

Effective integration of renewable energy in the European power market

EFET Position Paper, December 2010

1 Introduction: developing renewable energy in an efficient, effective and sustainable manner

The EU has committed itself to ambitious long-term goals to reduce greenhouse gases and increase energy security. This will require the expansion of low carbon technologies such as renewable energy, as stated e.g. by the EU renewable energy consumption proportion goal of 20% for 2020. A very substantial part of that target is to be reached in the generation of electricity (estimated at 34%). At the same time, we see the main trading partners of the EU, such as the USA, Canada, China and India, stepping up their efforts in the same direction, with huge flows of private and public funds going into R&D and investments in clean coal, nuclear, solar energy, wind turbines and biomass. Consequently, a major transformation of global energy systems is leading to increasing competition between the world's leading economies, to invent and take advantage of future energy technologies.

The EU renewable energy consumption targets are ambitious even collectively. In fact, according to their National Renewable Energy Action Plans, the majority of Member States expect to achieve their national targets on an individual basis. Hence, there is a diverse range of country-specific support schemes across the EU, such as feed-in tariffs, quotas fulfilled by redemption of certificates, tenders, tax breaks or investment grants. Some nationally designed schemes have already been successful in bringing about large volumes of renewable electricity (RES-E) production.

EFET¹ believes that this diversity of schemes will not be able to support an increase in the share of RES, to 20% and beyond, in an efficient way. We are convinced that only the introduction of market mechanisms can optimise cost savings at EU level and beyond the boundaries of Europe. Early adoption of market mechanisms will furthermore significantly reduce inevitable harmonisation costs in the internal market later. The EU could, in other words, gain a competitive advantage over the USA, China and India, if Member States cooperate to render their varying support mechanisms mutually compatible and susceptible to export and import flexibility.

¹ The European Federation of Energy Traders (EFET) promotes and facilitates European energy trading in open, transparent and liquid wholesale markets, unhindered by national borders or other undue obstacles. EFET currently represents more than 90 energy trading companies, active in over 27 European countries. For more information: www.efet.org

Furthermore, EFET points out that the achievement of environmental goals needs to be consistent with other objectives. In particular, a RES target should be pursued in a manner which is compatible with the vision of a common European energy market, operating without distortions. A level playing field can only be reached if RES are integrated economically into the current, European level, energy market design. Therefore, market integration of RES-E is an important cornerstone for underpinning the common market. The EU ETS is a successful example of how environmental policy can be pursued according to a market-based design, harmonized and internationally compatible across Europe from the start.

So, EU level reform is urgently needed. In the meantime, however, 27 different national support schemes hamper the development of a potential common market for deploying and developing renewable energy technologies. And many of the national arrangements impede the effective functioning of the single market in electricity.

With these considerations in mind, EFET is seeking to launch a European debate about how the renewable generation sector can be supported efficiently across the European Union, together with an examination of feasible transition paths from the current situation². EFET believes that more efficient support measures for renewable energy would increase the likelihood of meeting the EU target and provide a robust framework for future policy. We also believe that the key to reaching efficiently a high RES penetration target in Europe will be an integrated European solution.

EFET recommends that, even in advance of any fundamental or binding reforms, the following actions be started now by the EU Commission and by Member States³:

- **The EU Commission:**

- Step-up efforts to prepare for the scheduled 2014 review of the present Renewable Energy Directive 2009/28/EC, focusing on enhancing the role of the internal market, trade and competition
- Consider bringing forward a review on a voluntary basis
- Provide a support function for Member States, which wish to be frontrunners in creating truly European solutions to the long-term sustainable energy challenge
- Give the existing Florence, Madrid and London Forums, chaired by the Commission, an additional focus on integration of renewable energy in the internal market

- **Member States:**

- Exploit the potential for co-operation mechanisms, which exist under the Directive, including statistical trading, financing of joint projects and joint support schemes
- Explore on a voluntary basis a harmonisation of their schemes, to facilitate future cross-border trading mechanisms
- Seek to introduce incentives for RES-E generators not to over-produce at times of low demand, and to back up their own assets with reserve and balancing services in the market
- Reward TSOs for preventing surplus RES-E output at times of low demand from blocking interconnection capacity, which could otherwise be available for commercial use

² See Annex 1 „Recommended timetable for possible improvements to Renewable Support in the EU“

³ See Annex 3 „Next Steps“

We naturally also encourage the **European Parliament** to engage in the discussion of appropriate reforms, as new possibilities emerge.

