GET FiT Program

Global Energy Transfer Feed-in Tariffs for Developing Countries

April 2010

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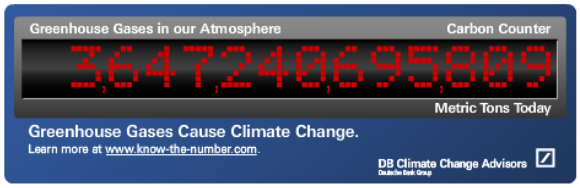

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Editorial Letter

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Over the past several years, developing world governments and international organizations have been seeking solutions for energy access for the underprivileged, energy scale-up for more developed countries and on top of this, how to do so in a clean and environmentally-friendly manner. Wherever we have encountered this discussion, the need for private capital has always been a key component. The question is how to generate scaled response through efficient Public-private Partnerships?

In our view, what is most often lacking is an understanding of the basic issues being faced literally on-the-ground by project financiers and developers. Hence, we have set out to identify these issues as clearly as possible and then, building on our own and others' previous work, provide a potential solution: Global Energy Transfer Feed-in Tariffs - GET FiT.

In essence, GET FiT is simple:

- International AAA-rated donors: national governments, development banks, and international climate-related funds provide premium payments for renewable energy in partnership with developing country governments. The payments would be structured in a way to support renewable energy technologies' progress towards grid parity. This is a major de-risking for investors and can establish fair and sufficient returns;
- Developing countries' governments and utilities administer the process and guarantee to pay generators at a rate based on the avoided costs of fossil fuel generation.
- An array of technical and risk mitigation programs will need to be aggregated and coordinated as well.
- Private investors then deploy capital in renewable energy projects.

However, the execution is complex, which our paper addresses.

We believe that while there are many options available for renewable energy deployment, advanced and well-designed feed-in tariffs can be applied to accelerate the scale-up of on-grid resources, and to promote energy access through mini-grids, while plotting a course to grid parity for the technologies. We have written extensively about feed-in tariffs in the developed world context already in our "Paying for Renewable Energy – TLC at the Right Price" whitepaper. In the developing world, any such policy proposal like this would need to be put in the context of national infrastructure development, energy regulatory frameworks, and plans such as Nationally Appropriate Mitigation Action plans (NAMAs), or what have been termed Low Carbon Growth Plans. Importantly, Public-private Partnerships can be adapted to FiT structures. In turn, these satisfy the key investor criteria we believe are critical to private sector investors: Transparency, Longevity and Certainty – TLC.

As we noted in our recently published whitepaper, "Global Climate Change Policy Tracker – The Green Economy: The Race is On," the developing world should not be left out of this race, both for the sake of the world's environment but more importantly, for the long-term viability of their own economies. The race is on – GET FiT!

We welcome feedback on this "Green Paper."

Summary for Policy Makers

Overview

The world faces two interrelated energy challenges that require serious capital mobilization: global CO_2 must be stabilized to avoid catastrophic climate change, and access to affordable, reliable and clean energy must be extended to the 1.5 billion people of the developing world in rural areas without grid connection to alleviate poverty and drive economic development. Renewable energies can help achieve these goals, in tandem with complementary efforts focusing on funding for energy efficiency, other low carbon energy options, and electricity grid expansion. Within this wider context of national plans, the Global Energy Transfer Feed-in Tariffs (GET FiT) Program is a concept to specifically support both renewable energy scale-up and energy access in the developing world through the creation of new international Public-private Partnerships. GET FiT would efficiently combine a fund of public money directed for renewable energy incentives with risk mitigation strategies and coordinated technical assistance to address project development and financing barriers. This combined approach would catalyze the supply of, and the demand for, private sector financing of renewable energy projects in both middle- and low-income countries, while also insuring maximum incentive capture at least cost to the funding partners. Importantly, it would provide what we see as crucial for private investors: Transparency, Longevity and Certainty – TLC. GET FiT would serve as a bridge to grid parity for renewable energy both by allowing developing countries to gain experience with renewable resources prior to break-even scenarios, and by adjusting incentive rates to reflect lower prices over time. This proposal is written from a standpoint of developers and financiers of renewable energy projects, highlighting the instruments which would help to mobilize private capital. The GET FiT concept could be flexibly adapted to specific national contexts, and could be launched on a bilateral, regional, or global basis. The race is on to create green economies and the developing world should not be left out.

Renewable Energy Financing

There is a broad range of policies in place that support renewable energy around the world, including mandates and standards, innovation policies, carbon pricing, and others[1]. The primary goal of GET FiT is to support renewable energy policies that reduce or mitigate investment risks, and consequently attract significant private capital to drive markets for commercially-available technologies. Feed-in tariffs, and similar performance-based incentives, have proven to be effective and efficient mechanisms for creating investor security and driving rapid renewable energy growth. The Stern Review on the Economics of Climate Change, for example, concluded that feed-in tariffs "achieve larger deployment at lower costs." By 2008, feed-in tariffs had driven 75% of PV capacity and 45% wind capacity worldwide. Although ~27 developing countries have adopted feed-in tariff policies, their designs and effectiveness vary widely, and some countries lack the financial strength, grid infrastructure, and/or regulatory frameworks for full policy implementation. GET FiT would partner with these and other developing countries to financially support policy structures that appropriately adapt best practices to national contexts, as part of broader, low-carbon development strategies (e.g. NAMAs)[2]. Such policies would include:

a) Primarily, the deployment of advanced feed-in tariff designs that target on-grid, commercialized, renewable resources at the right price[3] and that focus on the most appropriate technologies for local conditions.
b) Power purchase agreements as a pre-FiT regulatory mechanism in countries that face grid integration constraints, or for technologies that have a limited in-country track record, with the ultimate goal of the implementation of broader FiTs; and
c) The adaptation of FiT design principles to create performance-based incentives for decentralized multi-user energy generation, especially mini-grids, in rural areas not included in current grid expansion plans.

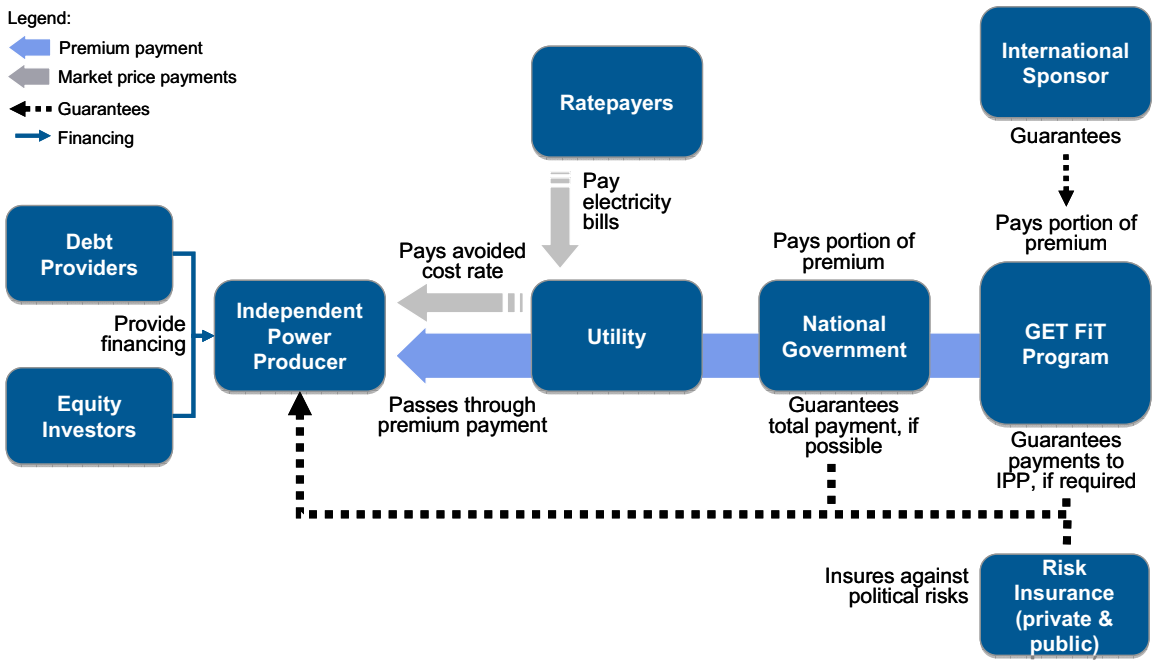
By supporting a range of policy structures, GET FiT could be tailored to work in different national contexts, including least developed countries, which may lack the grid infrastructure to initially support full feed-in tariffs. In each of the three cases

[1] *DBCCA (2009). Global Climate Change Policy Tracker: An Investor's Assessment. Available from http://www.dbcca.com/*
[2] *Nationally Appropriate Mitigation Action*
[3] *Advanced feed-in tariffs include cost/price discovery processes, the flexibility to respond to markets, and mechanisms to efficiently establish a pathway to grid parity while still operating within a transparent framework. See DBCCA (2009). Paying for Renewable Energy: TLC at the Right Price - Achieving Scale through Efficient Policy Design Available from http://www.dbcca.com/*

outlined above, the GET FiT Program would contribute public sector funds to share the above-market costs of renewable electricity with partner countries, whereas utilities would commit to purchasing electricity from generators at market price.[4] This stabilization of revenue streams would attract significant amounts of private sector capital from both domestic and international sources to build renewable energy projects. The payments would be adjusted to reflect market conditions over time and chart a pathway to grid parity.

Renewable Energy Risk Mitigation

In addition to providing direct incentives for renewable energy development, GET FiT would work with national and international partners to address a variety of risks and barriers faced by project developers, investors and financiers, including development risk, off-take and counterparty risks, political risk, market risk, reinsurance risk and currency risk. As can be seen in the graphic below, GET FiT would provide premium payments, passed through the national governments and utilities to independent power producers (IPPs). The utility would pay at least the market rate to the IPP, and there would be minimal additional burden on the electricity ratepayer. The transfer payments of the FiT premium to the IPP could be guaranteed by the national government, or by the GET FiT Program, depending on the national context and creditworthiness of the involved parties. An international sponsor would provide an ultimate guarantee for the GET FiT payments.[5] Political risk insurance entities, (e.g. MIGA, OPIC, private sector providers, etc.) could play a role in mitigating sovereign risk[6], and could also backstop governments' guarantees of renewable energy payment where necessary. Currency risk is also a concern in the global renewable energy market, and it is envisioned that the GET FiT portion of the payments would be made in hard currency, thereby significantly minimizing local currency risks.



[4] *The portion of the renewable energy premium payment borne by GET FiT would vary based on national conditions; a portion of the premium could also be recovered from national utility ratepayers.*
[5] *For decentralized energy generation, in particular mini-grids, a renewable energy service company (RESCO), owned either by the local community or by third party-developers replaces the utility in the chart shown above. The RESCO might also fully integrate both the independent power producer and utility functions shown in the graph above into a single entity, depending on the business model.*
[6] *The involvement of political risk insurance entities would depend on a wide range of factors, such as coverage eligibility criteria (i.e. national ownership requirements), each insurer's capacity to cover sovereign risk related to project development, government creditworthiness, etc.*

Summary for Policy Makers

Aggregating and Coordinating Existing Capacity Building and Technical Assistance

Direct financial support and risk mitigation strategies can create the financial conditions necessary to attract domestic and international capital. In the developing world, however, renewable energy projects can also face an array of non-financial challenges. GET FiT would seek to address these challenges by coordinating existing resources in the energy sector and directly involving domestic players in the Program's management and transactions. As can be seen in the graphic above, GET FiT would maximize the involvement of domestic government and utilities in the management of the program in order to reinforce the development of renewable energy expertise and capacity. GET FiT would also seek to create the conditions for private sector actors – such as local banks and energy service companies – to establish track records with renewable energy finance, development, and operations. This could be accomplished both through direct partnerships and through indirect effects, such as structuring feed-in tariff policies that create stable demand for the services of local contractors.

The combination of sustainable local involvement, with focused and appropriate technical assistance could enable developing countries to capture the full economic and social potential of the GET FiT strategy, in particular with regard to job creation, the expansion of technical know-how, and domestic market development. In order to strengthen demand for financing and to address the non-financial barriers to renewable energy in the developing world, GET FiT would help source technical assistance and capacity building focusing on areas such as:

- Advanced feed-in tariff policy design, including initial rate setting and ongoing review
- Grid capacity and expansion cost analyses, resource assessments, project feasibility studies, and integrated energy planning processes for governments and government agencies,
- Grid management and renewable energy integration strategies for utilities,
- Financial due diligence and risk mitigation strategies for local financiers, and
- Renewable energy project development, system construction, and operation and maintenance services for local private sector players.

Of this broad menu of activities, GET FiT would directly fund some technical assistance (e.g. feed-in tariff policy and rate design), but would primarily focus on aggregating and coordinating existing technical assistance resources from multi-lateral, bi-lateral, and private sector partners.

The challenges addressed by the GET FiT Program's approach are summarized in the table below:

Barrier	GET FiT Solution
Rapid scale-up of renewable energy may not be affordable for developing countries, and many existing policies do not offer sufficient payment levels to generators	GET FiT will support the payment of above-market premiums for renewable energy projects through feed-in tariffs or similar policy mechanisms
Many developing countries face grid or other renewable energy integration constraints which do not allow them to implement broad FiTs	In countries that only limited capacity for on-grid resources, GET FiT will also support the development of transparent "lighthouse" PPAs in order to build an early in-country technology track record and prepare for a broader FiT regulation. During the "PPA phase", Get FiT will continue to work with governments on grid expansion and renewable energy integration plans.
Renewable energy projects have trouble accessing affordable capital because of a broad range of risks	GET FiT will mitigate risks for developers, financiers, and investors by creating financeable incentives, backed by appropriate guarantees
There are a wide range of technical, regulatory, legal, and political barriers to renewable energy deployment that cannot be resolved through policy design alone	GET FiT Program will provide and coordinate targeted technical assistance focusing on feed-in tariff policy design, price discovery, rate setting, and policy review. The Program will actively aggregate and coordinate energy-related capacity building efforts of other public and private institutions
FiTs to date have targeted energy access in a limited regard (e.g. Ecuador has a FiT for off-grid systems but it is not fully operational)	GET FiT Program will support the development of off-grid solutions, such as mini-grids, in remote areas of developing countries

Summary for Policy Makers

Program Impact

Renewable energy investments in the developing world yield lower carbon abatement costs than in the developed world, while also achieving a broad range of additional social, economic, and environmental objectives. Based on a preliminary analysis, a 3 bn US$ commitment under the GET FiT scheme could facilitate:

- Over 1 GW of newly installed on-grid and off-grid renewable energy capacity;
- The abatement of approximately 100 million tons of CO_2 emissions over funded projects' lifetimes, which would translate into abatement costs of approximately 30 US$ per ton CO_2[7]; and
- Access to affordable, clean, and reliable electricity for over half a million people in rural areas, assuming that 60 MW of off-grid renewables are included in the portfolio of funded generation technologies.
- We would expect around 4 US$ billion of project finance capital to be attracted to such an investment program.

Governance and Capitalization

The GET FiT concept is intended to be a flexible, but detailed, program design that could be managed and funded through a number of different existing and/or new channels. At this stage of concept development, neither capitalization strategies nor governance structure are addressed in detail. To a large extent, these issues will be shaped by the way in which the GET FiT Program is ultimately adopted and implemented. One of the original guiding principles of the GET FiT concept was that it should serve as a template for parties seeking near term action on renewable energy development in the post-Copenhagen environment. It is conceivable that the GET FiT template could be deployed as a truly global structure as proposed in recent concept papers from international organizations. It may be challenging, however, to deploy and fund such a global structure in the near-term. Alternatively, it is also possible that GET FiT could be implemented in phases, with the initial phase prioritizing near-term bi-lateral or regional implementation opportunities. There are currently several ongoing or proposed bi-lateral national partnerships focusing on climate change and renewable energy technology deployment in developing counties that currently have feed-in tariff policies. South Africa, for example, is exploring working with Germany, whereas Kenya has announced plans to work Japan. Such bilateral partnerships could provide an avenue for deploying the GET FiT concept in an institutionalized way. It might also be possible to form specific multi-lateral partnerships in support of target regions.

