

The new European guidelines to support renewable energies: What are the stakes for energy transition?

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N°2014-03

POLICY BRIEF

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- The preferential use of tenders is expected to limit the cost of support. It allows public authorities a better control of the development of renewable energy sources, but it comes at the cost of increased regulatory risk for investors.
- The generous exemption regime for electricity-intensive industries anchors the system in a pro-competitive funding logic, but potentially at the expense of households and electricity-extensive industries.
- Permission to discriminate the support according to the degree of maturity of technologies opens the door to possible litigation due to a risk of overlap with state aids for research, development and innovation (RDI).

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THE NEW EUROPEAN GUIDELINES TO SUPPORT RENEWABLE ENERGIES: WHAT ARE THE STAKES FOR ENERGY TRANSITION?

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After a consultation conducted between December 2013 and February 2014, the European Commission published in April 9 new guidelines for state aid in the fields of environment and energy².

This text, which comes specifically from the DG Competition is neither a regulation nor a directive, but a "atypical" act outside nomenclature. Not provided for by the Treaties, it is not subject to any mandatory rule as to its mode of preparation. However, it has been the subject of wide consultation with other EU institutions and Member States. Because Member States have been tightly associated to the elaboration of the text, it is appropriate to consider that they have expressed their consent. Therefore, they must take account of the new guidelines that will prevail until 2020 in designing their system to support the development of renewable energy sources.

The main provisions of the text with regards to the support of renewables are:

- The Commission pushes to replace feed-in tariffs by feed-in premiums. Access to the network for green electricity will therefore be subject to market conditions, without priority.
- To reduce the cost of aid, the Commission advocates the use of tenders.
- Endorsing a generous exemption regime for electricity-intensive industries, the Commission opted for a pro-competitive mode of financing but at the expense of households and energy extensive industries.
- The Commission will display non-discrimination between the different sources of green energy while allowing discrimination based on the degree of maturity of technologies.

Our analysis is that the use of feed-in premiums is consistent with the objective of fighting against the greenhouse effect. In the short term, by exposing investors to market risk, it will however slow the development of capacities without necessarily solve the problem of intermittency. In the long term, it is hoped that market forces will redirect investments in renewables in a way facilitating their integration into the network. The promotion of tenders seems double-edged. It can reduce the cost of support only if regulatory uncertainty perceived by investors is limited. Unlike the exemption scheme of electro-intensive industries, the principle of non-discrimination between technologies seems consistent with the environmental goal. However, the Commission seems to create ambiguity by continuing to allow discrimination provided that it is based on a difference in the degree of maturity of technologies, at the risk of increasing litigation due to overlap with state aids for research development and innovation.

² http://ec.europa.eu/competition/sectors/energy/eeag_en.pdf

A FRAMEWORK FOR SUPPORTING RENEWABLE ENERGY

The issue of economic instruments have unfortunately been largely absent from the debate on energy transition in France that rather focused on scenarios for 2050. The text published by the European Commission overcomes this lack of strategy in terms of policy instruments. From the beginning of July, it introduces two fundamental ruptures compared to the previous 2008 guidelines.

The first is a much more precise guidance on the types of support for the development of renewable energies that will be considered compatible with the internal market rules. This framework will tend to homogenize the types of instruments used by the European partners and, coupled with targets of installed capacity, it sets *de facto* a European policy for renewable energy development. From this point of view, the French law on energy transition that is still in preparation will have only limited room for designing specific instruments.

The second is that it no longer consists, like the 2008 guidelines, of guidelines on State aids for environmental protection but of guidelines on State aids for environment and energy. Expanding the issues to the energy sector is not neutral because, as we shall see, it allows for example to take up the issue of a capacity market.

STATE AID TO RENEWABLE ENERGY: WHAT IS THE ECONOMIC RATIONALE?