In the following sections of this paper we look in more detail at the most desirable features of RES-E support schemes, we analyse the merits and disadvantages of existing schemes, and we state some provisional conclusions about how they could be reformed and harmonised.

2 EFET vision – desirable features of renewable support mechanisms

The three EU 2020 targets, related to RES consumption, CO₂ emissions and energy efficiency, will not be achieved independently from each other. In fact, they have one aspect in common: the need for a reduction of greenhouse gas emissions. In the longer term, measures for abating CO₂ will prevail, while promotion schemes for RES and energy efficiency are likely to be phased out. Ideally, renewable energy should not require any subsidy at all, with projects being developed in response to the price of carbon. This would promote CO₂ emissions reduction by the most efficient means. We conclude mandatory reduction of such emissions should be the overriding objective of the European Union, since it is the policy instrument having the most direct beneficial impact on climate change. Hence, the CO₂ emissions target is the dominant target among the three. Indeed, EFET believes that non-subsidisation of RES, at least in the context of power generation, should be the long-term political objective⁴.

Meeting the specific 2020 renewable energy consumption target, expressed by varying (percentage) targets per Member State, however, clearly does require governments to continue in the meantime to make financial support available. The question is how their support mechanisms should be designed, with a view to achieving future harmonisation and greater efficiency of resource allocation. In this respect we list **eight** principles, on which policy design to expand the share of renewable energy over the long term should be based, and which support schemes should demonstrate:

1. **Sustainable:** meaning both environmentally and economically sustainable. Investments in RES production should be based on ecologically sound standards; investments have to be optimised, taking into account, among others, long term economic, environmental, and security factors.
2. **Comprehensive:** covering eventually all sectors and uses including heat and transport. If the RES target will be broken down to various uses i.e. electricity, heat, transport, with only sectoral targets for each, the least-cost solution will certainly be impossible to reach. To our mind a truly comprehensive support solution must comprehend also a successful integration of renewable energy into the EU internal market.
3. **Predictable:** a long-term, reliable support scheme with a clear route towards a situation where RES subsidies are no longer needed. Hence, pressure on the costs of RES technologies is important in order to make them commercially viable at market prices – including the economic benefits from the EU ETS market, which would, ideally, be the long-term European policy measure to promote renewable energies.
4. **Targeted:** (relatively) mature technologies can be made viable with more modest support; research has shown that power production from hydro, biomass, on-shore

⁴ See also Annex 1 „Recommended timetable for possible improvements to Renewable Support in the EU“

- wind and, at the margin, well located off-shore wind meet that criterion. Non-mature technologies may require extra investment, but will deliver a viable return in the long term. The non-mature technologies should be supported by way of demonstration projects and more limited deployment support (by way of learning costs). Support for basic and applied scientific research is needed to move ideas from laboratories to prototypes. It will be legitimate to offer industry and financial institutions incentives to encourage them to participate.
5. **Integrated:** increasing amounts of (intermittent) renewable energy output (wind, solar, tidal) compatible with the functioning of energy transmission and distribution systems. Technical and commercial integration into the interconnected high voltage grid is axiomatic to the future sustainability of renewable electricity production. Improved cross-border management of, and increased investment in, grids will prove essential for this purpose. Solar technology in southern areas of Europe and beyond will deliver a very stable output during hours of daylight.
 6. **European and more:** geographical flexibility with respect to the location of new renewable energy production facilities, mediated through market mechanisms and irrespective of national borders. This will be the best way efficiently to lower the overall costs associated with achieving renewable targets. The flexible mechanisms (which may be implemented by the Member States according to Article 9 of the RES Directive) allow the import of RES from outside the EU, potentially opening the door for trading between the EU and third countries.
 7. **Market-oriented:** renewable electricity producers fully integrated in the power market, being obliged to nominate (within reasonable gate closure times) and to balance their portfolio like other generators. In addition, cross-border trade should be based on an efficient use of existing infrastructure and utilise cross-border matrices and platforms, which allow continuous trading until close to real time (H-1).
 8. **Freedom of choice for the customer (disclosure):** support schemes not constituting a general burden for society. Freedom of choice is a key principle in the European Union and should also be an important driver of renewable energy deployment. Enhanced disclosure of attributes (mentioned now in Directive 2009/72/EC) can allow customers to choose their electricity product, based on available information about involved generation sources and their environmental impacts.