Depending on the ultimate structure of the GET FiT Program, there are a wide range of potential capitalization strategies that could be pursued (e.g. fast start funds, international carbon markets, national donor strategies, bonds, etc.). A key funding challenge will be how best to secure the funds necessary to guarantee long-term incentive payments to projects. It is unlikely that national donors would be able to provide the upfront the capital necessary for the entire projected incentive payment. As a result, it may be necessary for the GET FiT fund to explore funding opportunities in bond markets secured by commitments from donor organizations and other revenue streams through long-term annual commitments.

[7] *Based on preliminary modelling conducted by Deutsche Bank; the results of this analysis will vary, strongly depending on assumptions about baseline emissions, technology mix, incentive levels, and the split between on-grid and off-grid capacity. Conservative assumptions have been chosen for the decentralized projects, taking into account required technical assistance and length of implementation process.*

Chapters

The Challenge of Renewable Energy in the Developing World: A Project Level Perspective

Chapter Overview: The challenge of renewable energy in the developing world

The world faces two interrelated energy challenges that require serious capital mobilization: global CO_2 must be stabilized to avoid catastrophic climate change, and access to affordable, reliable and clean energy must be extended to the 1.5 billion people of the developing world in remote areas without grid connection to alleviate poverty and drive economic development. Renewable energies can help achieve these goals, in tandem with complementary efforts focusing on funding for energy efficiency, other low carbon energy options, and electricity grid expansion. Although there is a vast potential for renewable energy in the developing world, large-scale renewable energy deployment faces significant challenges and barriers. When looked at from the perspective of a developer and financier, these can generally be grouped into four categories: (1) cost competitiveness, (2) technical and engineering concerns, (3) project development, and (4) financing. This Chapter provides an overview of these barriers and details their characteristics, their interactions, and types of potential solutions.

Renewable energy can play a key role in addressing the challenges of climate change and energy access in the developing world.

- CO_2 levels must be stabilized in order to avoid catastrophic climate change.
- 1.5 billion people do not have access to electricity in the developing world.
- Developing countries are seeking to expand on-grid generation capacity to serve growing load, and to electrify rural and remote areas.
- Renewable energy can, through efficient policy design that includes Public-private Partnerships:
  - Meet rising energy demand, diversify generation portfolios, reduce dependency on (expensive) energy imports, and mitigate climate change when integrated into national and regional grids.
  - Provide access to affordable, reliable, and clean energy in remote rural areas to alleviate poverty and drive economic development.
- Renewable energy deployment, however, faces a series of key regulatory, infrastructure, ownership, and policy barriers, which may vary depending on project size, technology, application, and geography.
- Besides renewable energy scale-up, which is a central theme of this report, efforts will be required to support energy efficiency, other low carbon energy options, and electricity grid expansion to maximize the impact of renewable energies. In particular, the establishment of internationally connected grids could mitigate concerns over renewable energy intermittency and reduce installed capacity requirements.
- There are three electricity system structures that need to be considered: large-scale grids, smaller regional grids and decentralized micro or mini-grids.
- Any specific proposal like this should be put in the context of an overall plan for a country's energy system, often expressed as a NAMA or Low Carbon Growth Plan.

Although there is a vast potential for renewable energy in the developing world, large-scale renewable energy deployment faces significant challenges and barriers. These can generally be grouped into four categories: cost competitiveness, technical and engineering, project development, and financing. A sample of these barriers is included below in the form of questions that might be asked by project developers and investors when considering renewable energy opportunities in a given country.

(1) Cost Competitiveness

- Are renewable energy technologies cost-competitive with traditional electricity generation technologies and/or are incentive programs in place to level the playing field?

(2) Technical and engineering concerns

- Is there a stable grid that a renewable energy project could connect to? Are grid data readily available to developers from utilities? Are there incentives in place to encourage utility information sharing with independent power producers (IPPs)?
- Does the grid have the capacity to absorb power from new generation? Is there a development plan in place to build or strengthen the grid, especially if the grid is constrained?
- Are renewable energy resource assessments available to project developers or must they perform their own?
- Are grid operators able to integrate and manage renewable energy power plants? Is there a risk that a renewable energy generator will be disconnected as a result of a lack of operator experience with distributed generation or as a result of power failure?
- Are there experienced local plant managers or service providers that can operate, maintain, and monitor installations to ensure they operate optimally (and generate expected revenues)?
- Is renewable energy technology and/or component manufacturing present in the country?

(3) Project development concerns

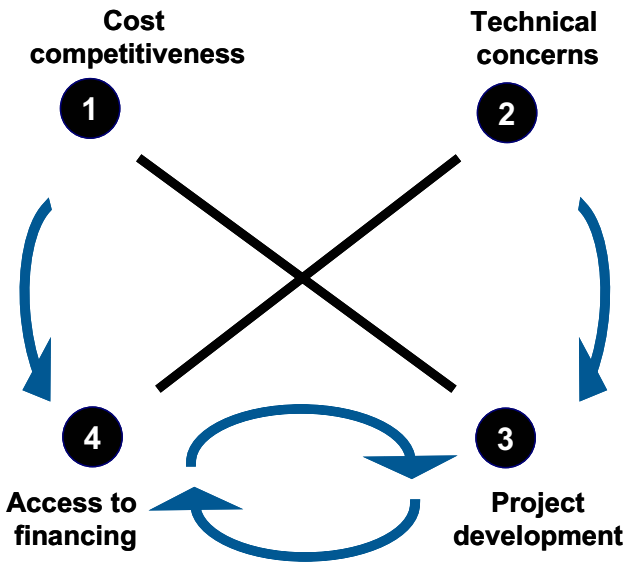
- Do utilities and/or local project developers have experience working with feed-in tariff policies, power purchase agreements (PPAs), and/or standard offer contracts?
- Are there legal mechanisms in place for developers during contract negotiations, and in the event of lawsuits/appeals?
- Are transparent and clear rules in place for projects to connect to the grid (interconnection standards)?
- Does the utility regulatory structure create barriers for project developers, or for certain types of ownership structures (e.g. independent power producers, community ownership, etc.)?
- Do project developers have sufficient financial resources to finance the development phase?

(4) Financing concerns

- Is the risk-return profile attractive for equity and debt investors? Are risk-mitigating measures in place for the major risk categories?
- Do policies and regulations mitigate off-take risk and offer Transparency, Longevity, and Certainty (TLC) to investors? Are project counterparties creditworthy (i.e. are utilities creditworthy, is the source of incentive payments considered creditworthy)?
- Would projects be exposed to political risk, such as government instability? Do investors have access to low-cost political risk insurance? To what extent is political risk insurance necessary and available to guarantee payments for electricity?
- Is corruption a factor in the country?
- Is currency risk low enough that it can be readily absorbed? Are hedging instruments, or is inconvertibility insurance, available?
- Are local banks familiar with renewable energy technology and policy or do they need assistance acquiring this expertise? Do they have sufficient knowledge of or capacity to deal with regional or international banks? Do local banks have the necessary knowledge base (valuing, auditing, etc) to evaluate and finance renewable energy projects? Do local financial institutions have the capacity to lend to projects? Do they have experience lending to decentralized energy systems, such as mini-grid applications?
- Do international banks provide financing in the country?

The Challenge of Renewable Energy in the Developing World: A Project Level Perspective

The barriers to renewable energy projects in developing countries constrain both the demand for, as well as supply of financing. Moreover, the barriers are interrelated and can be mutually reinforcing.

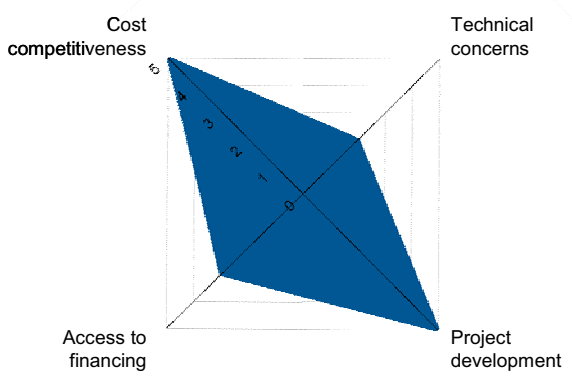


- The renewable energy market in developing countries is characterized by a lack of access to financing (i.e. supply of financing) and limited project development activity (i.e. demand for financing), with each factor activating and compounding the other:
  - Given the low probability of finding investors, many project developers cannot afford to make the upfront investment in feasibility studies and project development activities.
  - Investors that would like to be more active in developing countries are unable to do so because there is a lack of well-developed projects.
- Few renewable energy technologies are already cost competitive with conventional alternatives. In cases where they are cost-competitive (e.g. when replacing diesel generators in remote applications), there is a lack of financial security necessary to attract capital.
- Many developing countries' governments subsidize electricity generation and fossil fuel prices, which further decreases the potential cost-competitiveness of renewable generators.
- Since the barriers are interrelated, strategic interventions must be coordinated to change the dynamic. Targeting both supply and demand for financing will accelerate the development of renewable energy markets in developing countries.

The Challenge of Renewable Energy in the Developing World: A Project Level Perspective

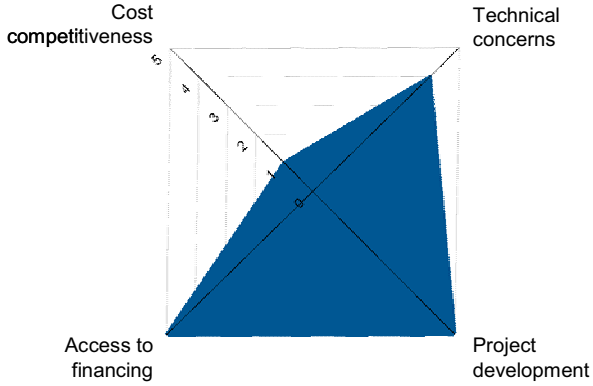
Barriers to renewable energy development can differ depending on project size, technology, application, and geography. The graphs below illustrate how the relative severity of different barriers can vary from the developer perspective using on-grid and off-grid PV installations as examples. The graphs, which rank each of the barriers on a scale from 0 to 5 (0 = no concern and 5 = serious concern), are based on Deutsche Bank surveys of project developers active in developing world markets.

Example 1: Large, grid-connected PV project



- Large, grid connected PV power plants can operate at an average LCOE of 20-40$c/kWh and are therefore currently one of the least cost competitive sources of renewable energies. PV's high costs, however, also mean that the technology has a substantial potential for cost reductions over the next few years.
- Financing is available, but many international grant funding facilities have difficulty investing in PV because of limited project development pipelines.
- Project development is constrained by high opportunity costs of international developers, and a lack of technical expertise among local players.

Example 2: PV Mini-grid

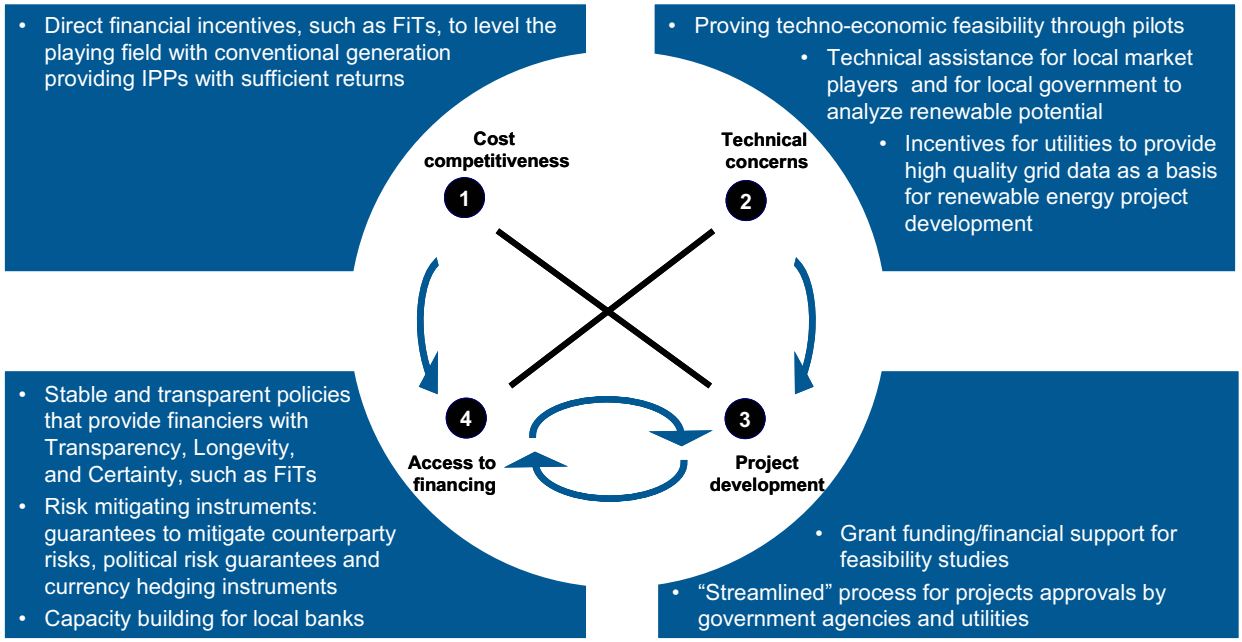


- Mini-grid PV applications are competitive with small scale diesel-generated electricity.
- Such projects however must be well designed to meet the requirements of local communities.
- Substantial local involvement is required to secure community buy-in. Local project developers lack technical expertise, and projects are often too small to attract attention of international developers.
- Financing can be difficult because project sizes may be too small for large lenders, and/or because local banks do not have a track record in mini-grid and/or PV financing. If local banks do have an established renewable energy financing track-record, they may not want to assume the off-take risk, depending on off-taker volume risk and creditworthiness.

The above example underpins the fact that the type of support required to accelerate renewable energy deployment in developing countries varies depending on the specific context. While financial support and risk mitigation will be crucial for large, grid-connected projects, focused capacity building will also have to be brought to bear in order to support both on-grid projects and the development and realization of mini-grid applications.

The Challenge of Renewable Energy in the Developing World: A Project Level Perspective

Renewable energy barriers require coordinated policy, financial and technical assistance strategies. The graphic below links the challenges described on pages 11 and 12 with potential financial, risk mitigation, and technical assistance strategies in order to illustrate the mix of solutions that could be coordinated.



Targeting each of the four categories of barriers will maximize the outcomes of any broader policy initiatives. The actual mix of instruments applied to resolve barriers will need to vary from country to country depending on factors such as in-country technical know-how, the maturity of the domestic renewable energy sector, the strength of national and regional financial institutions, and the capacity of government and utilities to support and manage renewable energy programs.

The GET FiT Solution

Chapter Overview: The GET FiT Solution

The Global Energy Transfer Feed-in Tariffs (GET FiT) Program is a concept to address some of the barriers described in the preceding Chapter by addressing key risks and making renewable energy projects bankable. The Program would support both renewable energy scale-up and energy access in the developing world through the creation of new international Public-private Partnerships. GET FiT would combine a program of public money for renewable energy incentives with risk mitigation strategies and coordinated existing technical assistance to address project development and financing barriers. This combined approach would catalyze the supply of, and the demand for, private sector financing of renewable energy projects in both middle- and low-income countries. GET FiT would serve as a bridge to grid parity for renewable energy both by allowing developing countries to gain experience with renewable resources prior to break-even scenarios, and by adjusting incentive rates to reflect lower prices over time. This proposal is written from a standpoint of developers and financiers of renewable energy projects, highlighting the instruments which would help to mobilize private capital. This Chapter describes the goals of the GET FiT, including appropriate adaptation of feed-in tariff best practices to specific national contexts, the integration of renewable generation into national and regional grids, and support for decentralized energy solutions.

