

SUMMARY

- 1/ EDITO
- 2/ FOCUS OF THE MONTH
- 3/ WHAT DOES THE MARKET SAY ?
- 4/ OUR NEWS

FINERGREEN INSIGHT

2nd ISSUE – OCTOBER 2015



Damien Ricordeau
Managing Director

EDITORIAL

A few months before the opening of the COP21, French policies in favor of renewable energy are multiplying: after the Energy Transition bill was passed on August 18th, President François Hollande announced the doubling of photovoltaics tenders, increasing the announced capacity from 400 MW to 800 MW.

As we are particularly focused on the PV sector, we are happy about the government initiatives and welcome the measures taken.

The new Energy Transition law introduces, in Title V, the principle of Feed-In-Premium, highly expected by the producers of renewable energy. The implementation of such a system is a touchy, complex matter and its effects on the renewables and the financing of the future French solar production particularly drew our attention. Thus, we decided to dedicate our second Insight to the subject and, relying on the interview Bayern LB, key German bank, gave us, we tried to fully understand the mechanism of the Feed-In-Premium system and the consequences of its introduction.

The upcoming COP21 also led us to adopt a stance in favor of an “energy for everyone”. Indeed, we collaborated with L’Agence des MicroProjets and the French Development Agency (AFD) to launch the COP21 Prize. The Prize will award the best humanitarian micro projects that use renewable energy as a way to develop emerging countries. We are thrilled to be part of this initiative and proud to be one of the sponsors, alongside with two other actors of the sector.

Finally, these last months have been full of changes for the French solar sector and we hope that the French and international policy-makers will continue on that path.

As the COP21 gets closer, we will probably see new initiatives emerge, that we will certainly welcome.



SUMMARY

- 1/ EDITO
- 2/ FOCUS OF THE MONTH
- 3/ WHAT DOES THE MARKET SAY ?
- 4/ OUR NEWS

THE FEED-IN-PREMIUM

How does the Feed-In-Premium work in France

The recently passed Energy Transition law introduces the principle of a Feed-in-Premium in its title V. This law establishes the planned replacement of the feed-in tariffs for renewable electricity with a premium, paid by EDF to the suppliers, for 20 years. A transition period will be conducted in 2015 and 2016 to enable the various producers from each sectors to implement the system.

Introduction

As the host country of the COP21 in 2015, France wants to be ambitious in its objectives of fighting climate change and remarkable in achieving them.

One of the government commitments is for instance to set the proportion of renewables in the final energy consumption at 23% by 2020, versus 14% in 2012 and 10% in 2005.

These more and more ambitious goals make it necessary to consider the consequences of the growing production of renewable electricity on the networks and markets. Indeed, since 2008, the injection of a growing quantity of green electricity in the distribution network led to a worsening instability of the electricity networks and to the malfunctioning of markets.

On the one hand, the production of renewable electricity has a negative impact on market prices, when France is already in a situation of excess production capacity that lower the market prices.

The profitability of traditional electricity producers is ensured by

the sale of electricity on the wholesale market, in short and medium term.

The MWh selling price is determined for every half-hour, according to the “merit order” principle, i.e. depending on the ascending marginal cost of production means (see Figure 1a).

However, as the renewables’ marginal cost of production is zero or close to zero, their growth within the French energy mix leads to a shift of the “merit order” curve (figure 1b), which means a decrease of the wholesale prices of electricity, weakening the security of supply for the whole country.

On the other hand, the current mechanism of payment for the renewables increases the risks of a physical disequilibrium on the distribution network. The units of production of renewable electricity, that have had until today a guarantee of compensation for every MWh produced, regardless of the actual demand, are encouraged to produce their maximal permanently, when it would be economically more rational to cut

the production. This situation increases the frequency of periods of negative prices, when the renewable production is high and the demand is low.

In this way, because of their distance to market and their lack of flexibility, renewables do not currently take part in the real-time balancing of electricity production and worsen networks’ actual instability.

Goals of the Feed-In-Premium

In order to restore an efficient functioning of the market and electricity networks, the French Ministry of Ecology, Sustainable Development and Energy published, on September 11th, a draft decree that aims at making the rules of support to the renewables evolve. This decision is part of the government’s logic to gradually reduce the support to renewable energy. Eventually, their profitability should be guaranteed by the sole market sale of their production, and potential capacity compensation.

Pampered by the system of purchase obligation until today, green electricity producers will soon have



THE FEED-IN-PREMIUM:

How does the Feed-In-Premium work in France ?

