

Unleashing renewable energy power in developing countries

Proposal for a global
Renewable Energy Policy Fund

Hamburg, November 2009

The concept:

- Many developing countries have failed to implement a sound renewable energy policy because of the uncertainty about the financial costs. Furthermore, the existing Clean Developing Mechanism (CDM) has barely covered small-scale appliances of renewable energy.
- A renewable energy policy like the Feed-in Tariff (FIT) is the best political mechanism to provide investment security and spread the decentralized production of renewable energy. A national policy is key to deliver both while ensuring that the greater part of the supply chain remains in the particular country.
- This proposal shows how the introduction of a **Renewable Energy Policy Fund** financed by industrialised countries would provide an easy-to-use, flexible and self-sustainable support mechanism for renewable energy development in developing countries.

1

Background and objectives of the Global Renewable Energy Fund for Developing Countries

Energy is the key for development. Without the possibility to cook most people cannot survive. Without light and access to modern information technologies it is very difficult to provide education and health care. For developing countries and rural populations, a functioning financing mechanism for renewable energy (RE) appliances is of utmost importance. Microfinance models for off-grid renewable electricity appliances and cleaner cooking facilities based on biogas can limit severe health risks and the environmental damage of indoor fires. In grid-connected areas a fixed tariff-based incentive for renewable electricity, or Feed-in Tariff (FIT), has proved successful to provide investment security, a key element for boosting renewable energy.

The big challenge for the renewable energy industry has been competition from heavily-subsidised conventional energy. Households or energy companies which want to install wind turbines or solar panels have been discouraged by lengthy pay-back times. If in the 1950s and 1960s, the manufacturers of nuclear power plants had been faced with the same barriers that the renewable industry is now confronted with, they may not have built a single power plant. Without increased consumer demand and political measures to facilitate access to the market, manufacturers of, for example, wind turbines and solar photovoltaic (PV) panels, cannot produce the unit volumes needed to bring prices down and drive technological innovation.

FIT has proven to be the most effective policy instrument in overcoming these barriers. This simple mechanism has turned several European countries into world leaders in the renewables sector. In particular, one of the benefits of a sound FITs can provide a long-term planning certainty for investors/operators of RE-installations. This is crucial to develop a healthy national RE sector and thus **to create real economic value** in the respective country.

Many developing countries have seen the opportunities of FITs but are held back from implementing them due to the costs involved.

2

The status quo: The Clean Development Mechanism and the development of renewable energy projects in developing countries

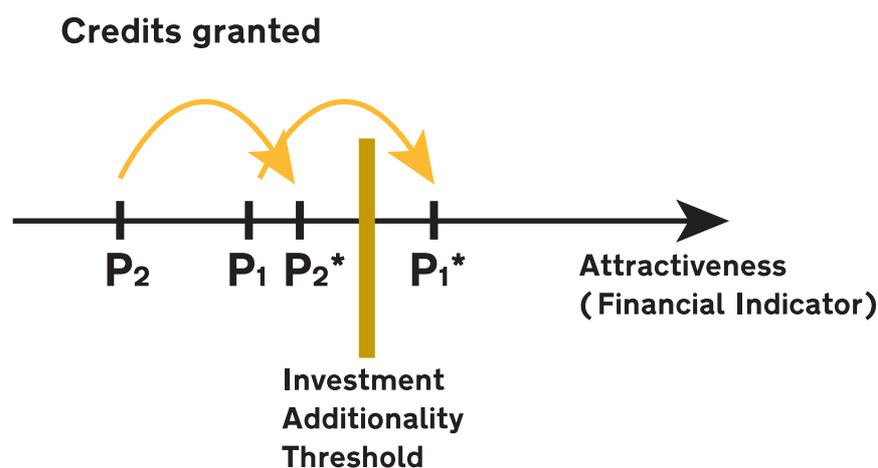
The Clean Development Mechanism (CDM) was created under the Kyoto Protocol to support the sustainable development of poorer countries while helping to avoid critical and irreversible climate change. But practical evidence shows that the CDM is not boosting renewable energy projects as desired, especially not the small projects that prevail in the developing world. It is too complicated for many states, too questionable

in terms of net CO₂ reductions, and unpredictable in terms of price development.

The CDM allows industrialised nations to fulfil some of their legally binding greenhouse gas emission reduction targets by financing projects in developing nations (Non-Annex I countries). Each tonne of reduced and verified CO₂ equivalents resulting from these projects can be traded – and profits made – on the international carbon market in the form of Certified Emission Reduction Units (CERs). In short, the CDM mechanism is a financing tool for investments in renewable energies [Streck 2004] and other GHG-reducing project types.