The GET FiT concept seeks to provide a solution for some of the barriers to renewable energy described in the previous Chapter. GET FiT envisions a global program that includes public money to support and expand feed-in tariffs in the developing world, and the adaptation of advanced feed-in tariff best practices to serve national goals for energy access and renewable energy scale-up. GET FiT adopts a bottom-up project development / investor perspective and builds off high-level global feed-in tariff program proposals that were developed by international bodies and NGOs during 2008-2010

To date, global feed-in tariff funds and programs have been proposed by, among others:

- Ad Hoc Working Group on Long-term Cooperative Action (under the UNFCCC)
- UN Department of Economic and Social Affairs
- European Renewable Energy Council and Greenpeace
- World Future Council
- World Wind Energy Association
- International Renewable Energy Alliance
- Project Catalyst
- European Commission Joint Research Centre

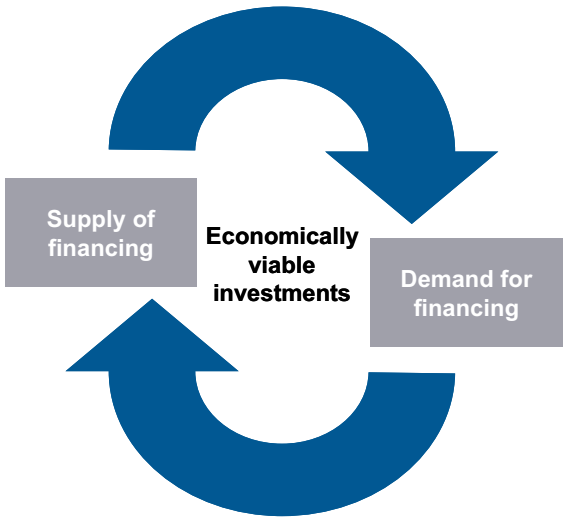
- Most of these recent proposals share the following characteristics:
  - They are high-level concepts developed in advance of the Copenhagen conference.
  - The majority recommend providing long-term premium feed-in tariff payments, although some also propose that low-interest loans, technical assistance, and other forms of support be delivered in tandem.
  - Their capitalization strategies focus on carbon emissions trading revenues (emissions auctions, carbon tax proceeds), national donations, and/or multi-lateral bank sponsorship.
  - They envision being embedded in the existing international infrastructure (e.g. Global Environmental Facility, World Bank Climate Technology Fund, etc.).

- The GET FiT Program builds upon the high-level concepts contained in proposals such as these and explores implementation details in a way that reflects the concerns of project developers, owners, and financiers.
- More detailed summaries of these recent proposals can be found in Appendix I.

The GET FiT Solution

The GET FiT mission is to:

- Support renewable energy scale-up and energy access in the developing world through the creation of new international Public-private Partnerships.
- Catalyze the supply of, and the demand for, private sector financing of renewable energy projects in both middle- and low-income countries, and create economically viable renewable energy investment opportunities by:
  - Supporting national renewable energy policies that mitigate investment risks, and attracting significant private capital as part of broader, integrated low-carbon growth plans.
  - Adapting international renewable energy policy best practices to the developing country context to support both on-grid and off-grid development.
  - Strengthening the ability of the local private sector to expand development activity by offering technical assistance.
- Serve as a bridge to grid parity for renewable energy by:
  - Allowing developing countries to gain experience with renewable resources in advance of break-even scenarios; and,
  - Adjusting premium payments to reflect lower prices over time.



GET FiT would focus on three strategies to achieve its mission and address barriers:

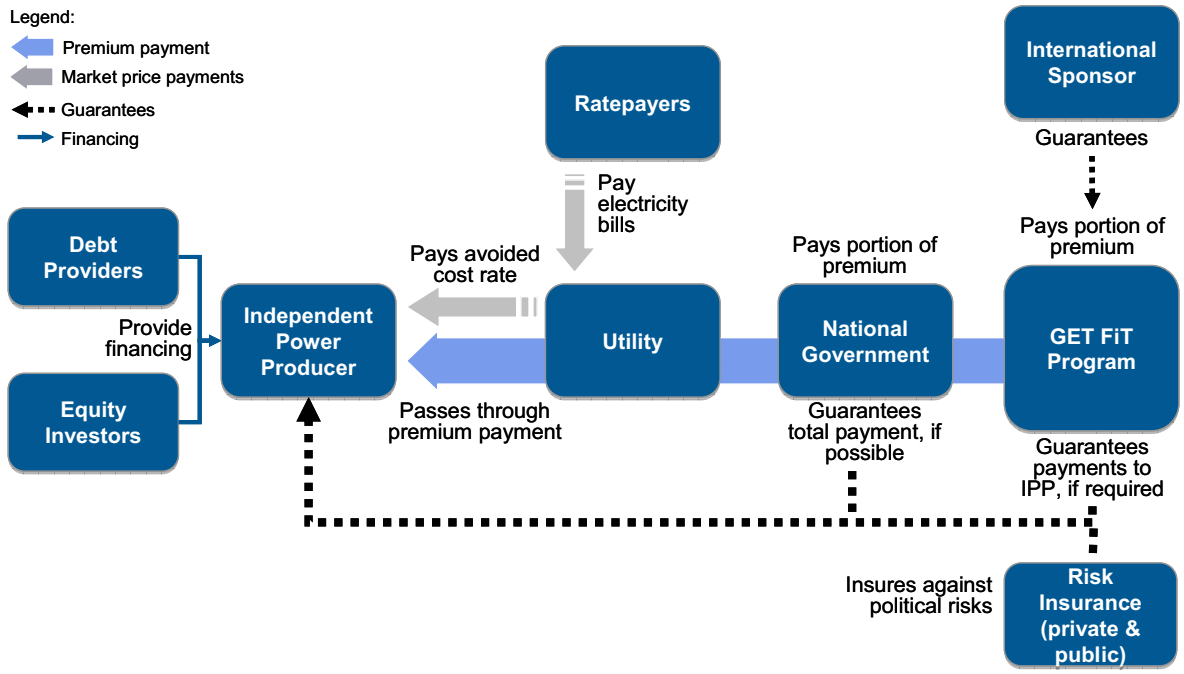
- The creation of an international program(s) that provides direct incentives to renewable energy projects, channeled through national policies and institutions. The incentives would be structured in partnership with national governments to reflect advanced feed-in tariff design best practices that are adapted to the national context.
- The establishment and coordination of risk mitigation strategies that draw on the strengths of international organizations, and maximize the involvement of national and local institutions.
- The aggregation and coordination of existing technical assistance programs targeting non-financial barriers.

The GET FiT Program would be structured to address a broad range of risks and barriers faced by investors and financiers making renewable energy projects bankable.

- As seen in the graphic below, the GET FiT Program would pay a portion of the feed-in tariff premium, which is channeled through the national government and the local utility, thereby relieving ratepayers of a large proportion of the incremental cost of renewable electricity. We discuss the burden sharing issues for paying the premium in more detail later in the paper.
- The utility would pay IPPs the market prices for power.
- The GET FiT Program would encourage national governments to guarantee utility payments, to the extent they are able to do so.

The GET FiT Solution

- The GET FiT Program could also guarantee utility payments (in addition to guarantees by the government), or have this risk assumed by public or private insurers.
- The political risk and breach of contract insurance sector could also secure both the government guarantees of utility payments and the utility payments themselves, as necessary.
- Counterparty risk for GET FiT portion of premium payment would be substantially mitigated by the AAA rating of the Program's international sponsor(s).



These elements are discussed in further detail in the following sections.

GET FiT will tailor its strategies to support renewable energy development in different contexts. The core focus of GET FiT is to provide incentives through feed-in tariff policies, but the Program would also support alternative policy structures that meet FiT design best practices (to the extent feasible) as a bridge to the implementation of full-scale FiTs. Such alternative policies will likely be most applicable to the least developed countries.

GET FiT will support:

a) Primarily, the deployment of advanced feed-in tariff designs that target on-grid, commercialized, renewable resources at the right price[8], and that focus on the most appropriate technologies for local conditions.

b) Power purchase agreements as a pre-FiT regulatory mechanism in countries that face grid integration constraints, or for technologies that have a limited in-country track record, with the ultimate goal of the implementation of broader FiTs; and

c) The adaptation of FiT design principles to create performance-based incentives and/or guarantees for decentralized energy generation, especially mini-grids, in rural areas not included in current grid expansion plans.

[8] *Advanced feed-in tariffs include cost/price discovery processes, the flexibility to respond to markets, and mechanisms to efficiently establish a pathway to grid parity while still operating within a transparent framework. See DBCCA (2009). Paying for Renewable Energy: TLC at the Right Price - Achieving Scale through Efficient Policy Design Available from http://www.dbcca.com/*

The GET FiT Solution

GET FiT would seek to integrate renewable energy resources into electricity grids of different scales in order to drive renewable energy scale-up and energy access. GET FiT would target national, regional and mini-grids, recognizing that each grid type would require specific technological and policy solutions. The graph below provides an illustrative comparison of these different grid types according to several key criteria.

	Strengthening Existing Grids		Rural Electrification
	Large, grid-connected renewable energy projects in national or supranational grids	Grid-connected renewable energy projects in regional grids	Multi-user decentralized systems (e.g. mini-grids)
Current sources of electricity	• Broad generation mix comprising also "cheap" technologies like hydro and coal	• Often substantial diesel and crude oil generator capacity	• Small scale diesel generators on single user level • No access to utility-managed grids
LCOE based on current generation mix	• <$0.15/kWh • End user prices often subsidized	• $0.20-0.40/kWh • $0.15-0.20/kWh • End user prices often subsidized	• $0.35-1.50/kWh
Abatement potential (per kWh and total)	Medium High	Medium-to-high Medium-to-high	High Medium
Cost competitiveness of renewable energy	Low	Medium	High
Social/economic impact	Low-to-medium	Low-to-medium	High

Note: LCOE data calculated on the basis of simplified assumptions regarding diesel generator efficiency and current diesel prices as well as publicly available data for other technologies.

- While large grid-connected renewable energy projects offer the highest absolute abatement potential, mini-grids have a substantially higher abatement potential per kWh, and are more likely to provide direct social and economic benefits by enabling energy access and creating new economic development opportunities.
- Population density, projected electricity consumption, and distance from the grid will be among the factors that determine the most appropriate GET FiT strategy for a given country or region.
- Although GET FiT will seek to support multi-user decentralized energy applications, in anticipation of eventual connection with national or regional utility-managed grids, the Program will not directly support single-user, off-grid systems (e.g. stand-alone solar home systems) because these types of installations are more appropriately served by other incentive mechanisms.

The GET FiT Solution

Summary of the GET FiT Program Strategies

The graphic below summarizes each of the major barriers that the GET FiT Program would target, as well as the proposed solution.

Barrier	GET FiT Solution
Rapid scale-up of renewable energy may not be affordable for developing countries, and many existing policies do not offer sufficient payment levels to generators	GET FiT will support the payment of above-market premiums for renewable energy projects through feed-in tariffs or similar policy mechanisms
Many developing countries face grid or other renewable energy integration constraints which do not allow them to implement broad FiTs	In countries that only limited capacity for on-grid resources, GET FiT will also support the development of transparent "lighthouse" PPAs in order to build an early in-country technology track record and prepare for a broader FiT regulation. During the "PPA phase", Get FiT will continue to work with governments on grid expansion and renewable energy integration plans.
Renewable energy projects have trouble accessing affordable capital because of a broad range of risks	GET FiT will mitigate risks for developers, financiers, and investors by creating financeable incentives, backed by appropriate guarantees
There are a wide range of technical, regulatory, legal, and political barriers to renewable energy deployment that cannot be resolved through policy design alone	GET FiT Program will provide and coordinate targeted technical assistance focusing on feed-in tariff policy design, price discovery, rate setting, and policy review. The Program will actively aggregate and coordinate energy-related capacity building efforts of other public and private institutions
FiTs to date have targeted energy access in a limited regard (e.g. Ecuador has a FiT for off-grid systems but it is not fully operational)	GET FiT Program will support the development of off-grid solutions, such as mini-grids, in remote areas of developing countries

The GET FiT Solution: Adapting FiT Design for the Developing World

Chapter overview: Adapting FiT design for the developing world

There is a broad range of policies in place that support renewable energy around the world, including mandates and standards, innovation policies, carbon pricing, and others. The primary goal of GET FiT is to support renewable energy policies that reduce or mitigate investment risks, and consequently attract significant private capital to drive markets for commercially-available technologies. Feed-in tariffs, and similar performance-based incentives, have proven to be effective and efficient mechanisms for creating investor security and driving rapid renewable energy growth. The Stern Review on the Economics of Climate Change, for example, concluded that feed-in tariffs "achieve larger deployment at lower costs." By 2008, feed-in tariffs had driven 75% of PV capacity and 45% wind capacity worldwide. Although ~27 developing countries have adopted feed-in tariff policies, their designs and effectiveness vary widely, and some countries lack the financial strength, grid infrastructure, and/or regulatory frameworks for full policy implementation. GET FiT would partner with these and other developing countries to financially support policy structures that appropriately adapt best practices to national contexts, as part of broader, low-carbon development strategies (e.g. NAMAs) . This Chapter provides an overview of how feed-in tariffs can be adapted to the developing world context, including how feed-in tariff best practices might be utilized to structure alternative policy mechanisms in circumstances where countries may not be ready for broader FiT policies. The key goals for adapting feed-in tariff best practices are to generate appropriate volume response and renewable energy scale-up, while driving down costs towards grid parity.

Defining Feed-in Tariffs: TLC at the Right Price

- Feed-in tariffs (FiTs) set a premium price for generated renewable electricity and pay for each kilowatt-hour (kWh) of power fed onto the grid.
- These minimum price guarantees are typically higher than the conventional electricity market price to ensure a favorable but fair return on investment.
- FiTs can be structured either by setting a fixed price for power generated by eligible sources and fed onto the grid, or by setting a fixed premium rate, which is paid on top of the market price, for power generated by eligible sources and fed onto the grid.

The core elements of feed-in tariff policies are:

1. A defined set of eligible technologies.
2. Tariff pricing differentiated by technology.
3. A standard offer (frequently expressed through a contract) for a guaranteed payment for renewable electricity generation.
4. Guaranteed interconnection for all renewable generators.
5. Payments over a long timeframe.

Advanced Feed-in Tariffs:

- Support a mandated renewable energy target by creating Transparency, Longevity and Certainty (TLC) for an investor with a pathway to grid parity, subject to transparent price discovery.
- A detailed matrix of advanced FiT design elements, based on DBCCA analysis of developed countries, is included below. A discussion of how these design elements can be adapted to developed countries is then included on page 25.