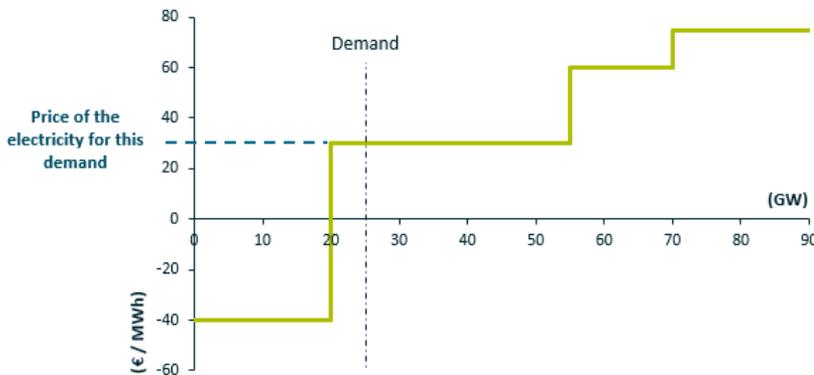
to face the market and participate, as any owner of a conventional production unit already do, in the system safety.

The publication of the draft decree, that will be applicable from 2016,

embodies the European commission goal: the Feed-In-Premium as the only option for the units of over 500 kW in capacity, from January, 1st 2016, along with the obligation to sell the electricity produced on the wholesale electricity market.

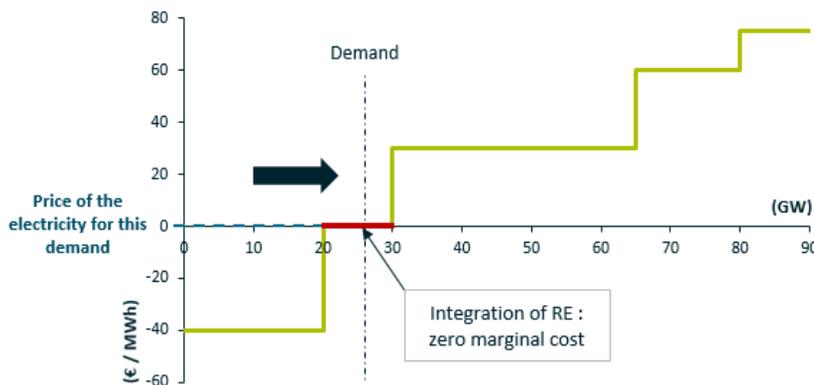
France goes ahead this goal by setting the upper limit of automatic access to purchase obligations to 100 kW. Indeed, after that limit, every new PV unit will only have access to purchase obligations or Feed-In-Premium if they are selected through a tender.

Figure 1a : Curve of the "merit order" of production units (excluding RE)



A production unit is switched on when the electricity price reaches or exceeds its marginal production cost. The price depends on the demand level and the means of production available at the moment M. Prices are negative when it is more expensive to stop a unit rather than producing at a loss.

Figure 1b : Curve of the "merit order" shifted by the introduction of renewable energy



When the renewable capacities of production are important, the wholesale price is lower for an equivalent demand. The conventional means are then less in demand and as a consequence, less profitable. As renewables always produces at their maximal capacity, the production exceeds more often the demand and negative prices appear.

Passing from a guaranteed purchase obligations system to a mechanism of Feed-In-Premium aims at fostering the integration of renewables to the electricity system by initiating a familiarization of the actors with the way the wholesale markets work.

The stake is now for the government to achieve a smooth transition so as not to put a stop to investors. The level and conditions of the Feed-In-Premium must guarantee a security and a sufficient income level to compensate the investors and reassure the banks. The government well understands what is at stake and mobilized all the actors affected by this decree to take part in its elaboration. The planned mechanism thus has to manage the difficult conciliation between fostering a real exposure of the producers of renewables to the market, opening the actors' eyes to the adjustment necessity, and continuing to guarantee stable and predictable revenues for the producers, to keep the financial actors confident, in spite of the inherent volatility of markets.



THE FEED-IN-PREMIUM:

How does the Feed-In-Premium work in France ?

How does it work ?

The Feed-In-Premium (FIP) is designed to offer the producers the same revenues as the purchase obligation system. It includes a management premium covering the additional costs of accession to the market, and takes into account the forecasted revenues that will be collected as part of the capacity mechanism, which will come into force in 2016.

Figure 2 outlines the main components taken into account to determine the FiP amount.