We can identify at least three reasons to introduce policy instruments to support the development of renewable energy:

- 1) The most compelling is the drastic reduction of emissions of greenhouse gases by increasing the use of non-fossil energy sources. The most effective way to achieve this is to introduce a pricing of CO₂ emissions. This is what Europe has tried to do for his industry by creating the system of exchange of CO₂ allowances from 2005 (European Union Emissions Trading System). Due to the absence of adequate governance, this instrument which was to be the backbone of the European strategy for climate change actually tends to be marginal. Faced with this relative failure, the European Commission acknowledges the persistence of what is described as a "residual" externality (§ 35) and it therefore allows to correct it by state aid to non-carbon energy. In filigree, there is a will to promote instruments that are not detrimental to European competitiveness in an international context where Europe leads, almost alone, a proactive policy to fight against global warming.
- 2) The second reason could be found in the Hartwick rule stipulating that it is necessary, for future generations to reach the same level of welfare that current generations in spite of the scarcity of natural resources, that all the rents from the extraction of these resources are reinvested for the benefit of future generations. This rule would justify

taxing these rents and reinvesting them in favor of the development of renewable sources of energy available for future generations. However, this rule is more relevant for countries that are producers and exporters of fossil fuels than for countries that are rather consumers like most European countries.

- 3) The third reason is given by innovation economics and issues of diffusion of new technologies and development of industrial sectors. Market failures typically characterize the production of knowledge, which is theoretically treated as a public good, especially upstream in the innovation process. Production and dissemination of immature technologies also induce high risks for private players, which raises the issue of coordination between private actors, more specifically in the presence of technologies that are embedded in complex systems. It is however not demonstrated that specific rules should apply to Research Development and Innovation (RDI) in favor of renewables when a CO₂ efficient pricing is implemented. It seems at least that it is the opinion of the Commission, which refers explicitly to the guidelines of State for RDI on this point (§ 15-d).

It is thus essentially the struggle against the "residual" externality related to CO₂ emissions that underlies the guidelines for state aid in favor of the development of renewables. However, confronted as in this case to a pollution stock (it is not emissions but the cumulative stock that causes instant damage), the economic theory argues for a price signal based on the impact in terms of damage generated by a marginal increase of the stock. The strong inertia of the stock induces that the marginal damage is almost invariant in the short term and therefore suggests that the price signal is fixed. *A fortiori* it is independent of the price of electricity. Although this is not the main argument put forward by the European Commission, the inconsistency of guaranteed tariffs with this principle justifies their planned abandonment.

WHAT CAN WE EXPECT FROM THE CHANGE IN TERMS OF SUPPORT INSTRUMENTS?

The new guidelines devote clear and sharp drop-in of the existing tariff (also known by the acronym FiTs for Feed-in Tariffs) for electricity from renewable sources and a switch to support in the form of premiums (FiPs for Feed-in Premiums) added to the market price of electricity (§ 125). It has already been said above that, from a strictly economic point of view, FiTs do not meet the definition of an adequate price correction of high-carbon energies compared to non-carbon or low-carbon energies. By nature, FiPs are much more compliant. However, this is not the argument stressed by the Commission. The objective is rather to submit installations of green electricity generation to market conditions. Incidentally, the Commission effectively suppresses the priority access to the network that benefited to renewables. The expected effects of the switch from FiTs to FiPs depend on the time horizon considered.

In the short term, FiPs expose renewable electricity producers to the risk affecting the market price of electricity while FiTs, offering in essence a fixed overall remuneration, protect them from such a risk. Market uncertainty is well known to strongly affect the incentive to invest

for two reasons well documented in the economic literature. The first is the existence of a risk premium for any investment subject to fluctuations. The second is the existence of an irreversibility premium when projects combine high sunk costs and uncertain return on investment. These two premiums are cumulative and make the level of return required to install a given capacity higher than in the absence of risk. With a same initial level and a same time-path of the market price of electricity, the FiP required to generate a given amount of new installed capacity must be greater than the difference between the FiT and the market price of electricity. Insofar as the Commission does not want budgets devoted to the support of renewables to increase but rather seeks to contain them, it is likely that the development of renewable energy sources will be slowed.