Given current experience in the 27 EU Member States and their national approaches, EFET expects the 20% renewable energy goal to be in danger of not being met in a sustainable manner.

The serious risk of non-sustainability is the result of ignoring economic facts:

- The absence of coordination between national renewable energy support schemes leads to a degree of variety and incompatibility, which is certainly not in the spirit of an EU-wide internal market. Increasing the share of renewable energy in the consumption mix without at the same time paying attention to harmonisation, tradability of renewable attributes and wholesale market integration challenges, is in clear contradiction with the goal of a competitive internal energy market.
- Renewable electricity is not necessarily produced at sites with the best natural conditions. In contrast, sites which offer the best economic or commercial conditions the investor (e.g. by reference to high tariffs) are preferred, this leading to unnecessarily elevated socialised costs.
- Currently, there is no distinction with respect to the different degree of maturity of technology. In many areas, it is common understanding that mature technologies are ready for large-scale deployment, whereas immature technologies need research first.

EFET believes that a thorough application of the eight criteria listed above will help focus discussion about reforms required. The reforms would be aimed at permitting the EU as a whole to reach renewable energy consumption goals in a sustainable manner at an acceptable cost for the society.

In relation to the qualities “European” and “market-oriented”, we point out that simple administrative and commercial measures could contribute almost immediately to a closer integration of renewable power in the overall European wholesale electricity market. Examples include:

- Improving cross border congestion management operationally
- Addressing the question of dispatch for intermittent wind power in countries with feed-in tariffs
- Making certificates issued in countries with quota schemes eligible for credits in other EU Member States.

Finally, we must acknowledge that a prerequisite for an ambitious build-out of renewable power generation capacity within Europe in the future will be a reinforcement of parts of the interconnected European high voltage transmission network. In this context, in order to align the parallel grid and RES-E generation capacity investments in the most efficient and sustainable manner, harmonized and market-based financial aid schemes will greatly help. European-wide harmonization, in a manner compatible with the current operation of the internal electricity market at the wholesale level, will send signals to locate RES-E production on sites with the most promising electricity output (in terms not just of volume but also profile and market value). In this case, the demand for grid developments would follow the economic positioning of generation investment, rather than artificially tracking differences in the financial benefits between national support schemes.

3 Evaluation of current support mechanisms

EFET believes that the aggregate effect of the currently diversity of non-harmonized schemes is detrimental both to the objective of achieving the EU targets and to the interests of consumers.

3.1 EU-27 vs. national schemes:

Action at national level has created a patchwork of schemes which are conflicting for some technologies, while at the same time leaving other areas not covered at all. Purely national approaches will never provide the right answers for a European solution. Thereby, they accumulate unnecessary burdens upon domestic/European customers. They constitute generically a distortion of a putative EU-wide market in RES energy. In order to achieve a level-playing field in Europe, to integrate RES into the internal electricity and gas markets, and in order to enable a cost-effective build-out of the grid, a harmonized approach to RES subventions is of utmost importance. Otherwise, EU citizens will be burdened differently in the Member States, while the missing benefits of an internal market will lead to higher costs for the whole EU.

3.2 EFET notes the following pros and cons of current types of support mechanism from evaluation studies⁵:

3.2.1 Fixed feed in tariffs (FIT):

- Pros:
 - Developers earn stable and predictable levels of revenue for each vintage of newly deployed capacity of a given technology
 - Potential for providing support also to non-mature technologies, spurring technological progress
- Cons:
 - Provide no scope for integration of power output into the wholesale electricity market, unless overlaid with discretions given to TSOs or to an agency to impose re-dispatch and balancing obligations
 - Limited incentives for choosing the lowest cost technologies
 - Changes in the feed-in tariff system often have long-time lags with respect to technological development, leading to situations where the feed-in tariffs do not follow the learning rates of technologies. Also, the uncertainty of future levels of subsidy rates may postpone investments in R&D to produce the next vintages of the technology
 - Energy companies need to understand the implications of 27 different and constantly changing systems
 - Feed-in tariffs were instrumental in spearheading the introduction of renewable energy in the relative few countries that now have significant renewable energy production; it is far less suited to deal with a system where renewable energy accounts for the bulk of new investment in electricity generation
 - Fixed feed-in tariffs distort both current and long term investment decisions with respect to the integration of green electricity into the physical power market, as the remuneration is independent of actual power prices. FITs are strongly associated with priority access, with the consequence of always having the right to full remuneration, even when the produced power is not needed due to low demand and overcapacity of other renewable sources. A question naturally arises, whether subsidies should be paid during periods of negative prices on the electricity market, or for producing power in excess of demand in regions from which export capacity is limited