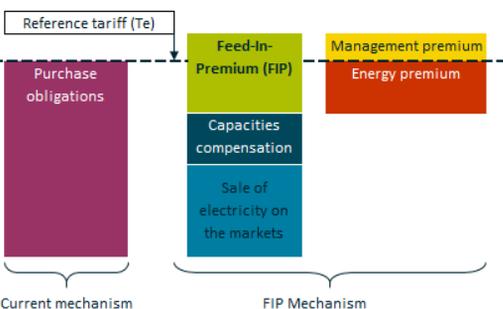


Figure 2 : Architecture of the Feed-In-Premium

According to the draft decree mentioned before, which final version will enter into force in January 1st 2016, the formula should be as follow :

$$CR = \sum_{i=1}^n E_i \cdot (\alpha R_t - M_{0i}) - Nb_{capa} \cdot P_{ref\ capa} + \sum_{i=1}^n E_i \cdot P_{management}$$

Where:

- **n** is the number of periods and **i** is the frequency of calculation of the premium per year, given for each sector in the corresponding bylaws published by the Ministry;
- **α** is a coefficient of degression, defined by bylaws for each sector;
- **E_i** represents the net electricity production (excluding electricity produced during negative prices episodes) of the installation, during the time step **i**, expressed in MWh;
- **R_t** is the reference tariff expressed in €/MWh during the time step **i**, defined per sector by bylaws and indexed on production costs inflation of this particular sector;
- **M_{0i}** is the reference market price during the step time **i**, expressed in €/MWh and calculated ex-post as the average of positive and neutral prices recorded on the day-ahead market;
- **Nb_{capa}** corresponds to the normative number of warranty of the installation capacity for one year of delivery, in MW, defined as the installed power multiplied by a specific coefficient for each sector;
- **P_{ref capa}** refers to a reference price of the warranty of exchanged capacity for the year before the considered delivery year, in €/MW. This price is zero for the first civil year of the installation settlement.
- **P_{management}** designates the management premium, in €/MWh, that covers the costs of access to the electricity market: registration fees, tools, regulatory controls and penalties linked to the differences between forecasts and actual production.

* In **blue**, settings whose value will be determined by bylaws and is still unknown today.



THE FEED-IN-PREMIUM:

How does the Feed-In-Premium work in France ?

Following the contribution of different actors of the sector, some elements of the mechanism have evolved. The following table sums up the main points of attention :

Comfort elements	Uncertain Elements
Monthly payment of the energy premium, with annual regularization	Payment of a negative FIP if the market price is higher than the reference tariff
No downward retroactive adjustment of the management premium	No FIP during periods of negative prices
Exclusion of guarantees of origins, whose capacity under FIP could not benefit	Uncertainty about the production cap and the value of elements T_e ; α ; i ; $p_{management}$

An analysis made by Green Giraffe predicts that such a formula (excluding certificates of origin) could have a financial impact close to zero when moving from Feed-In-Tariff to Feed-In-Premium, at the conditions that the management premium reaches 4€/MWh and the Reference Tariff (Rt) equals the amount of the purchase obligation rate. The increase of the project cost due to the management premium would be entirely echoed on the CSPE that would thus be enhanced by 3% compared to its current level.

Impact on the project owners

The decree published on September 11th establishes that the production units that will still benefit from purchase obligations include all PV installations of less than 100 kW of power and all the wind production facilities.

As the PV sector is still considered as a non-mature sector, a new installation cannot freely apply for

the Feed-In-Premium yet.

From now on, the only way for units whose capacity exceeds 100 kW to benefit from a Feed In Premium or a

contract of purchase obligation will be to respond to a call for tender, each having a defined mode of grant.

This obligation has led to the development of the aggregator profession, as an intermediary between the producers and the market. The introduction of a new intermediary generates a new risk for the upcoming RE projects: the counterpart risk. To counterbalance this risk, the decree introduces the notion of “buyer of last resort”, who will be chosen through a government tender and will buy the electricity produced at a discounted price (80% of the reference tariff) in case of failing counterpart.

Concerns subsist about the implementation of such a mechanism. The formula complexity could reduce the attractiveness of the French market in the short term, in particular to foreign investors. The market players are also expecting the bylaws that will define the parameters specific to every sector. These fears could have some inflationary effects on the total cost of projects, as shown in the table below.

The official publication of the decree thus promises to alter the French legislative landscape of renewable energy. However, many parameters are still to be defined for sectors as wind or solar energy, which depend on future tenders and decrees announced by the government.

Furthermore, if the limit of January 1st 2016 has been settled for the implementation of the system, the whole mechanism still has to be reviewed by several advisory bodies (the Commission for Energy Regulation, the High Council for Energy...), which might delay its implementation.

Impacts on investors	Impacts on bank financing
Prior to the project : less visibility on revenues	
During the project: increased complexity; need close monitoring. Increasing risks (counterpart, costs increase and market risks).	
Increase of the IRR demanded	Increase of the DSCR demanded ; decrease of the ratio Debt/Equity



FINERGREEN INSIGHT

SUMMARY

- 1/ EDITO
- 2/ FOCUS OF THE MONTH
- 3/ WHAT DOES THE MARKET SAY ?
- 4/ OUR NEWS

WHAT DOES THE MARKET SAY ?

Our questions to ...