In the short term again, we would hope that FiPs contribute to solving the problem of intermittency. Priority access to the network coupled with the obligation to purchase has so far favored sources of renewable electricity that are the less predictable. The intermittency of renewable electricity and the inertia of nuclear power plants require reliance on a "producer in last resort". This role is endorsed by gas-fired and coal power plants. As they are mobilized intermittently instead of running at full capacity, their economic equation is undermined and, subsequently, the stability of the network is at risk. By restoring equality of access to the network for the different sources of electricity, the new guidelines will probably not help to limit this phenomenon. Indeed, once a capacity of renewable electricity is installed, it generally has low production costs (they are reduced to the cost of maintenance). The logic of dispatching, which consists in soliciting in priority producers whose marginal production costs are the lowest, is therefore likely to continue to favor renewable sources. Probably aware of this point, the Commission leaves the door open to a capacity market (§ 220), but under strong conditions.

In the longer term, the switch from FiTs to FiPs can help redirect investments and facilitate the integration of renewable sources of electricity into the network. Indeed, albeit imperfectly, the market price vehicles information. If onshore wind-power plants tend to produce too much during off-peak hours, their remuneration will be affected downwards and investments will be redirected towards renewables which tend to generate electricity during peak hours or whose production is more predictable, as marine energy (tide or wave power plants...). The investment, including R&D, in storage solutions can also be stimulated. In this sense, the substitution of FiPs to FiTs cleanses the FiTs' incentives sent to investors.

WHAT CAN BE EXPECTED FROM THE PRIVILEGED USE OF TENDERS?

Parallel to the substitution of FiPs to FiTs, the Commission advocates a generalization of tenders for determining the amount of support (§ 127). The main motivation advanced by the Commission is to achieve the development goals of renewable energy sources at a lower cost. By doing so, it seeks to respond to the drastic increase of the burden of financing FiTs. The idea is simple and intuitive in a world where there exist no risk or uncertainty. Otherwise, it is less so.

It should be noted that the principle of tenders can be applied to both FiTs and FiPs. Moreover, it is this principle that has been adopted in France for offshore wind-power plants, but probably in the context which is the less favorable according to the recommendations of the Commission. Indeed, the Commission foresees the possibility not to use tenders when, among other things, the risk of collusion between bidders are too large (§ 127 i and ii). The small number of players in the offshore wind sector, which are confronted to each other every tender, implies that offshore wind is one of the renewable sources of electricity that gathers all the theoretical conditions for tacit or explicit collusion to occur.

In the context of tenders, project leaders are encouraged to bid on the amount of compensation (fixed price or premium added to the market price, depending on whether the tender relates to FiTs or FiPs) they wish to achieve their investment. This mechanism is not required to apply for small installed capacity (§ 128) in order not to penalize investments made by individuals (it is expected that in this case FiPs will induce less administrative costs). Box 1 highlights two important points.

Firstly, tenders imply that public authorities directly regulate the level of renewable electricity capacities and that the remuneration follows. By contrast, FiTs and FiPs directly determine the financial incentives and capacities are automatically adjusted accordingly. Because of this close relationship and by abuse of language, we are talking about tenders on FiTs or FiPs. Secondly, in a first analysis, tenders offer the advantage of minimizing the financial transfer to the producers of renewable electricity compared to a generic direct compensation (FiT or FiP) of the same amount for all facilities. This advantage tends to disappear if one takes into account the uncertainties that necessarily affect the system. Indeed, tenders are subject to uncertainty about the amount of compensation received. This uncertainty is even higher given that, in essence, they imply new facilities. The monetary compensation necessary to achieve the development of a targeted capacity thus depends on the pace of technological innovation, which is highly uncertain. Compared with a system of direct compensation in the form of a FiT or a FiP, which eliminates the risk affecting the overall (FiT) or additional (FiP) remuneration received by investors and replaced it by uncertainty as regards the achievement of installed capacity targeted by public authorities, tenders induce the accumulation of risk premiums and irreversibility premiums to the remuneration of investors. It is therefore quite possible that tenders ultimately reveal to be more expensive than direct compensation mechanisms.