The GET FiT Solution: Adapting FiT Design for the Developing World

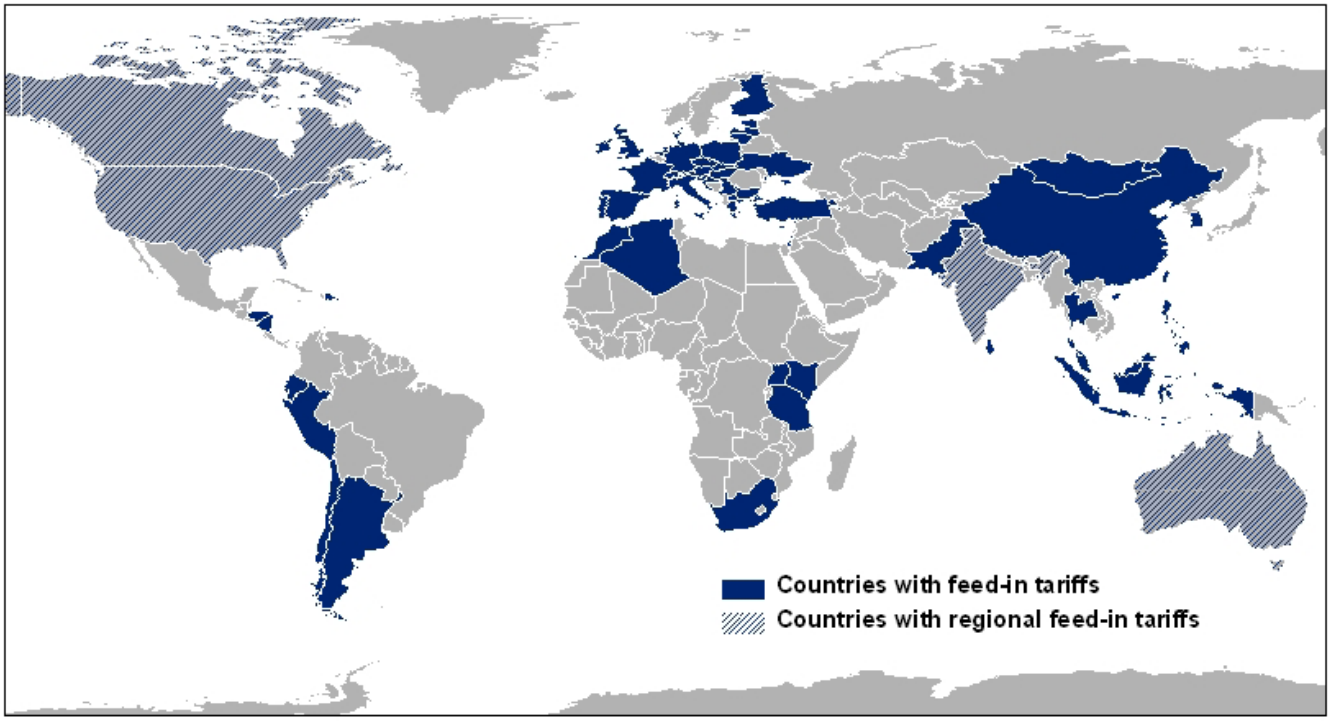
Illustration of best practice advanced FiT for developed countries

FIT Design Features	Key Factors	TLC at the Right Price
Policy & Economic Framework	"Linkage" to mandates & targets	Yes
Core Elements	Eligible technologies	All renewables eligible
	Specified tariff by technology	Yes
	Standard offer/ guaranteed payment	Yes
	Interconnection	Yes
	Payment term	15-25yrs
Supply & Demand	Must take	Yes
	Who operates (most common)	Open to all
Fixed Structure & Adjustment		
How to set price	Fixed vs. variable price	Fixed
	Generation cost vs. avoided cost	Generation
	IRR target	Yes
How to adjust price	Degression	Yes - ending at LCOE breakeven
	Periodic review	Yes
	Grid parity target	Yes
Caps	Project size cap	Depends on context
Policy interactions	Eligible for other incentives	Yes - eligible to take choice
Streamlining	Transaction costs minimized	Yes

Feed-in tariffs can provide the foundation for a strong, transparent, and financeable regulatory framework. Investors look for 3 key policy elements: Transparency, Longevity and Certainty. DB Climate Change Advisors has concluded that well-designed feed-in tariffs, which incorporate the design elements listed in the figure above, can efficiently deliver TLC at the right price. The concept of TLC is discussed in greater detail in DBCCA's report, "Global Climate Change Policy Tracker: An Investor's Assessment." A detailed analysis of how feed-in tariff policies specifically can be structured to provide TLC can be found in "Paying for Renewable Energy: TLC at the Right Price - Achieving Scale through Efficient Policy Design." Both reports, which were published in 2009, are available online from http://www.dbcca.com/research.

The GET FiT Solution: Adapting FiT Design for the Developing World

As can be seen in the graphic below, feed-in tariffs are prevalent around the world, in both developing and developed countries. Feed-in tariffs have driven a significant proportion of global renewable energy generation capacity, but the majority of this capacity has been concentrated in the developed world to date, and primarily in Europe.



Note: This graphic is based on the REN21 global policy update, as well as subsequent interviews with in-country experts.

- FiTs have been demonstrated to "achieve larger deployment at lower costs," compared to other policy types, according to the Stern Report on the Economics of Climate Change.
- FiTs supported 75% of global PV capacity and 45% of global wind capacity through 2008. The large majority of this capacity is concentrated in developed countries, and particularly in Europe where both Germany and Spain have driven significant wind and photovoltaic market growth using feed-in tariffs during the past decade. These figures take into account not only current feed-in tariffs, but also capacity installed under some feed-in tariff regimes which are no longer in place, such as those in Denmark and in Brazil.[9] For a breakdown of global wind and PV capacity generated by feed-in tariffs as of 2008 please refer to Appendix II.

[9] *These figures do not include the Public Utilities Regulatory Policy Act in the United States, as it was implemented in California through Standard Offer No. 4. Standard Offer No. 4 is frequently referenced as the first example of a feed-in tariff policy (e.g. Mendonça, M., Jacobs, D. & Sovacool, B. (2009). Powering the green economy: The feed-in tariff handbook. London: Earthscan). Under PURPA 17,172 MW of renewable energy capacity were installed by 1996, including 1,670 MW of wind.*

The GET FiT Solution: Adapting FiT Design for the Developing World

Feed-in tariffs are in place in ~27 developing countries, but designs and impact vary widely, as do the economic conditions in each country. Some of the national policy regimes listed in the table below, for example, target small portfolios of technologies or single technologies. GET FiT would seek to work with these and other countries to strengthen existing policy regimes through direct financial support and to advise governments on obtaining technical assistance.

Low income, not creditworthy (IDA)	Low income, creditworthy (Blend)	Middle income, creditworthy (IBRD)		
■ Kenya	■ Armenia	■ Algeria	■ Indonesia	■ Poland
■ Honduras	■ India	■ Argentina	■ Macedonia	■ Serbia
■ Mongolia	■ Pakistan	■ Bulgaria	■ Malaysia	■ South Africa
■ Nicaragua		■ Chile	■ Morocco	■ Thailand
■ Sri Lanka		■ Dominican Rep.	■ Peru	■ Turkey
■ Uganda		■ Ecuador	■ Philippines	■ Ukraine

Source: World Bank, 2010; REN 21, 2010

- Some countries with feed-in tariffs focus only on the cheapest renewable energy sources instead of those that would be the most sustainable and/or appropriate in the mid-term. Financial support for these feed-in tariffs could allow countries to expand the menu of eligible resources targeted by their feed-in tariffs.
- See Appendix III for detailed, representative summaries of developing country FiT designs based on a version of the Deutsche Bank TLC matrix (see page 25) that has been adapted to take into account policy considerations specific to developing countries.

Feed-in tariff design best practices can be readily adapted to the developing world context. In addition to providing direct financial assistance to support feed-in tariff premiums, GET FiT would also provide FiT design support. Design support activities, however, would take into account the fact that feed-in tariff policies in developing countries could require designs different from those in developed countries. Examples of design elements that could require tailoring are included below.

- **Caps** – There is a trade-off between caps and investor security. On the one hand, caps may be necessary to limit ratepayer exposure and/or to acknowledge transmission constraints. In such cases, caps would require clear and transparent queuing rules structured to prevent speculative place holding. Caps that are too small, however, could serve as a deterrent to investment. In this context, the implementation of a pre-FiT environment based on “lighthouse” PPA projects would be considered and analyzed.
- **Adjusting rates over time** – In some developed countries (e.g. Germany) feed-in tariffs rates are not adjusted for inflation over time. In developing countries – depending on portion of local input and the level of variable costs – it may be more appropriate to adjust the rates for inflation annually.
- **Contract length** – long-term, fixed price contracts (e.g. 20 years) are not ideal for technologies that face fuel supply risk and uncertain fuel prices, such as biomass. Biomass supply risk can be acute in developing countries, and shorter-term incentive payments may be more appropriate for biomass generators.
- **CDM eligibility** – The potential for projects to be eligible for both feed-in tariff payments and Certified Emission Reduction (CER) incentives may need to be taken into account as part of the feed-in tariff design. Some countries’ feed-in tariffs automatically adjust downward if projects qualify for CERs, whereas other countries allow developers/owners to claim both without any penalty to the FiT rate.

The GET FiT Solution: Adapting FiT Design for the Developing World

The table below contains a summary of example design elements which could be adapted to the developing country context. Those that differ from the table on page 22 are in bold blue text.

FIT Design Features	Key Factors	TLC at the Right Price
Policy & Economic Framework	"Linkage" to mandates & targets	Yes
Core Elements	Eligible technologies	All renewables eligible[10]
	Specified tariff by technology	Yes
	Standard offer/ guaranteed payment	Yes
	Interconnection	Yes
	Payment term	15-25 yrs **5-10 yrs**
Supply & Demand	Must take	Yes
	Who operates (most common)	Open to all
Fixed Structure & Adjustment		
How to set price	Fixed vs. variable price	**Adjusted for inflation**
	Generation cost vs. avoided cost	Generation
	IRR target	Yes
How to adjust price	Degression	Yes - ending at LCOE breakeven
	Periodic review	Yes
	Grid parity target	Yes
Caps	Project size cap	Depends on context
	Policy cap	**Based on transmission constraints and/or ratepayer impact**
Policy interactions	Eligible for other incentives	Yes - eligible to take choice
Streamlining	Transaction costs minimized	Yes
CDM linkage	**Does the national FiT policy take CDM into account?**	**Yes**

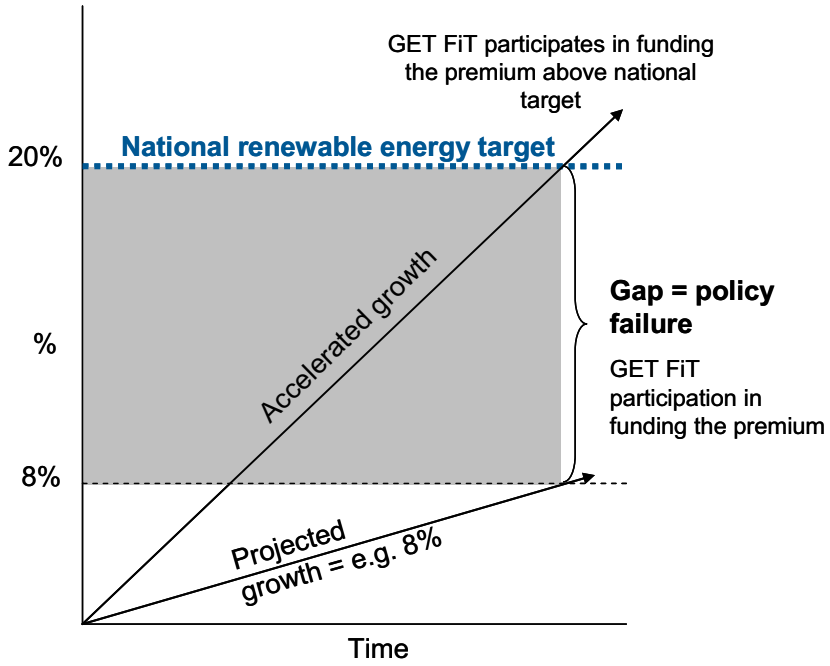
Interaction with the carbon market

- CDM revenues for renewable energy projects can be limited because of the transaction costs of the CDM mechanism, and the comparatively small CER volumes generated by renewable generators. We believe the CER value on average, but subject to case-by-case analysis, is below 5% of initial investment for PV and below 10% for wind in developing countries.
- Original CDM additionality rules created a disincentive for countries to create national renewable energy policy, since projects funded by national renewable energy policy were not considered “additional.”
- The CDM Executive Board ruled that national renewable energy policies enacted after 2001, such as feed-in tariffs, do not violate “additionality” rules; projects can therefore receive national FiT payments and CER revenue.
- CER revenues could be treated in several ways under GET FiT:
  - Feed-in tariff payment levels would adjust automatically downward to reflect the value of the CER. However, this could serve as a disincentive for projects to pursue CERs.
  - Feed-in tariff payment levels would remain the same and generators would be entitled to the excess CER revenue. However, this might result in excess profit for project developers/owners.
  - There could be CER revenue sharing between the developer/owner and the GET FiT Program.

[10] *Renewable energy eligibility should be defined according to sustainability criteria. Sustainability criteria may be particularly critical when considering biomass and large-scale hydro projects, but may also be important to other technologies and project scales when evaluated within the context of broader regional planning.*

The GET FiT Solution: Adapting FiT Design for the Developing World

A key question that GET FiT will have to confront when providing incentives to partner countries will be how best to share the policy costs. In effect, this addresses the "moral hazard" question that is frequently raised in the context of international climate finance. In the case of the least developed countries, it may be appropriate for the GET FiT Program to support the full cost of the above-market premium paid to generators. In most cases, however, it is envisioned that there would be a premium sharing arrangement with the partner country. There are different approaches to sharing policy cost burden with the partner country, which can be determined based on criteria such as comparative income levels (and/or income distribution), or criteria such as progress towards national low-carbon energy goals. The graph below uses a hypothetical example to illustrate some of the considerations relevant to the latter option.

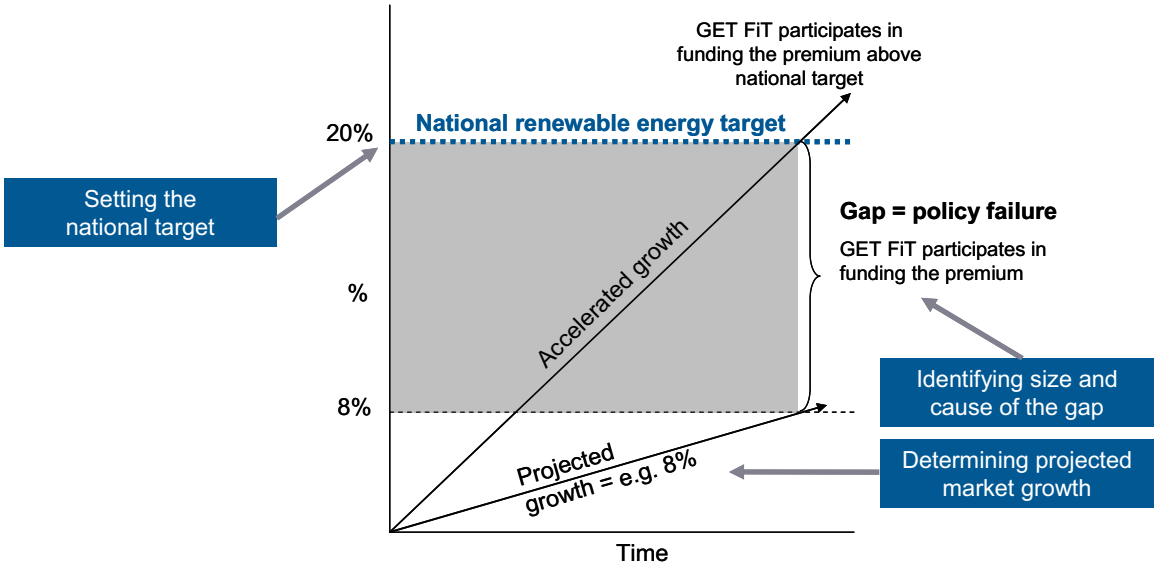


- The country in the graph above has a national goal of 20%. In this scenario, GET FiT would participate in funding the premium payments for feed-in tariff resources over and above the national goal.
- Up until the national goal is reached, the GET FiT Program also participates in funding the premium.
- The degree to which national governments or ratepayers would share the burden would be adjusted based on a country's ability to meet its national targets.
- A country whose historical and projected market growth tracked far below the growth required to achieve its goals (e.g., 8% projected growth in the graph) might receive greater assistance to close the gap, such as:
  - A larger amount of targeted technical assistance; and/or
  - A greater share of the premium covered by the fund.
- Alternatively, burden sharing could be determined based on indicators such as relative income and income distribution.
- In addition, the expected economic impact of renewable energy scale-up on the partner country might be considered. The private sector in emerging countries is expected to be capable of providing substantial input into renewable energy project development under GET FiT, and may be able to benefit from the creation of new upstream manufacturing activities (e.g. wind turbine manufacturing in Brazil) besides maintenance and operations services. Obviously, more developed countries will find it easier to pay part of the premium.