EFET view:

FIT are a good instrument to kick-off renewable electricity production and they have proven to be successful in various European markets. However, after renewables RES-E production has reached a substantial volume, such a promotion scheme, which tends to segregate renewable electricity from all other electricity at the level of wholesale transactions, is no longer appropriate, at least in relation to new investment. More appropriate will be a scheme that integrates renewable energy output into the existing energy market.

3.2.2 Premium feed-in (FIP):

- Pros:
 - An improvement on fixed feed-in tariffs, since the plant operators have an interest in the market integration of their plants, i.e. to choose the right site with

⁵ We have looked at output *inter alia* from Copenhagen Economics, Brattle Group, LECG, Nexant and Consentec

respect to grid connection and to natural resources (wind speeds, solar influx, etc.)

- Cons:
 - Otherwise, same as fixed feed-in but also more uncertainty, as future levels and volatility of power market prices increase investment risks

EFET view:

FIP is a possible next step after FIT. As with green certificates, renewable production would come closer to the market: The electricity would at least be sold and purchased via the wholesale electricity market, while the renewable attributes still attract a supplementary income.

3.2.3 Certificate schemes linked with a minimum quota:

- Pros:
 - Quota schemes provide a more efficient way, by incentive, to reduce costs and choose lower-cost technologies
 - They avoid the risk of regulatory capture and mis-pricing of underlying production costs inherent in feed-in systems where legislator determine rates of remuneration
 - Quotas, with certificates evidencing generation capable of being traded in a secondary market, best facilitate trade in renewable attributes between entities located in different Member States, for the purpose of adjusting compliance with nationally set RES-E output targets, subject to mutual recognition of certificates between Member States
- Cons:
 - Create some unpredictability concerning returns, which may lead to more cautious investment behaviour. This unpredictability may have several sources:
 - Once the quota-target for renewable electricity is reached, i.e. when there are enough certificates, the market price will go to zero, if no banking of certificates for later delivery periods with a more ambitious quota is allowed
 - The renewable target may change over time, thus potentially creating uncertainty
 - Support is limited to most effective technologies, hence no “help” to less mature technologies
 - Pricing in the certificate market will be determined by the highest cost marginal producer to reach the target; hence there exists the potential for the creation of windfall profits. Such profits may accrue to low-cost producers in the absence of countermeasures, at least on a short time scale. In the long run, producers will only invest in low-cost technologies, hence driving the high-cost marginal producers out of the market, leading to a reduction of prices on the certificate market (see further section 3.2.4.1 below)

EFET view:

With European wide trading of green certificates, valued in the internal market according to harmonized renewable source quota obligations for each power supplier, the overall social cost of existing support schemes would be reduced. EFET believes that the better incentive properties of a certificate based scheme outweigh the disadvantages (discussed further in sub-section 3.2.4 below). In particular, the risks associated with variable energy and certificate prices can be effectively managed by investors.

Using a certificate approach means that for newly built renewable plants, sites and technology will be chosen in the most efficient economic way, i.e. where the overall

consideration of several factors (e.g. site, proximity to grid connections, etc. offers the most generation output for the least money.

Expensive technologies will therefore not be supported and incentives will point in the direction of lowering costs and offering competitive solutions. This can be seen, for example, in the very successful Swedish quota system, where the investors focus on hydro, wind and biomass. This leads, in the end, to lower costs for society, and makes potential windfall profits (due to minor differences between sites and technology) acceptable for society as well.

Renewable plants, that are experiencing the end of a FIT-scheme, will also be known to the market participants and the investors. Hence, they will be replaced in the future by more efficient solutions – avoiding also a continuing unnecessary burden for society.

Certificate systems can be stabilised by means of targeted governmental support on an interim basis.