A PRAGMATIC APPROACH IN TERMS OF FINANCING

The content of the new guidelines for funding assistance to renewables contrasts in terms of pragmatism with the innovative and bold guidelines proposed as regards policy instruments. The guidelines for funding are limited to partial exemption rules (§182 to §193) that can be considered compatible with the internal market.

The text first recalls that aid funding by electricity consumers should not, in principle, induce discrimination between them. Nevertheless, it is clear that the will to avoid a detrimental

effect on the competitiveness of some players implies deviations from this principle (§ 183). This provision helps to enhance the acceptability of aid measures for the development of renewable energy sources by avoiding excessive impact on economic activity and employment. It therefore allows a distortion within the internal market to limit distortion with other markets. From the perspective of international competition in global markets between geopolitical areas that do not coordinate their environmental policy, this is a measure that can be strategically consistent. However, this is not such a strategic rationale that is directly emphasized. The text rather argues that a loss of competitiveness would reduce the base of contributors because of bankruptcy or relocations and would question the sustainability of the financing. A footnote in page 89 specifies how to delineate the set of beneficiaries of the scheme of exemption. Unsurprisingly, it is based on criteria related to trade and electro-intensive nature of the industry. Nevertheless, a quick review of the Appendices 3 and 5 of the document leaves a quite perplexed. The two Appendices list the sectors, among which coal mining, the extraction of crude oil or natural gas extraction. It seems rather far from sectors involved in sustainable development.

Other bolder tracks could be considered. Funding using revenues from auctioning emissions allowances on the European carbon market is one of them. It is consistent *vis-à-vis* the energy transition: unsustainable revenues from the CO₂ market (which encourages eco-efficient investments) could be used to finance the transitional aid for the development of renewable energy sources. Broadening the base of contributors by taxing the most protected from competition from outside Europe, even if it is not directly related to energy consumption, is another one.