The GET FiT Solution: Adapting FiT Design for the Developing World

Burden sharing designs can address moral hazard problems that could require complex negotiation with client countries.

Key considerations include:



- The variables highlighted in the graphic above – how to set the national target, how to determine projected market growth, how to identify the root of policy failure, etc. – could create disincentives for national governments to aggressively support renewable energy growth using domestic financial resources. If GET FiT were to propose a higher premium for countries that had made slow progress toward their national goals, for example, this might create incentives for countries to decelerate their renewable energy market growth.
- This example is included for illustrative purposes only and presumes, for example, that the country has set a national target and also has the financial resources to support it. GET FiT, however, would also seek to identify opportunities to work with least developed countries that have not set targets and do not have the resources to support premium FiTs.

In developing countries that may not meet the conditions for a full FiT, GET FiT would support the development of lighthouse renewable energy PPAs.

- The GET FiT program will primarily focus on FiT support as a way to create a stable policy environment.
- GET FiT will also assist renewable energy projects in countries that have a “pre-FiT” regulatory environment and/or grid infrastructure constraints that would prevent the implementation of a full FiT policy.
- Grid infrastructure will likely need to be addressed prior to FiT implementation in some countries (e.g., strengthening and expanding transmission, and/or adding backup power). This will require grid analyses that include assessments of potential projects’ impacts. GET FiT would support such analyses, in addition to providing financial support to renewable energy projects.
- In countries where there may be limited short-term opportunity to implement a FiT, GET FiT will support the development of renewable energy generation capacity via transparent, stand-alone “lighthouse” PPAs.
- PPA structures would be used to establish a track record for technologies that have limited deployment history in the partner country as a precursor to eventual implementation of broader FiTs.
- This could be a particularly useful approach for least developed countries, many of which do not have the infrastructure in place for a full FiT in the near-term.

The GET FiT Solution: Adapting FiT Design for the Developing World

Decentralized energy systems can offer energy access to end-users in remote environments at prices comparable to grid-connected levels. GET FiT will support decentralized multi-user energy solutions, such as mini-grids, in order to extend access to affordable, clean, and reliable electricity.

- Energy access is key to poverty alleviation and multi-user systems such as mini-grids are an emerging solution for regions with weak (or no) electricity infrastructure.
- The adoption of mini-grids has the potential to be both popular and indeed transformative to local communities and economies. Access to clean power brings access to many economic opportunities. In the way that microfinance has proved both popular and effective, local communities are likely to embrace this opportunity.
- The pace of expanding electrification is slow because of the low potential electricity demand in remote areas, the high cost of transmission infrastructure, and political barriers.
- The predominant off-grid energy solutions include traditional fuels (e.g. wood), or fossil fuel systems, such as diesel generators or kerosene. Although renewables can compete with diesel generators on a life-cycle cost basis, the high upfront costs and lack of technical expertise has prevented widespread deployment of decentralized renewable generation.
- Integrating renewable energy such as PV, small wind, biogas digesters, biomass gasifiers or micro-hydro power plants into decentralized energy systems such as mini-grids, can improve the reliability and security of energy service, and create additional social and environmental benefits.
- In particular in rural electrification projects, increasing access to electricity needs to go hand in hand with energy efficiency efforts and training for the productive use of electricity.
- Mini-grid operators provide electricity access in the same way that utilities do, offering inhabitants services comparable to a grid-connected environment:
  - End customers can pay based on electricity consumption levels (which can also be estimated as a flat access rate to minimize infrastructure and billing costs).
  - End customers are not burdened with the initial upfront investment, and are also not responsible for the maintenance and operation of energy generation system.
- Decentralized energy solutions can address rural electrification challenges as a preliminary stage before full grid connection, and the system can be converted into an IPP arrangement in the case of a grid connection. We therefore believe that mini-grid applications offer advantages over single-user applications:
  - Balancing electricity demand at a community level and easier expansion of generation capacity.
  - Administrative functions can be set up comparably to grid-connected environments.
  - Once mini-grid communities are connected to a national/regional grid, their power stations can be connected as well, feeding in electricity into the existing, larger grid.
  - Potential mini-grid transmission and distribution infrastructure can also be integrated into national/regional grids after successful grid expansion.

FiT principles can be employed to support and finance decentralized energy solutions in the developing world.

- Decentralized energy solutions are currently financed primarily by donor grants. Banks usually do not provide financing because of small project size and/or substantial off-take risks. GET FiT would create the conditions for mini-grids to receive stable, performance-based incentives, which would better match loan terms and put a premium on project performance. The stable revenue for renewables under FiTs – in concert with other securitization mechanisms – would enable financing.
- Two options of support for decentralized energy solutions are possible:
  - GET FiT could provide off-take guarantees at the levelized cost of electricity to allow for bank financing, without providing additional incentives where renewable energy is currently cost-competitive; or
  - GET FiT could provide incentive payments to lower the electricity price available from decentralized energy (where costs can be high when diesel is used) to a level comparable with electricity prices available from the national grid.

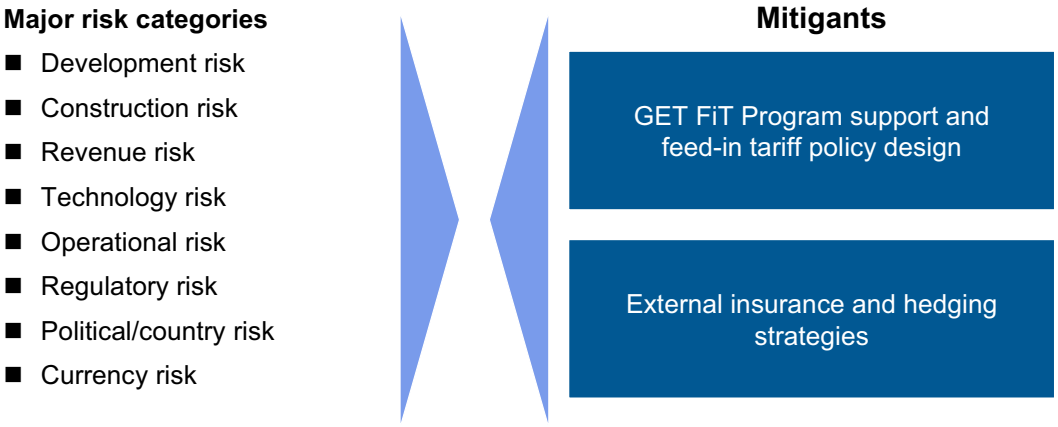
- While the first option is the more cost efficient structure, our view is that electricity prices for rural people and those in grid-connected areas should be equal. The second option might create significant demand for mini-grids within local communities, although direct incentives would be more costly than a guarantee. Also, off-take guarantees might cause inappropriately sized systems instead of incentivizing an energy efficient and productive usage of electricity. We therefore believe that performance-based incentives rather than off-take guarantees and investment incentives can best address rural electrification challenges.
- GET FiT would provide and coordinate technical assistance to ensure that
    - Feed-in tariff payments support pragmatic mini-grid administrative and management systems,
    - End customer awareness with regard to energy efficiency and the productive use of electricity increases.

The GET FiT Solution: Mitigating Investment Risks to Attract Capital

Chapter overview: Mitigating investment risks to attract capital

In addition to providing direct incentives for renewable energy development, GET FiT would work with national and international partners to address a variety of risks and barriers faced by project developers, investors and financiers, including development risk, off-take and counterparty risks, political risk, and currency risk. This Chapter provides an overview of these risks and discusses the mitigation strategies that can be used to address them. Some of these mitigation strategies are provided directly through GET FiT, and some are provided through external organizations.

The GET FiT Program is structured to address a broad range of risks and barriers faced by investors and financiers. The graphic below includes a list of major project development risk categories. GET FiT would seek to mitigate these risks through direct financial incentives, through policy design and technical assistance, and through the use of external insurance and hedging strategies. These different strategies are described in greater detail in the pages that follow.

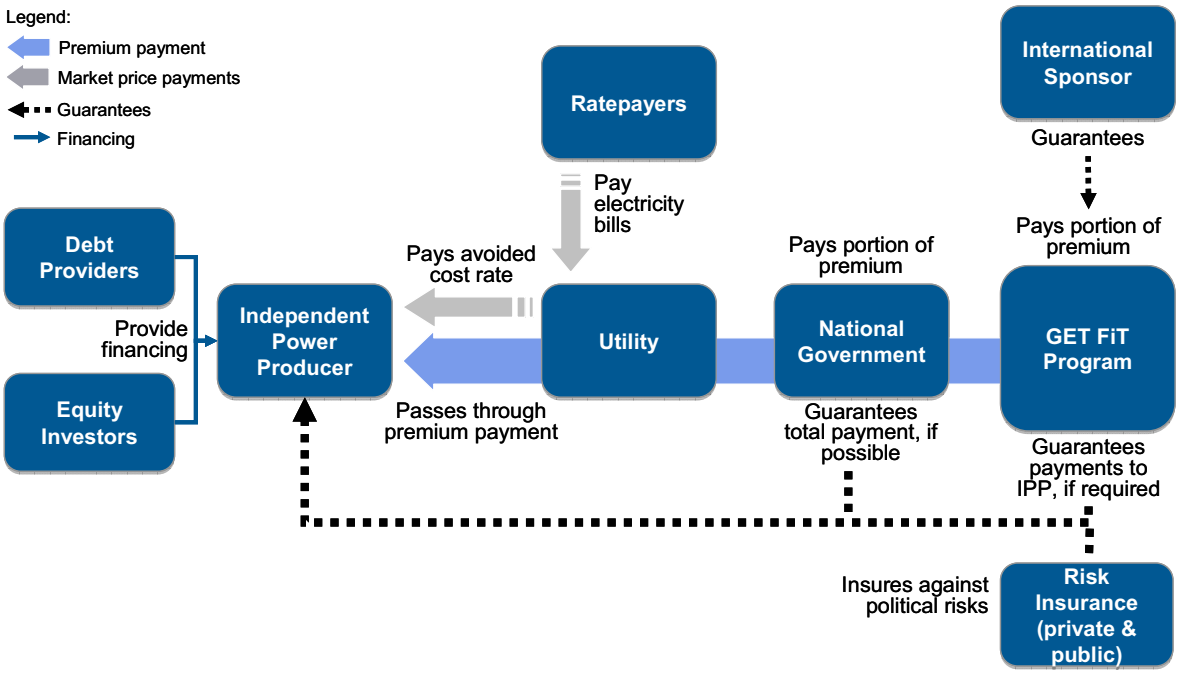


Note: A more detailed description of these key risks can be found on pages 39-40.

Renewable Energy Risk Mitigation

In addition to providing direct incentives for renewable energy development, GET FiT would work with national and international partners to address a variety of risks and barriers faced by project developers, investors and financiers, including development risk, off-take and counterparty risks, political risk, market risk, reinsurance risk and currency risk. Addressing these risks will help make renewable energy projects bankable. As can be seen in the graphic below, GET FiT would provide premium payments, passed through the national governments and utilities to independent power producers (IPPs). The utility would pay at least the market rate to the IPP, and there would be minimal additional burden on the electricity ratepayer. The transfer payments of the FiT premium to the IPP could be guaranteed by the national government, or by the GET FiT Program, depending on the national context and creditworthiness of the involved parties. An international sponsor would provide an ultimate guarantee for the GET FiT payments. Political risk insurance entities, (e.g. MIGA, OPIC, private sector providers, etc.) could play a role in mitigating sovereign risk, and could also backstop governments' guarantees of renewable energy payment where necessary. Currency risk is also a concern in the global renewable energy market, and it is envisioned that the GET FiT portion of the payments would be made in hard currency, thereby significantly minimizing local currency risks. These issues are discussed in greater detail on pages 35-38.

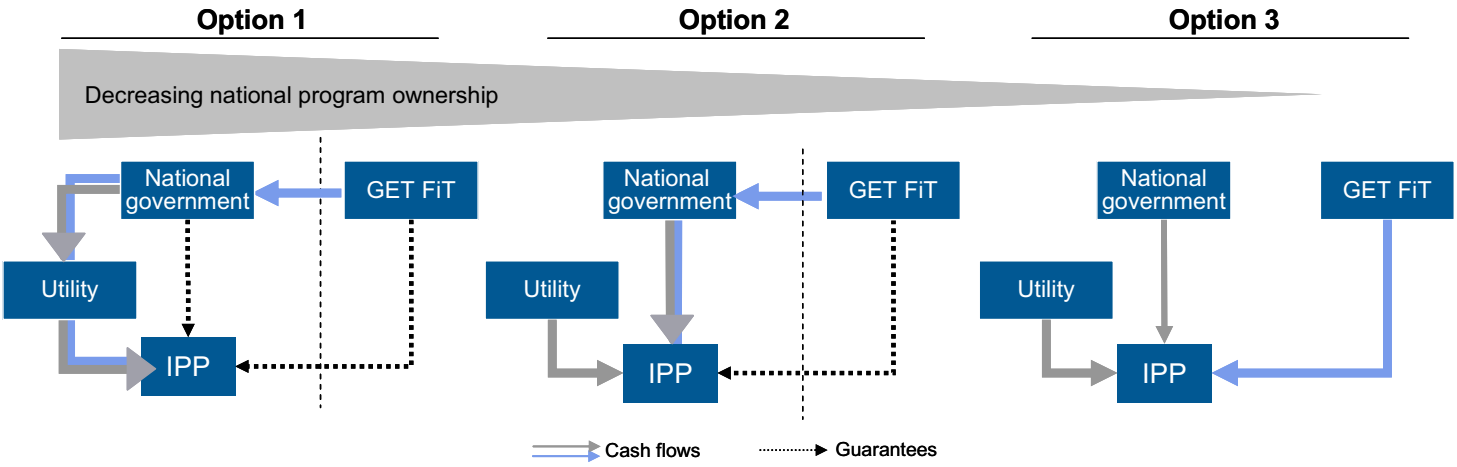
The GET FiT Solution: Mitigating Investment Risks to Attract Capital



Note: In the context of the payment structure, "utility" shall be defined as the entity collecting the ratepayers' payments. Depending on the national electricity market structure, this can be a privatized company or a state-owned entity on the one hand and the transmission company or the power generator on the other hand. Required payments to local transmission and grid operator companies are not included in the chart shown above. Nor are any potential incentive payments to local utilities for administration.