3.2.4 Transition problems⁶:

Two main problems are sometimes evoked as major obstacles to effecting a transition from feed-in tariffs to a green certificate scheme:

- The possible creation of windfall profits in the hands of sellers of certificates, and
- A failure to provide support for immature technologies

3.2.4.1 Windfall profits

Windfall profits are most likely to arise in a situation in which all renewable power plants would be transferred immediately into a quota system. If this happens, the market prices for renewable certificates will be defined by the most expensive technology: i.e. some widespread but nevertheless immature technologies will set the market price. This would mean potential over-support for the cheaper and more mature renewable technologies, leading to so-called windfall profits.

However, this problem can be easily averted by leaving already existing renewable power plants in the old promotion scheme. This means that existing plants cannot affect the market price for certificates nor benefit from them. Certificates will therefore only be available for renewable energy produced from newly installed generation. Such an approach will tend to prevent renewable attributes of plants already installed in one Member State potentially being “transferred” to another Member State, with respect to the achievement of its renewables target, but this downside may be an inevitable consequence of limiting the windfall scope.

For newly built renewable power plants, the sites and the technology will be chosen in the most economically efficient way, i.e. where the overall consideration of several factors (e.g. site, proximity to grid connections, etc.) offers the most valuable generation output for the least investment and operating cost in combination.

⁶ See also Annex 1: “Recommended timetable for possible improvements to Renewable Support in the EU“

Of course, the choice of a quota and certificate method for rewarding new RES-E investment risks immature – and hence very expensive – technologies not being taken into consideration by investors. The market will prefer competitive solutions. However, other policy responses can be found to encourage such immature technologies (see sub-section 3.2.4.2 below).

Renewable power plants, approaching the end of their entitlement under a FIT-scheme, will in due course become known to market participants and investors. If they are even by then uneconomical to operate without subsidy, they will be replaced in the future by more efficient units or similar units in more efficient locations. This will also be a beneficial effect of the replacement of the old FIT support by a quota and certificate scheme for new plants, since the replacement will remove an unnecessary financial burden for society.

3.2.4.2 Support for immature technologies⁷

Quota schemes result in investor preference for low-cost solutions. Hence, mature and competitive technologies will be the clear winners of such a system. Immature technologies, however, can also be promoted, for instance, by research grants or tenders limited either by a financial cap, or by total promoted capacity in MW. This will help immature technologies to become more competitive.

This clear separation of promotion schemes with respect to their different degrees of technological and economic maturity will help to avoid a large scale roll-out of generation assets in a too early state, leading to either stranded assets or high follow-up costs. (See also the second bullet point under sub-section 3.3 below.)

3.3 *Partial coverage of support schemes:*

In most cases, existing schemes are restricted to electricity generated from renewable resources. Incentives to use renewable resources for heat and transport either do not exist, or are subjected to separate schemes. This situation will not lead to an efficient choice between different renewable technologies in the different sectors.

Overall, we recommend that evaluation of different support systems should take place at the cross-continental level, bearing in mind that no single mechanism can solve all challenges in boosting long term supply of renewable power. Examples:

- Certificate schemes are well designed to roll out mature RES technologies over the medium term offering a (relatively) modest premium on the power price. In addition, lower power prices will mean higher certificate prices and vice versa. Therefore, some volatility of certificate prices is desirable, implying in fact stable overall remuneration, which is what renewable power producers are concerned about.
- Fixed feed-in systems with a cap on the total installed capacity can be designed to test deployment of non-mature technologies, while the introduction of such technologies in a certificate system would make little sense. Support should be reduced over time to give producers incentives to cut costs.

⁷ See Annex 2 „Policy Priorities“

4 Conclusions and next steps

The current design of renewable power production support mechanisms across the European Union falls some way short of ideal. Redesigning and harmonising the support regimes is desirable. However, changes need to be made in a measured way, to avoid creating uncertainty among investors and provoking excessive political disagreement. Therefore, EFET has attempted a distinction between what is achievable in the short, medium and long term. Reforms need to protect investments in RES-E generation units already undertaken, in order to ensure that expectations with respect to existing projects are fulfilled and the future confidence of investors not undermined. The attached Annex 1, “Recommended timetable for possible improvements to Renewable Support in the EU” sets out a potential reform timeline, and contains our suggestions as to the respective responsibilities of the Commission, Member States and other actors.