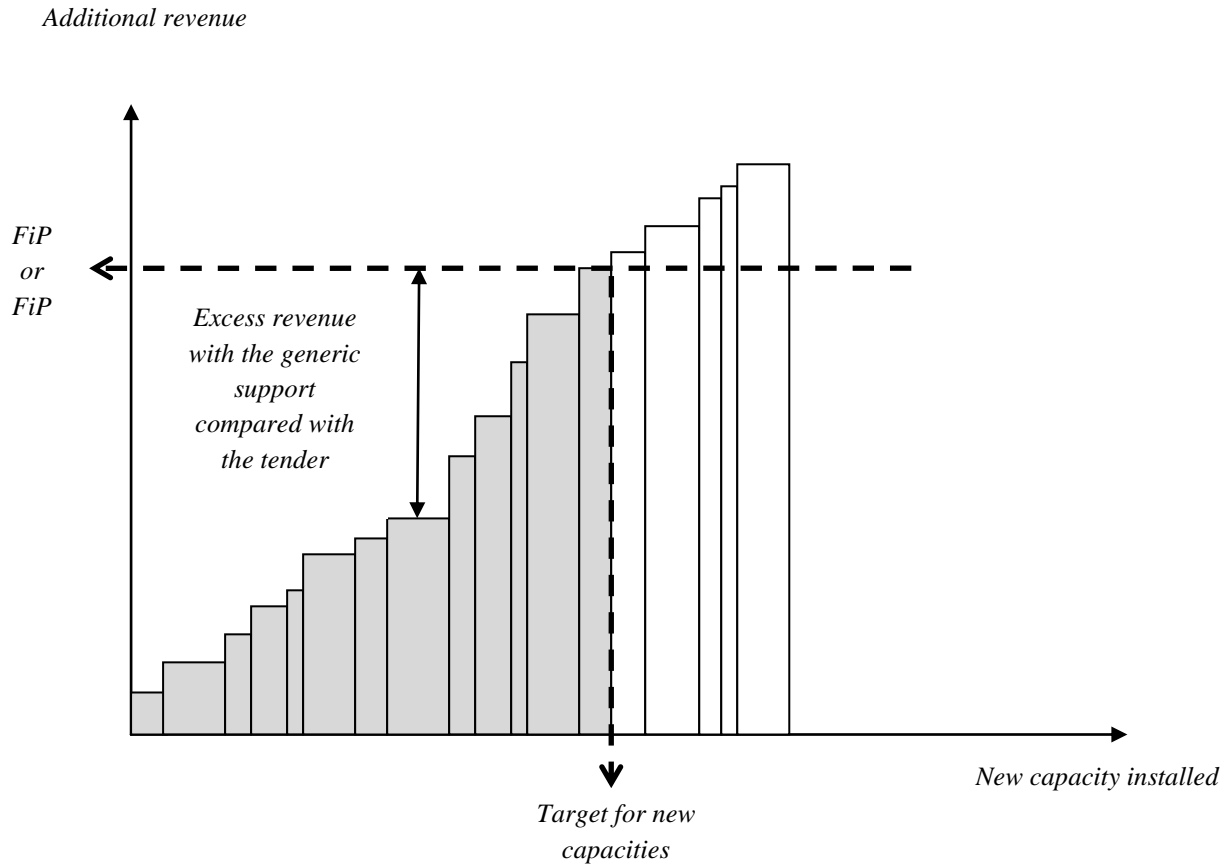
AN AMBIGUOUS ATTITUDE VIS-A-VIS THE DISCRIMINATION BETWEEN TECHNOLOGIES

Beyond the call for competition between plants using the same technology, what the Commission targets with its preference for tenders is also an unbiased competition between different renewable energy technologies. It is said that, in order to be considered compatible with the internal market rules, the procedure must be clear, transparent and based on non-discriminatory criteria (§ 127). It is nevertheless possible to limit the procedure to specific technologies provided evidence of at least one element of a list of specific contexts.

The first of these elements, the long-term potential of an innovative technology, provides an answer to the argument that the degree of maturity of technologies justifies discrimination in the amount of aid provided. However, as already mentioned, when the aid is justified by the need to correct an externality related to CO₂ emissions, the price signal should depend on the level of the accumulated stock of greenhouse gas emissions but has no theoretical reason to depend on the type of technology that is favored. Moreover, the time horizon set for these new guidelines (they will be in force until 2020) is rather limited compared to the time horizon of R&D programs. Regulatory uncertainty also weighs on the type of aid that a technology that is currently at the stage of R&D could benefit, once available on the market.

More fundamentally, there is a risk of overlap of state aids. Indeed, the less mature technologies of renewable electricity generation are often eligible for state aid, not under the environmental and energy issues but under the Research and Development and Innovation issues. The guidelines for this type of aid already allow a different support depending on the level of maturity of technologies. The rationale is that the more upstream is the innovation process the less knowledge can be protected by a patent system, even though its production is subject to significant positive externalities. Given the lack of incentives for private actors to produce knowledge, public subsidies are considered most useful for innovation in an upstream phase. However, for a state aid to be considered compatible with the rules of the internal market, it has to be demonstrated that in its absence the desired effect would not occur. This demonstration is clearly not possible when using two types of aids seeking to achieve the same goal. To promote the emergence of new technologies generating electricity from renewable sources, it would be more prudent and appropriate to rely on a mechanism based on state aid under the Research Development and Innovation rather than to allow discrimination in the support to the production of electricity between the competing sources of renewable energy in the context of State aid for environmental protection and energy.

BOX 1



In a tender procedure, bidders state the amount of aid (in the form of a feed-in tariff or as a premium over the market price of electricity according to the case considered) they wish in order to realize their investment in new capacity of renewable electricity production. Having sorted the different bids in ascending order, the public authority in charge of the tender determines which projects are accepted so as to obtain the total amount of new capacity that it targets. Compensation obtained by the marginal plant (ranked last among those accepted) is identical to the amount of generic aid (FiT or FiP depending on the case in question) it would take to get the same amount of total installed capacity.

The difference between the tender and a generic FiT or FiP is that, with the first, each plant receives the amount of aid requested whereas with the second, all units of capacity receive the same payoff than the one received by the marginal unit. The overall cost of using a FiT or a FiP is thus higher than that of a tender.