However, for renewable energy projects and several other project types, financial income from CER-sales on the international carbon market is generally marginal in comparison with the overall costs of a project. An investor will compare the project and transaction cost with the expected volume of certificates, which can be traded on the international carbon market. This ratio is usually better for other CDM projects than for renewable energies: Most renewable energy projects are small-scale, leading to high transaction costs (poor economies of scale – high upfront costs for projects because of administrative burden of CDM submissions) and a relatively limited number of certificates [Schröder 2009: 239]. Consequently, developers tend to choose large CDM projects, offering a large quantity of CERs.

Therefore, these project types will have to be very close to the profitability threshold (Investment Additionality Threshold) even without CDM-revenues in order to become interesting for investors. The graph below shows that project P₂ is too far away from this threshold, as the additional income from certificate trading will not make the project economically attractive (P₂^{*}). However, CDM-revenues allow overcoming the profitability threshold for project P₁/P₁^{*}.



Graph 1: Economic attractiveness of GHG-reduction projects
Source: Bode & Michaelowa 2003: 509

There are two potential barriers towards renewable energy deployment through the CDM mechanism. First, the generally high project and transaction costs might hamper renewable energy project development, as greenhouse gas reductions can be achieved more cost effectively in other sectors, such as reduction of methane emissions or industrial gases. Second, the additionality requirement, as set out in the general rules for CDM projects, can lead to difficulties when combining CDM with other support mechanisms, such as Feed-in Tariffs.

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The additionality criterion is one of the crucial features of the CDM mechanisms as set out in the Marrakech Accords. Projects are eligible under the CDM only, if they would not have been implemented without the additional financial incentive offered by the CER-revenues.

The additionality requirement was implemented in order to avoid “free rider” participation – projects that would have been carried out anyway. In general, this makes sense since it ensures the environmental integrity of the CDM and guarantees that industrialised countries can only use CERs to achieve their national emissions targets if the underlying projects clearly reduce greenhouse gas reductions.

In the past, the additionality criterion sometimes led to perverse effects. If for example a developing country implemented a Feed-in Tariff this had to be taken into account when calculating the baseline for a CDM project and determining its additionality. As revenues for operators are higher in a situation with a Feed-in Tariff, a number of projects would already have been profitable without the additional funding through the CDM. Hence, these projects would fail the additionality criteria, and would not be approved under the CDM. This gave governments of developing countries the perverse incentive not to implement successful national policies for renewable energies or other GHG-reducing activities in order to attract more investors seeking to generate CERs.

Fortunately, the CDM Executive Board, reacted by clarifying that national policies implemented after November 2001 – e. g., Feed-in Tariffs – are not counted in the baseline calculations [UNFCCC 2005]. Therefore, the combination of CDM and Feed-in Tariffs is now possible without prejudicing CDM eligibility¹.

Nevertheless, the experience has shown that the current CDM-based support for renewable energy projects in developing countries is not sufficient to achieve the substantial push needed for renewable energies.

¹ The CDM Executive Board seems to have solved the problem of perverse incentives for developing countries governments. Yet, this is only true because they disabled their own additionality criteria. Under the current regulation, companies in developing countries that have implemented a Feed-in Tariff after the reference get additional CERs even though their project is profitable solely based on the Feed-in Tariff as long as the project would not have been profitable without the Feed-in Tariff.

1. First, the number of suitable projects is insufficient to trigger the establishment of national renewable energy industries and sustainable technology transfer. Economies of scale cannot be realised. Small renewable energy projects de-facto disqualify for the CDM in many cases because of the high CDM-related transaction costs (e.g. application, registration and monitoring procedures) and relatively low CER-potential.
2. Second, only the renewable energy technologies that are close to being economically attractive are promoted, because the projects need to be close to the Investment Additionality Threshold without external financing (see discussion above). Due to this fact, many renewable energy technologies with a large potential for future energy supply are not being supported, e.g. solar PV, geothermal, etc.
3. Third, the instability of the carbon price on the international market does not provide sufficient investment security for producers. However, research has shown that guaranteed returns on investment over a reasonable time period (typically > 15 years) are crucial to trigger investment from a heterogeneous group of potential producers.

The World Future Council strongly recommends that countries address these shortcomings by implementing Feed-in Tariffs in addition to the Clean Development Mechanism.