4.1 Short term need: harmonise grid access arrangements

In the very short term i.e. before 2014, there is an urgent need to harmonise grid access arrangements and develop better connection rules for offshore wind generation installations, in order to avoid perverse incentives, e.g. support schemes competing for offshore wind production by increasing feed-in tariffs. EFET expects that this can occur under the framework set out in the Third IEM Legislative Package involving ENTSO-E and ACER. However, the new RES Directive regrettably does not give Member States any obligations whatsoever to adapt their support schemes to admit foreign generators, nor to mitigate the burden on grids implied by absolute priority dispatch rights.

4.2 Medium term challenge: develop a European quota and certificates market

Member States and EEA countries with an existing quota system (Poland, Romania, Italy, United Kingdom, Sweden, and Norway) should evaluate enhanced collaboration in order to develop a model for a future European quota and certificate market.

Initially, such changes will need to be examined at national level. But, by 2014 at the latest, the European Commission must evaluate the RES Directive and make recommendations about any adjustments needed in relation to support schemes and the utilisation of cooperation mechanisms. The European Commission should then take the initiative to propose urgent harmonisation measures and/or other adjustments to be included in revisions to the Directive. These should, in particular, aim at higher **levels of cooperation and harmonisation between Member States and moves towards market related financial support**. That will in turn enhance competition between renewable technologies and projects across the whole continent and its maritime continental shelf, and trigger further innovation.

Cooperation mechanisms can lead the way towards market integration. A proper design of such mechanisms can serve as a role model for a more widespread harmonisation of support schemes and the further integration of RES electricity output into the European wholesale power market.

In Annex 1 to this paper we set out more detailed thoughts on transitional measures (both practical and legislative), which could help move Europe towards such harmonisation and integration in reality. In Annex 2 we suggest some specific policy priorities.

4.3 EU Commission and Member State involvement in progressive solutions

Both Member States and the EU Commission have important roles in advancing the reform agenda⁸.

EFET supports the realisation of the EU RES penetration target of 20% of energy consumption by 2020 and of more ambitious targets beyond that. We are proposing arrangements whereby the EU collectively stands a better chance of achieving a substantial uplift in actual RES power generation at a reasonable cost.

EFET believes that real freedom of investment and real competition in the production and supply of renewable power will create a greater momentum towards the achievement of an economically efficient and sustainable electricity industry. Such freedom and such competition are pre-requisites for the smooth functioning of price and investment signals within the internal energy market. As RES generation assets come to constitute an ever greater percentage of production capacity, it makes no sense to exclude them from normal internal market mechanisms. Only correct and reliable market-based signals will in the long run maximise the overall potential of the European continent to move from a low carbon to a zero carbon economy at a tolerable cost over the next thirty years. The reforms discussed above would all represent improvements to the current situation.

References:

EURELECTRIC (2009): Reaching EU RES targets in an efficient manner
EWI (2010): European RES-E Policy Analysis

⁸ See also Annex 3 „Next steps“

Annex 1 Recommended timetable for possible improvements to renewable support schemes in the EU

Reform of support schemes for renewable electricity generators should preserve the *status quo* in relation to existing plants, in terms at least of the period needed to achieve a payback of original investment undertaken. If an investment has been made, based on a given legal framework guaranteeing a subsidy, the relevant support scheme should only be phased out gradually.

New renewable power plants, however, should be supported only in ways compatible with the overall functioning of the EU internal market, as EFET proposes in the main part of this paper. Of course, existing plants should also be able to opt in to a reformed scheme, thereby facilitating the phasing-out of older subsidy schemes more quickly. In order to speed up this development, it is essential that owners and operators of renewable generation facilities are also increasingly made responsible for procuring their own balancing power and other ancillary services.

We set out below the types of reform measures, which we consider should be feasible over varying time periods (between one and ten years into the future).