Alternatives for funding flows from GET FiT to projects

As seen in the graph above, the GET FiT Program would seek to maximize the involvement of national governments and utilities in the policy transactions in order to create greater buy-in, opportunities for capacity building, and sustainable administrative structures. The flow of FiT payments to independent power producers, however, can involve government and utilities to different degrees and there are potential trade offs to consider. As can be seen in the graphic below, the options range from the one suggested for GET FiT (Option 1), in which funds flow through both the national government and the utility, to a model under which payment flows directly from GET FiT to the IPP (Option 3).



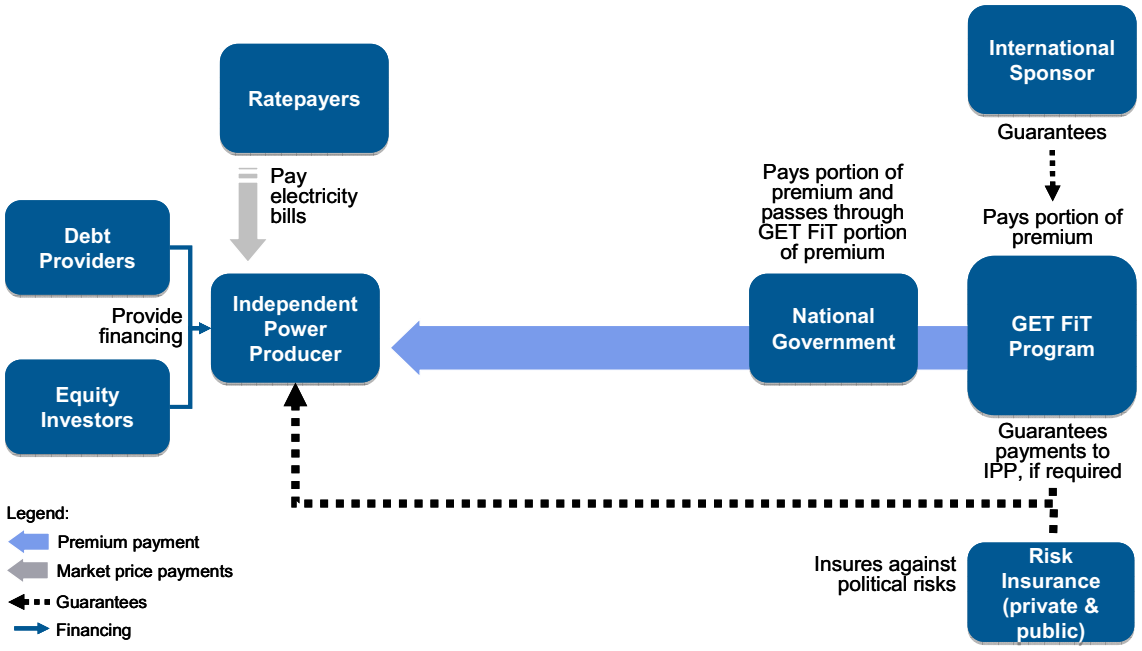
The GET FiT Solution: Mitigating Investment Risks to Attract Capital

- Options 1 and 2 prioritize program ownership by national institutions and in particular in Option 1 introduce a sustainable payment structure for the "post-incentive," grid-parity environment; however, these structures may introduce greater political risk and transaction costs, depending on the context.
- Option 3 may be slightly better from a risk perspective of the IPP and its financiers (direct payments from GET FiT instead of guarantees) as well as the risk perspective of GET FiT (e.g. reducing potential for corruption), but minimizes opportunities for national ownership and capacity building that are at the core of GET FiT.
- While we generally prefer Option 1, we acknowledge that there might be countries for which Option 2 or 3 allow for a faster start of renewable energy scale-up, such as when utilities lack the administrative resources to manage an incentive program (which could e.g. cause payment delays) or in circumstances where there is a lack of trust by financiers of the utility or national government. The payment option choice will also depend on the decision as to which institution / organization should be strengthened.

Mitigating off-take risk for decentralized multi-user generation, such as mini-grids

A similar structure to the one described for on-grid resources in the preceding pages could also be employed to mitigate risk in off-grid applications. The graphics below illustrate how GET FiT could provide incentives to decentralized power generation (e.g. mini-grids) in order to enable electricity sale at on-grid market prices. This structure would help to mitigate revenue risk and could work in situations where the IPP serves the function of both generator and administrator of the mini-grid, and in situations where the IPP provides power and technical services, but where the local community is responsible for aggregating and collecting electricity payments. Providing incentives to enable electricity sale prices comparable to on-grid market prices would help mitigate off-take risk and make projects bankable because a substantial portion of revenue would come from the GET FiT Program, channeled through the government or government agencies.

Example 1

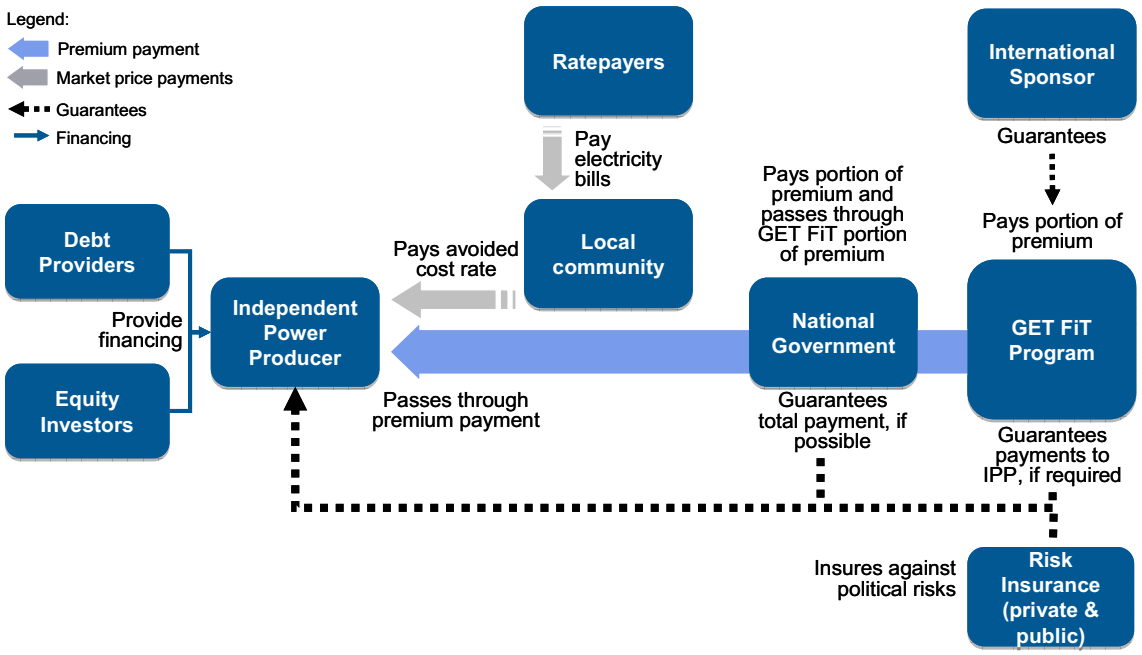


- In the example above, the IPP is responsible for collecting the electricity bill payments.
- The premium is channeled through national government.
- The GET FiT premium provides incentives to lower the price of electricity such that the revenue risk is calculated against the on-grid market price of electricity, rather than for full, levelized cost of electricity from the mini-grid.

The GET FiT Solution: Mitigating Investment Risks to Attract Capital

- There is counterparty risk in that the IPP is directly responsible for collecting payments from a potentially large number of ratepayers.
- In the example below, the local community takes responsibility for collecting electricity payments. The counterparty risk is therefore only with one party, which is in turn potentially guaranteed by the government.

Example 2



GET FiT mitigates certain project risks by adapting advanced feed-in tariff design practices to the developing world context. Feed-in tariff policies, when properly structured and implemented, can increase the transparency of the project approval process and can mitigate financial risks for IPP investors. Short descriptions of how FiT policy design elements can impact different types of risk are included below.

Increasing transparency and simplifying development processes:

Development risk (contracting)

- Assured access to an off-take contract reduces the risk of making development investments.

Length of development process

- Transparent government and utility approval processes reduce uncertainty.
- Standardized feed-in tariff contracts minimize contract negotiation uncertainties.
- The FiT payment reduces the need to rely on multi-lateral bank funding, which could shorten project timelines and decrease development risks.

Contract price risk

- Feed-in tariff price transparency reduces uncertainty of final negotiated contract price and can significantly lower transaction costs.

Easing access to financing

- Increasing attractiveness of the risk-reward-profile of debt and equity investors increases access to financing for project developers.

The GET FiT Solution: Mitigating Investment Risks to Attract Capital

Reducing revenue risk

- Long-term, fixed price contracts minimize revenue volatility and allow for transparent evaluation of whether revenues will provide target returns. This could in turn widen the levels of commercial bank finance available at longer tenors, and attract greater interest from foreign equity.

Reducing carbon price and policy risk

- FiT premiums based on technology generation costs that do not take potential CDM payments into account mitigate the risk of CDM availability.

GET FiT also recognizes the need to address counterparty and political risks. Some of these risks can be targeted directly through GET FiT mechanisms, and some require the involvement of external hedging and insurance strategies.

- As seen in the graphic on page 31, the GET FiT Program pays a portion of the feed-in tariff premium, which is channeled through the national government and the local utility, thereby relieving ratepayers of a large proportion of the incremental cost of renewable electricity. Alternative funding flow models are described on page 31.
- The utility pays IPPs the market prices for power and potentially a portion of the renewable energy premium if the cost of this premium would be recovered from ratepayers, rather than taxpayers (per TLC best practice criteria).
- The GET FiT Program would encourage national governments to guarantee utility payments. National governments may be unable to provide such guarantees if they participate in the Heavily Indebted Poor Country (HPIC) and Multi-Lateral Debt Relief Initiatives (see below).

Heavily Indebted Poor Countries (HIPC) (40 countries)

Completion Point (28 countries)		Decision Point (7 countries)	Pre-Decision Point (5 countries)
Afghanistan	Madagascar	Chad	Comoros
Benin	Malawi	Côte d'Ivoire	Eritrea
Bolivia	Mali	Democratic Republic of Congo	Kyrgyz Republic
Burkina Faso	Mauritania	Guinea	Somalia
Burundi	Mozambique	Guinea-Bissau	Sudan
Cameroon	Nicaragua	Liberia	
Central African Republic	Níger	Togo	
Republic of Congo	Rwanda		
Ethiopia	São Tomé Príncipe		
The Gambia	Senegal		
Ghana	Sierra Leone		
Guyana	Tanzania		
Haiti	Uganda		
Honduras	Zambia		

Note: Data as of January 30, 2010.
Source: International Monetary Fund.

- The GET FiT Program could also guarantee utility payments (in addition to guarantees by the government), or have this risk assumed by public or private insurers (see below).
- Counterparty risk for GET FiT portion of premium payment would be substantially mitigated by the AAA rating of the Program's international sponsor(s).
- The political risk and breach of contract insurance sector could also secure both the government guarantees of utility payments and the utility payments themselves, as necessary. There are a broad range of political risk insurers, including national (e.g. OPIC) and multi-lateral (e.g. MIGA) agencies, as well as private sector entities (see below).

The GET FiT Solution: Mitigating Investment Risks to Attract Capital

Mitigating political risk

- Any project faces some political risks to its cash flows, and to its assets.
- Political risk insurance covers loss of both cash flows and assets due to a range of events, ranging from war and civil disobedience, to currency inconvertibility and transfer restrictions, and possibly to breaches of contract by national governments (i.e. failure to pay for electricity delivered).
- Products offered, tenor, and coverage price vary by project, country and agency providing the coverage.
- The involvement of political risk insurance entities would depend on a wide range of factors, such eligibility criteria (i.e. national ownership requirements), each insurer's capacity to cover sovereign risk related to project development, government creditworthiness, limitations due to concentration of existing risk in a given country, national objectives (applicable to a public risk insurer), appetite for risk, and the insurer's capacity on a per project basis (i.e., a private insurer may have a capacity of $80 million per project while OPIC, the entity with the largest capacity, can cover $250 million per project).
- Projects will likely secure political risk insurance from an already well-established insurance industry, therefore the GET FiT Program would help coordinate this service.

<u>Three types of political risk insurers</u>

- National political risk insurers (public) typically cover investors/lenders from their own country that are investing in developing countries (Ex: OPIC, a US government insurer for US businesses investing in eligible developing countries).
- Multilateral insurers (public) typically cover investments by nationals of member countries that are investing in developing countries other than their own (e.g., MIGA, a World Bank Group member that provides political risk insurance to nationals of its 175 member countries).
- Private political risk insurers cover a wide range of interests, including through co-insurance with national and multilateral risk insurers.

Currency risk is a common concern with renewable energy projects in developing countries, and depreciation risk resulting from fluctuating exchange rates can heavily impact the equity IRR of international investors. One of several key questions related to currency risk is whether the feed-in tariff is paid in hard currency or local currency.

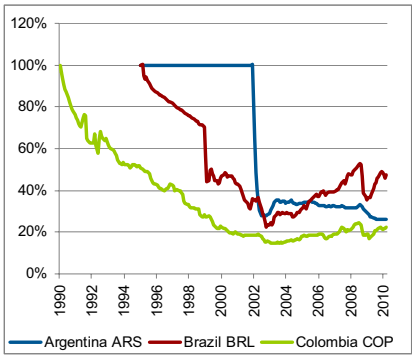
- Devaluation of local currency can be a serious concern for international investors in developing countries, and especially for projects with high upfront capital requirements and long service lives, such as renewable energy. This concern can be particularly acute if FiTs are paid in local currency. This would suggest that it would be beneficial for feed-in tariffs to be paid in hard currency.
- On the other hand, developing countries are often urged to limit hard currency liabilities in the post-HIPC environment in order to avoid excess levels of debt in hard currency should their own currency devalue.
  - From a developing country's perspective, there can be advantages if long-term commitments under FiT schemes are paid in local currency only.
  - However, due to the energy sector's dependence on raw materials and components that are priced in hard currency, energy projects and policies are granted HIPC exemptions more than other sectors.
- The developing countries that current have feed-in tariffs have adopted different current strategies. Some countries, such as Tanzania, Thailand and Argentina, pay their feed-in tariffs in local currency; where as some countries, such as Ecuador, Nicaragua and Honduras, pay their feed-in tariffs in hard currency.
- For investments in countries where the feed-in tariffs are paid in local currency, international financiers face the risk of substantial devaluation of future cash flows
  - Exchange rate fluctuations can heavily affect hard currency dividend payments and hence equity IRRs to international shareholders despite high predictability of cash flows in local currency.
  - The charts and tables below show the historic devaluation of selected developing countries' currencies.

The GET FiT Solution: Mitigating Investment Risks to Attract Capital

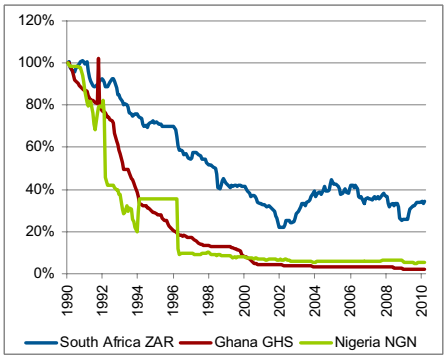
- An international investor will take into account historic and projected local currency devaluation when analyzing the risk-return-profile of the investment.
- The example below illustrates a simplified equity IRR sensitivity for an international investor depending on the average yearly devaluation of the local currency.
- Based on the required target equity IRR range of the investor, a maximum annual devaluation of the local currency can be calculated which would still allow the investor to achieve the targeted equity IRR.
- Taking into account its own assessment about the future development of the currency, the investor will decide whether this maximum annual devaluation provides enough safety cushion or not.