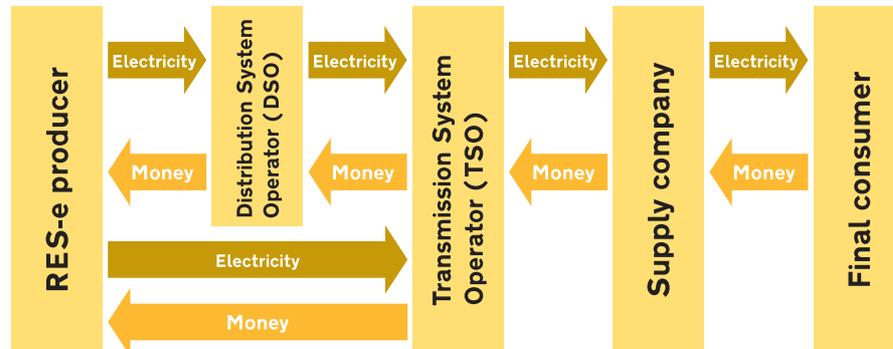
3 Combining Feed-in Tariffs (FIT) with the existing CDM

Under the current CDM regulations, a Feed-in Tariff does not alter the CDM project eligibility and will not negatively influence potential investors seeking to generate CERs. When combining CDM with a FIT, and calculating the tariff payment, legislators must decide for or against including the potential incomes from the Clean Development Mechanism. If these estimated revenues are not taken into consideration the project operators will be the big beneficiaries as they profit from both the Feed-in Tariff and the additional revenue from CER-sales. If they are taken into consideration operators just receive the Feed-in Tariff revenue.

Theoretically, one could argue that the additional income can be subtracted from the tariff payment and so the legislator can offer a lower tariff. However, the South African regulator decided not to include carbon revenues from CDM into the tariff calculation as the Kyoto Protocol will expire in 2012 and there is large uncertainty about the international climate protection regime in the post Kyoto era. CDM revenues are in any case very hard to anticipate due to CER price volatility. Therefore, the WFC recommends excluding potential revenues from CDM and ensuring that the right financial incentives are in place to protect investments in renewable energy production.

Feed-in Tariffs are generally financed by slight electricity price increases for the final consumer. The producer receives the tariff payment from the grid operator (legally obliged to connect and pay under the FIT system) who then passes on the costs to all consumers equally. While this set up

works very well in industrialised countries (e. g., Germany or Spain), direct replication would be difficult in developing countries, where the average income share spend on electricity is much higher and a “traditional” Feed-in Tariff would raise electricity costs for households even more. The WFC suggest addressing this sensitive socio-political issue by introducing a dedicated Renewable Energy Policy Fund.



Graph 2: General structure of Feed-in Tariffs

4

Financing Feed-in Tariffs through special Renewable Energy Policy Fund:

To avoid increases in electricity costs for households in developing countries **the World Future Council proposes to set up national Renewable Energy Policy (REP) fund that can cover the Feed-in Tariff rate. While some of the assets of such a fund should be mustered by the respective developing country itself, the majority should be provided by a global REP fund.** The concrete shares or developing country and REP-fund contribution could be determined based on criteria reflecting the development status of the respective country, e. g. GDP/capita, PPP/capita, HDI.

Part of the REP fund should always be financed by national revenue sources. This guarantees national political commitment and avoids absolute dependence on international donors. There are different options to provide this national contribution. An ideal solution for a developing country would be to tax CDM certificates generated within its borders and use these revenues to cover its share of the fund.



Graph 3: Structure of the proposed funding system for renewable energies

It has to be stressed, however, that financing through funds bears certain risks. For a sustainable development of renewable energies it is recommended to clearly separate the support instruments from the state budget. Otherwise a change in government or macro-economic data might lead to stop-and-go policies. Therefore, the sources of the fund have to be sufficient and steady. In addition, a fund model requires the fund manager to set aside large reserves as tariff payment is generally provided for a long time, i. e. 20 years. From this perspective, renewable energy projects can appear very expensive and thus put the whole support mechanism at risk.

Such a fund could also be used for the financing of Feed-in Tariffs in mini-grids. Mini-grids are interconnected small, modular generation sources in one small-scale distribution system. Originally, Feed-in Tariff schemes have been designed to support grid connected renewable electricity generation. Generally, this takes place in countries or regions with a well-established grid infrastructure. Many developing countries, however, have a large potential for the use of renewable energies but do not dispose of a highly interconnected electricity grid. Therefore, several researchers have tried to modify Feed-in Tariff schemes according to the requirements of mini-grids. Lately, the Joint Research Centre of the European Commission has proposed different ways of how to modify standard Feed-in Tariffs for mini-grid applications [JRC 2008].

5

The Global Renewable Energy Fund

5.1 Overall objective of the REP-Fund

The main reasons for proposing the REP-Fund's at the UNFCCC-level are that:

- a) the broader utilization of renewable energies is a key factor for reaching the ultimate objective of the Convention, and
- b) it can be an important element for satisfying the needs of Non-Annex I countries with regards to technology transfer. Numerous Non-Annex I countries have repeatedly highlighted the need for technology transfer in order to support their sustainable development.
- c) The national RE development backed by the fund might be accredited as a "Nationally Appropriate Mitigation Action (NAMA)" as currently discussed with a view to the post-2012 climate policy regime.