Michel Rousseau
Head of Project Finance
EMEA

*Created in 1972 and located in Germany, Munich, **Bayern LB** or Bayerische Landesbank is part of the Landesbanks. It is the 8th German largest financial group and currently employs 19 200 employees.*

What were your expectations and fears before the adoption of the EEG law ?

As a bank, it is important to us, that our clients have a reliable and stable legal framework for their business. Under the previous EEG and its predecessors, this has been the case and this is one of the most important reasons for the success of the renewable energies in Germany. In project finance, we lend against cash flows and a stable regulatory framework enables us to lend very long term (up to 18 years for renewable energy in Germany), because the basis for the cash flow is reliable. We do expect that, albeit the framework will change with the new regulation, the reliability will remain. The upcoming change to tender processes for wind energy projects does have its challenges, which will presumably be most difficult for smaller developers with less economic strength. These companies have been an important pillar of the wind industry and we therefore strongly recommend to consider this in the detailed design of the tender procedure.

After one year of implementation, what are the Feed In Premium's impacts on debt financing in Germany ?

The most challenging time in fact was the time of uncertainty prior to the implementation of the new law. The Feed in Premium does provide a good deal of reliability and the apparition of a decent number of strong direct marketing companies is comforting this new system. On the more challenging side of things, the introduction of a limit in the duration of the feed in premium for wind projects with a stronger wind resource has lead to stricter requirements as regards loans. All in all, the EEG2014 remains a solid legal framework.

Did the introduction of Feed In Premium have consequences on Bayern LB financing of renewable energy projects ?

We did adapt to the new framework by rather slight amendments to the lending policy. Obviously, the experience and credit of the direct marketing companies needs to be assessed as well as FP, but these are rather minor changes without significant impact.

Generally speaking, what is the policy of Bayern LB towards renewable energy financing, especially in France ?

Well, generally speaking, our policy in France is fairly similar to the approach in Germany. We do accept the current legal framework as reliable and a strong basis for the cash flow analysis. Naturally, we do assess each project as regards the parties involved, the technical and legal as well as commercial particularities and decide on an individual basis. France has been and remains a core country for our project finance business in general. Our European project finance team is also present in our Paris branch.

Do you plan to develop your activities in countries outside European Union in the coming years ?

We have been present for many years in New York City, which covers the Americas region. In many countries, we have supported our German clients, especially in Turkey, where we have financed almost 1GW of wind projects. We will continue to assess the opportunities on a selective basis.



FINERGREEN INSIGHT

SUMMARY

- 1/ EDITO
- 2/ FOCUS OF THE MONTH
- 3/ WHAT DOES THE MARKET SAY ?
- 4/ OUR NEWS

WHAT ABOUT FINERGREEN... ?

We were there:

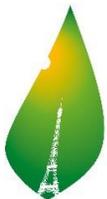
On September 18th, Damien Ricordeau, Founder and Managing Director of FINERGREEN talked about « Financing Energy Transition : between speech and reality » during the **Positive Energy Forum**, organized by **Jacques Attali**, in Le Havre.



Financing of the largest rooftop PV plant of Central France

Finergreen conducted the implementation of a 4-million-euro financing for several French developers. The project is the largest rooftop photovoltaic plant of Central France. Composed of 33.200 m² of rooftop covered with photovoltaic panels, the installed capacity of this plant is 2,3MW. The deal has been closed on July 31st.

Launch of the COP21 Prize with l'Agence des Microprojets



COP21-CMP11
PARIS 2015
UN CLIMATE CHANGE CONFERENCE

Finergreen is happy to be one of the sponsors of the COP21 Prize, co-organized by l'Agence des Microprojets and the French Agency of Development.

This prize aims at awarding the best humanitarian micro-projects on the theme « Renewables for the development of Southern Countries»

Winners will be offered an endowment of up to 10.000 euros during a ceremony organized as part of the COP21.

Insight on countries

Every two weeks, Finergreen will be offering you a RE country profile. This month, Finergreen Insight is pleased to let you discover an overview of the Indian energy mix, available on [our website](#).

Finergreen becomes international

Finergreen tackles the Indian market ...



Rohan SINGH

Project Manager India
Paris IX Dauphine

“After graduating from the 225 “Corporate Finance and Finance Engineering” Master ‘s degree of Paris

Dauphine, it is the entrepreneurial mind of Finergreen that attracted me. Given my French and Indian culture, it made sense for me to develop green energy in India and to contribute to provide electricity to local population”

... and the African one !

Mamoun TAHRI

Project Manager Africa
Mines Paristech



“After an experience within the Boston Consulting Group and Mirova-Eurofideme, I joined Finergreen in order to participate in its African development. The dynamism and the adaptability of the team seduced me, and I am thrilled to contribute to the opening and the growth of Finergreen on the international markets”



52 Boulevard du Montparnasse
75015 Paris
T + 33 (0)1 49 54 55 82
www.finergreen.fr