Devaluation of selected currencies over last 20 years

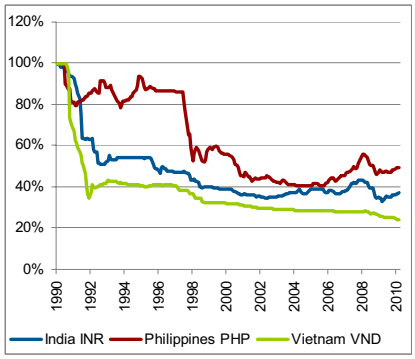
Latin America
LatAM currency moves vs. USD



Africa
African currency moves vs. USD



Asia
Asian currency moves vs. USD



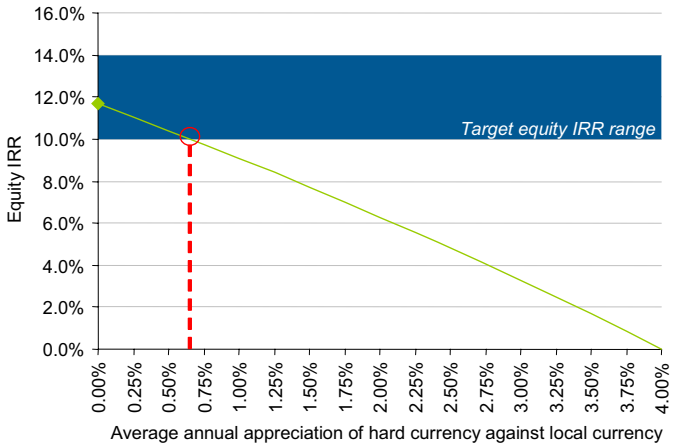
Source: Financial Markets & Global Insight
Note: Due to immense exchange rate fluctuations in the first years, for Brazil and Colombia exchange rate developments are shown for 15 years only. 20 years accumulated depreciation amount to (x)% and (y)% respectively.

	Average yearly appreciation of the US$ against the local currency based on last				Average yearly appreciation of the € against the local currency based on last			
	20 years	15 years	10 years	5 years	20 years	15 years	10 years	5 years
Argentina ARS	21.5 %	9.5 %	14.3 %	4.7 %	14.3 %	10.3 %	17.4 %	5.4 %
Brazil BRL	236.2 %	6.3 %	3.6 %	(5.3)%	205.7 %	5.6 %	4.8 %	(5.8)%
Colombia COP	7.9 %	6.0 %	1.3 %	(2.3)%	7.1 %	5.4 %	2.6 %	(2.1)%
South Africa ZAR	5.9 %	3.1 %	1.5 %	2.6 %	5.1 %	2.5 %	2.5 %	2.4 %
Ghana GHS	4.2 %	4.9 %	2.5 %	(1.7)%	3.4 %	3.9 %	3.7 %	(1.7)%
Nigeria NGN	9.1 %	3.3 %	2.5 %	2.8 %	8.7 %	3.1 %	4.2 %	3.5 %
India INR	6.6 %	6.9 %	4.4 %	6.9 %	5.3 %	5.3 %	4.1 %	6.3 %
Philippines PHP	21.3 %	19.7 %	15.9 %	9.2 %	19.9 %	18.2 %	16.4 %	9.5 %
Vietnam VND	26.3 %	21.2 %	4.0 %	0.8 %	24.4 %	20.1 %	5.5 %	1.2 %

The GET FiT Solution: Mitigating Investment Risks to Attract Capital

IRR sensitivity - The impact of currency depreciation on the equity investor

Example: PV power plant



Note: Linear appreciation of US$ over project lifetime assumed.

Assumptions

- Technology: grid-connected PV power plant
- FiT term: 20 year lifetime, flat FiT tariff in local currency
- Financing structure: 70% debt with 15 years maturity, 30% equity (both in hard currency)
- Operating costs: c. 4 % of initial investment volume p.a. (in local currency)
- Target equity IRR range of 10-14%
- Expected equity IRR assuming no local currency depreciation of c. 12%

Conclusions

- The sensitivity analysis shows that an average annual appreciation of the hard currency against the local currency exceeding approx. 0.65% will result in equity IRRs below the target range.
- The equity IRR will become negative as soon as the average annual appreciation exceeds 4%.

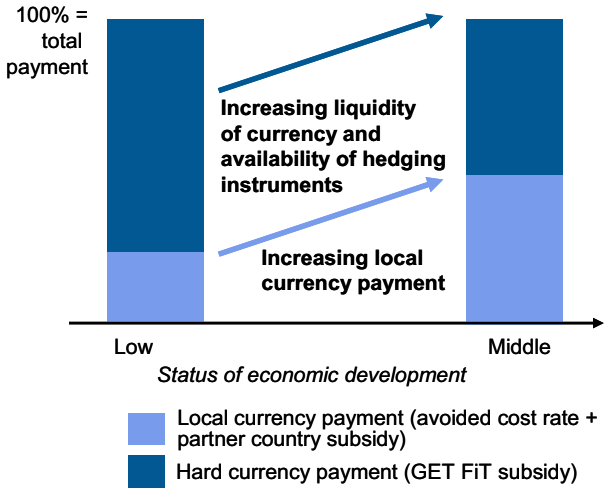
There are few established mechanisms for fully curing currency risk. It is envisioned that GET FiT would typically pay the feed-in tariff premium in hard currency, and thereby at least reduce currency risks. A brief overview of currency risk mitigation strategies is included below.

Currency risk mitigation

- There are currently no appropriate hedging instruments which cover the full tenor of the feed-in tariffs envisioned under GET FiT for emerging and developing countries (e.g. 15-20 years).
- For free convertible currencies that are traded in volume internationally, there are hedging instruments available – but for shorter terms than typical FiT payment lengths (up to 5 years vs. 15-20 years). The same applies for instruments addressing inconvertible currencies, so called non-deliverable forwards or options. Any portion of the project financed in hard currency could be insulated from FX risk through hedging for a portion of the FiT term only.
- A case by case analysis of the availability of hedging instruments will be required. For the currencies of many developing nations it is, however very likely that severe limitations of the FX market in particular with regard to terms and liquidity will exist.
- Against this background, GET FiT envisions that FiT premiums could be paid in hard currency in order to mitigate project exposure to local currency risk. A more detailed discussion of this dynamic is found in the section below.
- Importing technology equipment from another country with fluctuating exchange rates change can leave a project with potential completion risks. This risk can be minimized if the equipment is manufactured in the local country in which the project is being developed in, and is being paid for in the local currency.

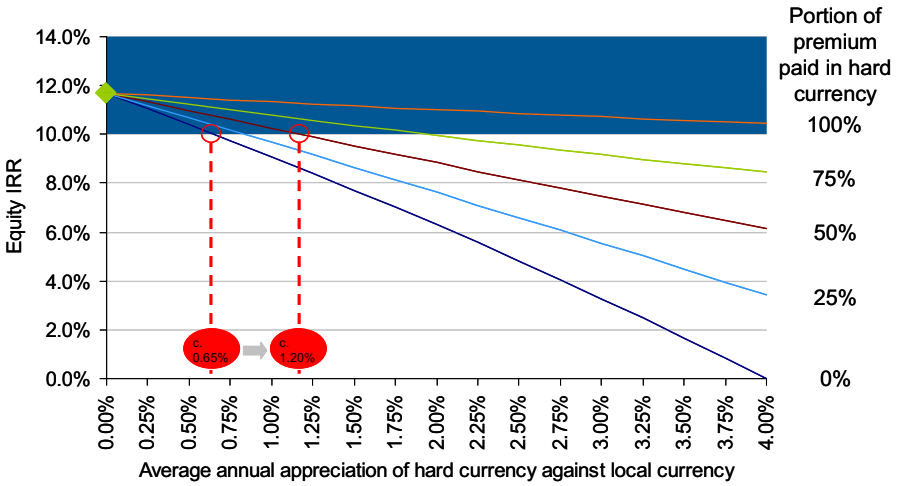
The GET FiT Solution: Mitigating Investment Risks to Attract Capital

The graphic to the right illustrates the expected correlation between the level of hard currency subsidies, the liquidity of a currency, and availability of hedging instruments. Higher levels of GET FiT premiums are likely to be paid in countries that also have the fewest available hedging instruments (in particular least developed countries). This will have a greater currency risk mitigation impact than instances in which a lower GET FiT premium is paid.



- The portion of local currency share would likely differ from country to country because of differential burden sharing arrangements (see pages 26-27).
- Least developed countries would be expected to receive a higher proportion of the required premium from GET FiT. As a result, the hard currency component of the payment would represent a dominant part of the total payment.
- The dominance of hard currency would translate into a lower local currency exposure for foreign investors and debt providers in least developed countries.
- There is a strong positive correlation between the status of a country's economic development, the liquidity of its currency, and the availability of hedging instruments. Least developed countries tend to have untraded currencies that cannot effectively be hedged.
- Similarly, countries with stronger economies, which would receive a lower level of support from the GET FiT Program than least developed countries would, tend also to have more hedging options available for their currencies.
- It should be noted that this risk mitigating effect will become less powerful as technologies approach grid parity and the level of GET FiT premium is correspondingly decreased.
- The chart below illustrates the impact of a partial hard currency payment on the maximum annual currency devaluation which would still allow the investor to achieve the targeted equity IRR.
  - A 50% hard currency premium would ceteris paribus increase the maximum acceptable annual appreciation of the hard currency from c. 0.65% to c. 1.20%.

IRR sensitivity



The GET FiT Solution: Mitigating Investment Risks to Attract Capital

The table[11] below again summarizes renewable energy project development risks from a developer / investor perspective by matching specific risks with likely mitigation strategies, detailing the degree that project developers or investors can manage the risk and then describing the degree to which policy makers can intervene to address the risks. For example, the risks which rank "High" in terms of policy maker influence can potentially be addressed through feed-in tariff policy design and incentive payments, whereas risks that are medium or low will require alternative risk mitigation strategies.

	Risk	Mitigation Strategy	Risk manageable by the developer/ investor	Policy Maker Influence
Development risk	**Timing** ■ Project will be delayed or not be completed at all ■ Missed milestones increase (1) cost of development capital, risk of achieving permanent financing; (2) exposure to contractual penalties (liquidated damages), loss of security, off-take contract termination risk ■ Time and cost of contract negotiations	■ Clearly defined process for siting, permitting and interconnection ■ Off-take contract flexibility in commercial operation	■ Medium	■ Medium
	Contracting ■ Investment in development, proposal development, contract negotiations without yielding off-take agreement	■ Assured access to off-take contract	■ Low	■ High
Construction risk	■ Delays and cost overruns ■ Later than expected connection to the grid or higher than expected cost allocation for grid connection	■ Fixed-price date-certain construction contract ■ Fix cost allocation for interconnection	■ High	■ Low
Revenue risk	■ Adequacy of revenues to provide target returns			
	Price risk ■ Lower than expected unit price	■ Long-term supply agreement with defined prices securing economical viability	■ Low	■ High

Continued on next page.

[11] *This table is adapted from an analysis developed by Deacon Harbor Financial, KEMA, Meister Consultants Group and Sustainable Energy Advantage*

The GET FiT Solution: Mitigating Investment Risks to Attract Capital

	Risk	Mitigation Strategy	Risk manageable by the developer/ investor	Policy Maker Influence
Revenue risk	**Volume risk** ▪ Lower than expected demand	▪ Long-term supply agreement with guaranteed supply volumes ▪ Utility to guarantee availability of grid for feed-in or to pay penalties if power failure does not allow feed-in	▪ Medium	▪ Medium
	Counterparty risk ▪ Off-take counterparty is unable or unwilling to pay	▪ Entering into contract with investment grade counterparty or securing a like guarantee	▪ Medium	▪ Medium
Technology risk	▪ Technology does not perform as expected ▪ Contractual damages for performance failures	▪ Equipment and construction guarantees and warranties	▪ Medium	▪ Low
Operational risk	▪ Lower than expected output or higher than expected operating expenses ▪ Shorter than planned lifetime of equipment	▪ Decent resource assessments (e.g. wind measurements) ▪ O&M contract guarantees ▪ Operational performance flexibility ▪ Priority dispatch or curtailment limitations/ compensation	▪ High	▪ Low
Regulatory and legal risk	▪ Incentive structure that is short-term focused, unstable, and not transparent ▪ Appeals/lawsuits challenging procurement results	▪ Long-term, stable and transparent incentive structure	▪ Low	▪ High
Political/ country risk	▪ Asset loss or reduced operational availability of asset caused by expropriation or political instability ▪ Inconvertability of currency	▪ Political risk insurance	▪ Low	▪ Low
Currency risk	▪ Risk of devaluation of local currency and lower than expected hard currency returns for international investors resulting in lower than expected equity IRR	▪ Hedging instruments where available ▪ Hard currency PPAs/FiTs	▪ Low	▪ Medium

The GET FiT Solution: Mitigating Investment Risks to Attract Capital

The graphic below summarizes the risk mitigation strategies discussed in the previous sections by entity

Risk/Barrier	Mitigation Strategy	GET FiT Program	Partner country	Utility	Int'l. Sponsor of GET FiT	Third parties
Development risk	Transparent approval processes	(indirect)	●	◑	○	○
	Equity investor carries economic risk	○	○	○	○	○
Construction risk	Transparent approval processes	(indirect)	●	◑	○	○
	Equity investor carries economic risk	○	○	○	○	○
Revenue risk	FiT mitigates price risk	●	●	◑	◑	○
	Guarantees mitigate counterparty risk	●	●	○	○	○
	Equity investor carries volume risk	○	○	○	○	○
Currency risk	Hard currency GET FiT premium	●	○	○	○	○
Political risk	Political risk guarantees	○	○	○	○	●

● = Primary role ◑ = Secondary or optional role ○ = No role

The GET FiT Solution: Providing Technical Assistance to Address Non-financial Barriers

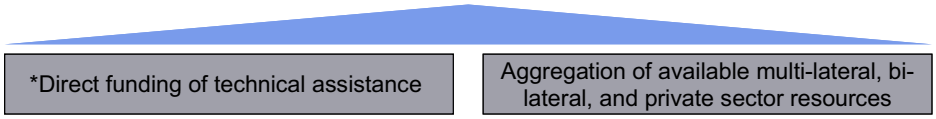
Chapter overview: Providing technical assistance to address non-financial barriers

Some barriers cannot be addressed through financial incentives and risk mitigation alone. This Chapter provides a short overview of the types of technical assistance and capacity building efforts that the GET FiT Program will work to aggregate and coordinate from existing programs.

Direct financial support and risk mitigation strategies can create the financial conditions necessary to attract domestic and international capital. In the developing world, however, renewable energy projects can also face an array of non-financial challenges, as described in the "The Challenge of Renewable Energy in the Developing World: A Project Level Perspective" section. GET FiT would seek to address these challenges through a combination of accessing existing technical assistance programs and the direct involvement of domestic players in the Program's management and transactions. The graphic below lists the primary types of technical assistance services by target entity. GET FiT could fund and provide some of these services directly such as feed-in tariff design, but would also aggregate and coordinate the resources of other multi-lateral, bi-lateral, and private sector efforts. GET FiT would also seek to create the conditions for private sector actors – such as local banks and energy service companies – to establish track records with renewable energy finance, development, and operations. This could be accomplished both through direct partnerships and through indirect effects, such as structuring feed-in tariff policies that create stable demand for the services of local contractors.