Short term (until 2012)

- Although RES-E producers must be assured of priority access and priority dispatch according to the recently enacted EU legislation, this does not prevent TSOs extending incentives to them to contribute to the management of network congestion and of system imbalances. Such incentives could be especially appropriate in the short run under a scheme involving fixed feed-in tariffs, indeed. A RES-E generator could for example be rewarded for making a nomination to the responsible TSO to run in advance, in exchange for suffering a penalty if it then deviates from the nominated volume or schedule. In practice, this could give a TSO the discretion to turn down renewable output under certain network conditions, provided that compensation was paid. This would have the effect of making the feed-in tariff more of a “take-or-pay” arrangement in cases of network congestion, and thus help mitigate system overload as well as unblock international interconnections
- New renewable generation facilities should be subject to balancing rules, in the sense that deviations from forecast power production should be subject to the same cash-out rules as other generators in case of an imbalance. This would give RES-E producers the incentive to make their schedules as accurate as possible
- Renewable power producers should be made responsible for selling their own power, rather than TSOs taking physical delivery of it and taking financial responsibility for marketing (as is currently the case in Germany, for example). Unbundling rules normally prohibit the participation of TSOs in trading activities and exemptions are undesirable. Pending the elimination of such exemptions, at least full transparency about the commercial and operational steps taken by TSOs, to market or deliver RES-E volumes, should be guaranteed. Disclosure should include complete information about the dispatching of renewable generation sources, especially wind farms, and about resulting network flows

Medium term (2013-15)

- In the medium term phasing out of fixed feed-in tariffs (for new RES-E generation investments) can start, in favour of support mechanisms offering producers the market price plus a support premium (either FIP or based on certificate redemption). This change would result in incentives for RES generators to produce at times of highest demand and encourage investment in smart technology, as well as removing some of the perverse incentives created by the operation of fixed feed-in tariffs. It would also entail RES-E generators selling their own production into the market and becoming more like a usual market participant
- A “virtual” FIT could, in a parallel development, be simulated through a smart certificate system. Under this system, TSOs or other agents responsible for paying the tariffs could enter into long-term purchase agreements for certificates evidencing renewable production in other Member States. The purchased certificates could count towards the national RES-E consumption target of the importing Member State according to a valuation indexed to deter the creation of windfall profits
- Further developments, which permit Member States to share the burden of meeting the overall EU target across Member States and between the electricity, transport and heat sectors, should also become feasible in the medium term. Use of the flexibility mechanisms, as envisaged by the EU Directive, could constitute a step towards a real EU-wide market integration of RES. Going even further and including third countries will give Member States even more opportunities to support RES in a more efficient way. The following measures would, for example, contribute to the evolution of greater flexibility:
 - Member States stipulate at least a minimum level of opening of their national support systems to cross-border trade in instruments evidencing RES-E output, for target counting purposes
 - Member States make arrangements for the mutual recognition of transfers of internationally compatible (even if nationally issued) renewable production certificates and set up a secure registry system; a plan is then elaborated for harmonising, and later merging, existing national schemes for the issuance and redemption of renewable energy related certificates, whether based on voluntary underwriting, purchase and subsequent cancellation of guarantees of origin, or on obligatory certified supply quotas; conditions are introduced to prevent double counting and allow for fair profit sharing
- Member States remaining outside harmonisation and scheme merging initiatives could at least agree that their national levels of new investment support will approximate to the expected market value of the “green” certificates to be issued under any subsequent Europe-wide scheme.

Long term (2016 onwards)

- EU institutions agree upon and create a European wholesale market for “green” certificates, as the most economically efficient way to reach sustainable levels of renewable energy production and consumption across Europe. This European scheme would apply only to investments undertaken after a pre-announced date (e.g. 31 December 2015), in order to avoid windfall profits for existing producers.

- A minimum EU renewable quota requirement should be introduced in relation to all final uses of energy (including heat and transport) and not just apply to consumption of renewable electricity. The EU quota would constitute the means to give issued certificates an intrinsic value at a national level.

Annex 2

Policy priorities

Much of the very intensive financial support being given to non-mature, high cost renewable technologies is apparently motivated by a laudable desire to develop future generations of technology. EFET recommends such development finance should be switched from direct production subsidies to research, development and innovation (RDI) support. This will better help European industry to be prepared technologically for the future, when ever more stringent climate change related emission targets are likely to apply.

Indeed, the present approach skews priorities in meeting long term objectives. There is too much emphasis on expanding medium term volumes of RES-E output, for example, as opposed to long term quality and economic sustainability of the technical means. The public costs of meeting renewable energy targets, particularly when support mechanisms do not leave room for cross-border trade and the play of the market, are many fold higher than the present value of funds allocated to RDI in energy technologies in national and EU budgets, in our estimation.