The operation of the Fund could be outsourced to a third body, also see chapter 5.3.

5.2 Financing of the REP-Fund

To finance the REP-Fund the World Future Council proposes two parallel initiatives. The first one is to use existing funds; the second proposal is to create the money needed in terms of Special Drawing Rights of the International Monetary Fund.

Stemming from the principle of ‘common but differentiate responsibilities’, the UNFCCC and the Kyoto Protocol foresee financial assistance from Parties with more resources to those less endowed and more vulnerable. Annex II Parties shall provide financial resources to assist developing country Parties implement the Convention. To facilitate this, the UNFCCC established a financial mechanism to provide funds to developing country Parties, which is operated by the Global Environment Facility (GEF). In addition, Parties have established three special funds: the Special Climate Change Fund (SCCF) and Least Developed Countries Fund (LDCF), under the Convention; and the Adaptation Fund (AF), under the Kyoto Protocol. These funds, however, have different scopes and are therefore not considered suitable for the proposed REP-fund. The GEF only finances certain projects if it is advised to promote these project types by the UNFCCC. As the programme focus shifts every few years, the trust fund does not really present a good solution for financing Feed-in Tariffs, whose sources have to be stable over many years. Hence, a new fund needs to be established.

The timing therefore is perfect: the financial mechanisms of the UNFCCC are currently under revision and will be amended at the negotiations, probably in Copenhagen later this year. With a view to designing the international post-2012 climate policy, developing countries requested to significantly increase the available funds and to establish funds for additional purposes.

The World Future Council therefore suggests integrating the idea of a REP-Fund into the post-2012 negotiations.

The REP-Fund could either be a separate fund, or part of a technology-transfer fund. This fund is currently been negotiated. In the latter case, a clear separation of budgets from other elements of the technology-transfer fund need to be ensured in order to ensure a proper functioning of the REP-fund.

Parties already have discussed several options for generating additional funding for the numerous funds/financing needs under negotiation. The REP-fund could be based on the same pillars, such as:

- CO₂-levies raised in/from Annex I countries,
- Auctioning of allowances in countries that have implemented national emissions trading schemes²,
- Levies on international transport; and
- a combination of these options.

² The German government for example started auctioning some of its EU-ETS allowances in 2008. It earmarked 120 Million Euros, or about 10% of the annual auction revenue (only 8.8% of the allowances are being auctioned thus far) for its International Climate Initiative, a fund that is financing mitigation and adaptation projects in developing countries and countries in transition [Climate Funds Update 2009].

Regardless the financing means for the REP-Fund, it must be ensured that a stable, long-term source of funding is created. As discussed, both receiving countries and operators/manufacturers of renewable energy technologies in developing countries need planning security in order to implement a sustainable FIT and healthy national RE economy.

Following should be considered:

- If an industrialized country raises a carbon tax it could use a portion of that revenue to cover its contribution to the REP-Fund.
- If it runs or participates in an emissions trading scheme it could use some of the revenue generated by auctioning the allowances.
- Extending the share of proceeds under the market mechanisms is not considered a feasible option for financing the REP-fund, as it would lower the revenues from CDM-projects and hence act counterproductively.
- The design of the REP-Fund must ensure a reliable, long-term (>15 years, as experience shows that this is the reasonable time period) source of financing for receivers in order to allow for the healthy establishment of a national RE market and thus to achieve a real change of national energy systems.

The second – and complementary – possibility to finance the REP is to create the necessary liquidity by issuing Special Drawing Rights of the IMF. Expanding the monetary base by “printing” new money (quantitative easing) is a practice of the last resort for central banks in times of scarce liquidity. It is rarely used since quantitative easing is in principle inflationary. But it is not inflationary if the monetary expansion comes hand in hand with the production of new goods since, in the long run, inflation always means that too much money is chasing not enough goods. Accelerating the transition to RE, in contrast, paves the path for new sustainable growth, instead of new overcapacities. Thus, a carefully managed issuing of new SDR is one solution to close a possible financing gap of the REP.

5.3 Operation of the REP-Fund

As mentioned earlier, the GEF’s Trust Fund has so far been the operating body for making renewable energy funding available in the UNFCCC context. Some of the limitations have been pointed out above.

Within the last few years the World Bank itself has become another important actor in financing climate change mitigation and adaptation. It operates different Climate Investment Funds to finance a large variety of measures. Besides different smaller initiatives the key pillars of the World Bank’s programme are the Strategic Climate Fund and the Clean Technology Fund. The latter might be relevant for the purposes outlined in this paper. Yet, its structure is not ideal to support a large-scale Feed-in Tariff programme. It is rather set up to give additional investment incentives to public and private investors for specific projects not only within the field of renewable energy but also for energy efficiency.

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