simple: it requires, among other things, the prediction of the demand for electricity in Italy in the next 10 years, which has been based on a detailed calculation from a bottom-up econometric model.

The rules to determine the required volume of GCs imply the evaluation of the electricity already produced from RES; of the first 100 GWh per year produced by each of the other plants (exempt from the obligation of GC); the combined heat and power (CHP) plants, which are also exempt, and the fraction of electricity imports that is certified to derive from RES production. Once all these contributions have been subtracted from the gross electricity production, the remaining part is subject to the percentage of GC fixed by the government, on which only reasonable hypotheses can be made after 2006.

The supply of GC is also evaluated, in its two components: plants operating under the former subsidy (CIP-6) regime and other RES plants. This prediction is somewhat affected by the future district heating plants (new or retrofit), which a recent norm has assimilated to RES plants. Reasonable assumptions have had to be made in this context. The scenario of GC supply takes into account the extension of time for which GC are issued for each plant (8 or 12 years as mentioned above).

The demand and supply of GCs are then compared up to 2015 to determine the behaviour of the market. It should be noted, however, that the recent legislation rules that possible GCs exceeding demand will be bought by the grid (GRTN) at a price to be fixed, but presumably still remunerative.

The price paid by the grid to the RES (non-CIP-6) producer is equal to the average market price of electricity, which will be determined, in the time frame considered, essentially by the thermo-electric component of the power-generating park. This will in turn depend on the composition of the park (expected to change substantially with time) and on the price of fuels

(mainly natural gas and, for a much lesser part, coal). Predictions are then made (based on a variety of sources and economic models) on the future prices of fuels, the investment costs in the power sector, and the market price of electricity, based on the experience so far of the operation of the electricity market. The result gives the first component of the revenue for RES plants.

The market value of GCs will then be evaluated. Until about 2012, this value will be dominated by the price of the GCs generated by the CIP-6 plants put on the market by the grid operator (GRTN) at a regulated price, given by the difference between the costs incurred by GRTN in purchasing electricity from renewable energy CIP-6 plants (whether or not they generate GC) and the revenue obtained from the sale of this electricity on the market (both free and regulated). Since the CIP-6 regime was quite generous, the resulting price is rather high and it represents a benchmark, as well as a cap, for the GC market.

Some rough estimates on what is likely to happen after 2015 are given.

Results

The revenue from selling electricity to the grid was estimated until 2015. The revenue from the sale of GC over the same period has also been estimated. Although uncertainties are obviously present, the structure of the system is such as to make the total revenue moderately dependent on contingencies. Any projection beyond 2015 is affected by much larger uncertainties.

Conclusions

The conditions at which the RES power plants are expected to operate until 2015 seem to be remunerative enough to allow a diffusion of the most convenient of these plants (wind farms and, to a minor extent, biomass plants) in the quantity foreseen by the Italian energy policy.

On the other hand, market forces play a minor role in determining the two components of the revenue of RES plants, and particularly the value of the Green Certificates. This may imply higher than optimum prices for the final consumers. In other words, the Italian system to promote RES as seen from the present perspectives, appears to be effective but not very efficient.