Hence, the first priority is to recognise the long term nature of the transformation process for energy systems. Over the next ten years up to 2020, the most cost-effective approach to create sustainable energy systems is to focus on energy efficiency and rolling out the most low cost renewable energy sources. Going beyond 2020, we think the role of renewable energy will need to increase, as cuts in CO₂ emissions required to meet long term targets will be increasingly costly to reach by efficiency savings in energy consumption. This implies massive increases in public and private RDI investments now, in order to put necessary new technologies in place in coming decades; this will be even more the case if nuclear power and CCS technologies do not attract sufficient investment in the medium term to allow them to play substantial roles in the longer term.

The second priority is to ensure that policy efforts support the EU energy industry in the global market place. Indeed, the EU's new 2020 Agenda underlines the role that green innovation can play in boosting the competitiveness of the EU economy. Over the next ten years, complying with the EU's 20% target for renewable energy will require hundreds of billions of Euros in investments in renewable energy. It is essential that EU companies can plan ahead in a transparent, non-distorted internal market where choice of location and technology is based on comparative advantage. That will help EU companies to develop and deploy cost effective solutions that can also be sold in global markets i.e. to increase their competitiveness. That will help to reach the 20% goal in the most efficient way and at the least cost for customers, i.e. to increase the competitiveness of energy consuming companies and to increase the acceptance of society for the changes occurring via this transformation process.

Annex 3

Next steps

The EU Commission could:

1. Start now its preparation of the 2014 review in a comprehensive manner:
 - Monitor the extent to which purely national approaches to support of RES-E production create harmful distortions to competition and trade in the internal electricity market; such monitoring should focus on wind power and use of biomass, since these sources are expected form the bulk of RES capacity expansion in the coming years
 - Investigate the scope for European harmonisation of RES-E support schemes in the meantime; study the merits of an EU wide quota and certificate redemption arrangement, and evaluate critiques of certificates schemes, which suggest they fail to support new and more expensive technologies and/ or create windfall profits; elaborate strategies to mitigate any such tendencies
 - Envisage the need for an entire transformation of the energy sector over decades; evaluate how specific and direct financial support to the volume deployment of renewable energy can gradually be phased out, in favour of more stringent climate action policies resulting in higher carbon prices
2. Engage in a support function for Member States that want to spearhead a more European and market based approach to achieving compliance with EU RES consumption targets. In particular it could propose:
 - A framework for the regulation of off-shore wind production. While currently of very limited size, offshore wind is projected to increase rapidly in the coming years, comprising installations in the North Sea and Baltic Sea in particular. Place of location may as much be influenced currently by relative sizes of subsidy as quality of wind conditions. Effective management of grid investments is severely hampered by domestic support rules, which requires that power physically enters national territory, if the output is to be eligible for subsidies. In the first place such a framework could be voluntary covering (potentially) some agreement on subsidy rates and rules for crediting production against domestic RES targets while latter become the platform for binding rules and over time be merged into a larger revised framework for RES support
 - A plan, outlining different options for how Member States can gradually move from national subsidisation towards a Europe-wide support scheme

Member States could:

- Exploit the opportunities for co-operation in the new RES Directive, including statistical trading and joint financing of projects
- Create flexible forms of co-operation, which may range from formal creation of joint green certificate markets, such as the proposed Sweden-Norway scheme, to partial links; a partial link could for example emerge from a national commitment to buy a certain amount of certificates in another Member State scheme for target compliance purposes; such initiatives may in particular be beneficial for countries with very high marginal costs of expanding RES output to reach its targets
- Phase out fixed feed-in tariffs (for new RES-E generation investments) in favour of support mechanisms based on generators receiving a market price plus a support premium (either as an extra tariff, or based on redemption of certificates it issues).

Member States, the EU Commission, TSOs and Energy Regulators together could:

Support an orderly integration of RES sources into the wholesale power market, in those countries and regions where the marketing and distribution of RES-E output is so far separate, for example:

- By ensuring RES-E generators receive incentives to contribute to managing congestion
- By making RES-E generators subject to balancing rules and responsible for procuring reserve power in case of non-availability of their production units
- By insisting on full transparency regarding any TSO arrangements for selling renewably sourced power and for dispatching renewable generation sources, especially wind farms, and also regarding resulting network flows