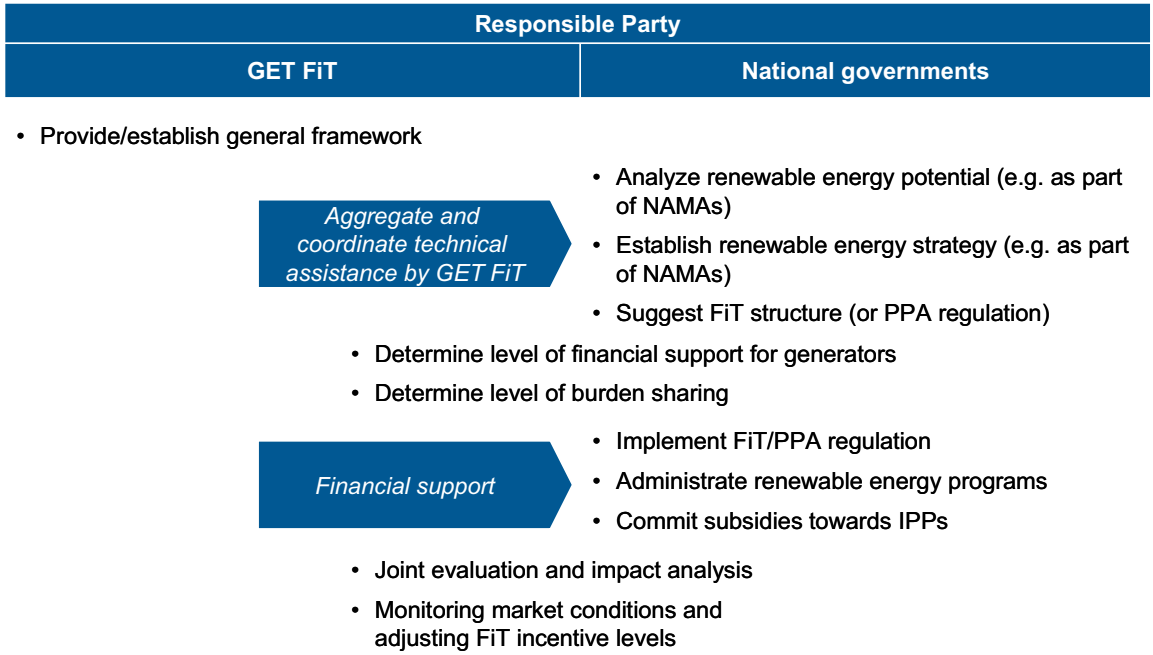
Technical assistance will enable developing countries to capture the full economic and social potential of the GET FiT strategy, in particular with regard to job creation, creation of technical know-how, and domestic market development. GET FiT technical assistance will follow a set of guiding principles detailed in Appendix IV.

Target Sector	Governments and government agencies	Utilities	Local financiers	Local private sector players
Focus areas	▪ *Advanced feed-in tariff policy design and resource diversity strategies ▪ Grid analyses ▪ *Resource assessments ▪ Project feasibility studies	▪ Grid management ▪ *Renewable energy integration	▪ Financial due diligence ▪ Risk mitigation strategies	▪ Renewable energy project development ▪ System construction, operation and maintenance



The GET FiT Solution: Providing Technical Assistance to Address Non-financial Barriers

There is a broad range of technical assistance services and resources that could be used to address renewable energy barriers. As can be seen in the graphic below, GET FiT could adopt different cooperative approaches with governments to establish and adjust feed-in tariff policies. The technical assistance tasks on the left-hand side of the graphic would be undertaken by GET FiT, whereas those on the right would be undertaken by the government. Activities in the middle, such as determining and adjusting feed-in tariff levels, could be undertaken jointly.



Below we present a case study which shows how the principles of a GET FiT program could be potentially adopted in a specific context.

Case study – SARI, the South African Renewable Energy Initiative, a locally grown initiative addressing the challenges of a renewable energy scale up

In the context of renewable energy deployment in South Africa, the high costs of a FiT to local ratepayers are likely to hold back the ability to scale up renewable generation and to allow the country to capture the full economic potential of rapid renewable energy market growth. Therefore, this represents a situation where an international subsidization of the premium payments could make sense.

The bullet points below briefly summarize the energy landscape in South Africa and then discuss the potential for an expanded feed-in tariff.

- Coal dominated power supply: About 90% of South Africa's electricity comes from coal fired power stations – and a significant proportion of its liquid fuels also come from coal.
- Energy intensive exporters: Large-scale, energy-intensive primary mineral beneficiation and mining industries dominate energy use. Thirty-six companies consume around 40% of the electricity sold in South Africa annually.
- Industrial development priorities for job creation: Economic development objectives focus on minimizing the impact of the economic downturn on the country's productive capacity, as well as creating jobs and reducing poverty by identifying opportunities for new areas of growth and economic participation.
- South Africa has implemented a feed-in tariff for selected technologies which are already close to grid parity. High costs of FiT incentives, however, are likely to hold back the ability to scale up renewable generation rapidly.
- The South African Government is committed to exploring how to increase the use of renewables in the national energy

The GET FiT Solution: Providing Technical Assistance to Address Non-financial Barriers

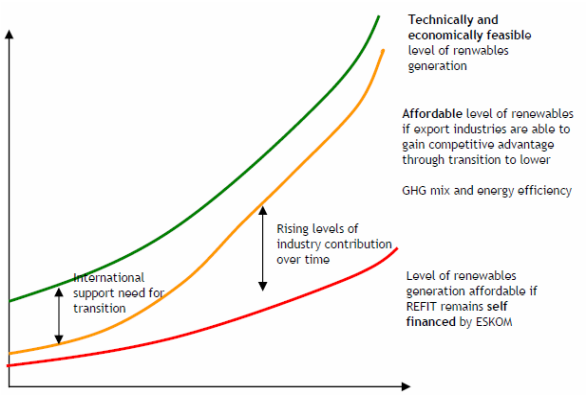
mix and develop an associated industrial sector.

- Given South Africa's development status, and the investment climate, the country is well positioned to benefit from in-country upstream activities in the renewables sector, which could in turn help achieve ecological and economic goals.

SARI stakeholders – public and private stakeholders joining forces

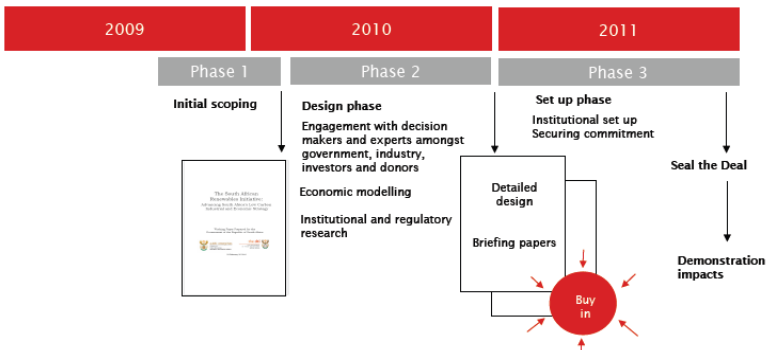
- The analysis done so far is being championed by Trade and Industry Minister, Rob Davies and Department for Public Enterprise Minister Barbara Hogan.
- It is being led by Department of Public Enterprises special projects advisor Edwin Richken. The Department of Public Enterprises is shareholder representative with oversight responsibility for state-owned enterprises including the energy utility Eskom.
- Phase 1 analysis has been supported by the Department for International Development (DFID) and been prepared in association with World Wildlife Fund (WWF) South Africa and AccountAbility.
- Funding for phase 2 research is coming from a DFID-supported trust managed by RSA, and from the European Climate Foundation.

The SARI goal – establish a mechanism which would solicit, receive and manage international and domestically sourced funds to enable renewable energy FiTs to be rapidly scaled, so as to facilitate a critical mass of demand to stimulate investment in renewables and related industries.



- Under the SARI proposal an advanced FiT would be financed from 1) domestic electricity consumers, 2) carbon levy, 3) green purchase obligations and 4) international public finance.
- International support is in particular required during the initial phase. Over time, driven by learning curve effects on the path to grid parity and an increasing domestic contribution, international support can be reduced.

SARI and GET FiT – SARI is a good example for a thought-through analysis that could form the basis for an efficient FiT regulation, taking into account the specifics of the South African context and aligning ecological and economic development considerations. GET FiT could close the remaining financing gap and build on the analysis already prepared.



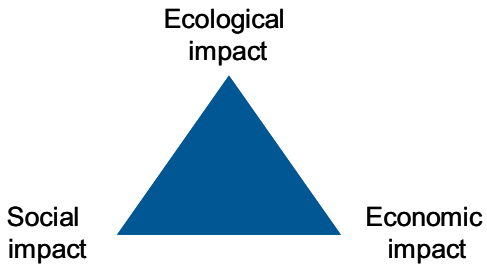
- In line with the concept described in this Green Paper GET FiT could partner with SARI to provide capacity building and technical assistance during phase 2 analysis and to close the existing financing gap for a rapid renewables scale-up.

Source: SARI briefing pack, April 2010.

Program Impact

Chapter overview: Program impact
Renewable energy investments in the developing world yield lower carbon abatement costs than in the developed world, while also achieving a broad range of additional social, economic, and environmental objectives. Based on a preliminary analysis, a 3 bn US$ commitment under the GET FiT scheme could facilitate the following over the next five years: ▪ **Over 1 GW of newly installed on-grid and off-grid renewable energy capacity;** ▪ **The abatement of approximately 100 million tons of CO_2 emissions over funded projects' lifetimes, which would translate into abatement costs of approximately 30 US$ per ton CO_2; and** ▪ **Access to affordable, clean, and reliable electricity for over half a million people in rural areas, assuming that 60 MW of off-grid renewables are included in the portfolio of funded generation technologies.** ▪ **Approximately 4 bn US$ in total private sector investment volume in project assets.**

The scale-up of renewable energies in developing countries equates to substantial carbon abatement. In addition, developing countries will have the chance to benefit from the economic and social impact of such initiatives.



- There are three impact dimensions: ecological, economic and social.
- Ecological impact:
  - Carbon abatement.
- Economic impact:
  - Direct domestic job creation for project development, operation, maintenance, as well as potentially component manufacturing and equipment assembly.
  - Private sector development and know-how/technology transfer.
  - Indirect job creation (outside the energy generation segment) through improved energy security and reliability.
- Social impact:
  - Providing direct access to electricity for people in remote areas as part of rural electrification initiatives.
  - Indirect effects of improved energy security and reliability on poverty reduction, education, health and gender equality.

Any impact analysis for a broad range of developing countries must be simplified by necessity. Specific impacts could vary significantly from country to country. We focus our analysis on the direct effects only, and intend our findings to be illustrative.

- The impact analysis depends on a number of factors which vary from country to country. The following GET FiT impact analysis should be read in the overall context of the concept, and the results should not be applied to individual countries. The following drivers will play an important role when analyzing the concrete impacts for specific countries:
- The level of premiums required to make renewable energy projects economically viable depends on equity IRR expectations and financing costs, levelized costs of electricity, and alternative electricity generation costs.
  - *Equity IRR expectations and financing costs*: Depending on the risk profile of an investment, equity investors will have varying return expectations. Risk factors like policy, country and currency risks can drive up equity return expectations from 9-11% for typical infrastructure projects to 20-25%, even for commercially-proven, climate-friendly technologies in middle-income countries. In addition, interest rate levels strongly impact project returns.
  - *Levelized cost of electricity (LCOE) for renewable energy technologies*: Different performance and resources factors can shape different projects' LCOEs. For example, LCOE will vary as a result of varying resource availability (such as solar radiation or wind availability) across different countries. Also, the availability of infrastructure required for the

construction of renewable energy projects will vary from country to country. Finally, specific tax climates and import duties have an impact on project returns.

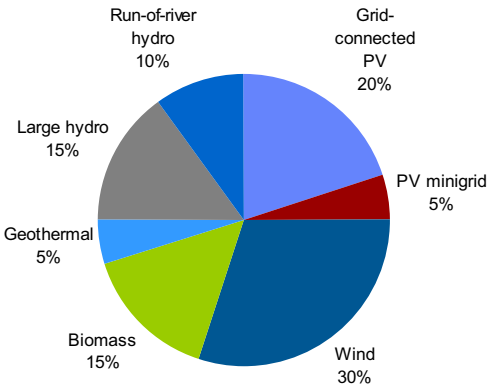
- *Avoided cost rate*: Different countries have different generation mixes, electricity infrastructure, and regulatory approaches to electricity rate setting. Electricity price levels are therefore likely to vary from one country to the next in the developing world. While some of the countries heavily depend on fossil fuel imports for in-country electricity generation, or import electricity from within their region, other countries might have access to cheap coal resources.

- The impact per US$ provided by GET FiT depends on the premiums required, on the one hand, and the level of burden sharing, supported renewable energy generation mix, and the applied discount rate on the other hand
  - *Burden sharing*: As discussed in the "The Get Fit Solution: Adapting FiT Design for the Developing World" section, the level of burden sharing will differ based on factors such as the country's progress with regard to national renewable energy targets, or on economic indicators.
  - *Generation mix*: Given the spread in different renewable technologies' proximity to grid parity, the target generation mix drives the impact per GET FiT US$.
  - *Discount rate*: For our impact analysis, we assume a fixed level of funding at the beginning of the GET FiT program implementation. The discount rate applied to future payments made under a long-term FiT has substantial impact on the maximum commitments possible under GET FiT. We calculate with a conservative 6% assumption.
- Finally, abatement potential is dependent on current baseline assumptions.

Required premiums and GET FiT contribution to total premium

- The incentive levels required for different technologies drive the impact analysis. We assume different incentive levels, depending on the current gap between the market price of electricity and technology generation costs. This gap would reduce over time to reflect the path to grid parity.
- As outlined above, required premiums to bridge the gap to grid parity with traditional technologies (LCOE less avoided cost rate) will differ substantially from country to country.
- For our overall scenario we have assumed the following:
  - approx. 7US$c/kWh for the non-PV renewable energy technologies;
  - approx. 20US$c/kWh for grid connected PV applications;
  - 5US$c/kWh increase of premiums for rural electrification projects.
- On average, it is assumed that the GET FIT portion accounts for approximately 70% of the total premium required for viable development.

Assumed renewable energy generation mix under the GET FiT scheme (% of MW installed capacity)



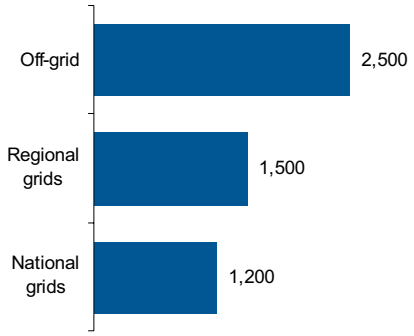
- The actual generation mix will have to be adjusted to the resources available in the respective GET FiT partner countries.
- Our conservative assumption on the proportion of mini-grid applications is driven by assumptions about the short-term implementation potential and required project development efforts and the necessity of the inclusion of local communities in the development process rather than a general concern about the validity of rural electrification projects.

Baseline emissions (in g CO_2/kWh)

For the impact and abatement cost analysis, "business-as-usual" emissions have been assumed to differ in national grids, regional grids and off-grid scenarios. The generation mix of national grids in most countries is comprised of a broad range

of technologies, usually including a substantial share of coal. For regional grids, large diesel and crude oil generators are assumed to be prevalent, with emissions/kWh exceeding emissions/kWh in national grids. In remote areas, business-as-usual emissions are assumed to be the highest, as a result of their reliance on inefficient, part-load diesel generators. As can be seen in the graphic below, off-grid systems are assumed to have baseline emissions of 2,500 grams CO_2/kWh, whereas national grids have only 1,200.

Typical grams of CO_2 per kilowatt-hour by grid type



Source: DB estimates

- Baseline emission assumptions have been estimated based on an analysis of publicly available CDM data and have been cross-checked with simplified calculations for diesel-generated electricity.
- Actual baseline emissions will vary substantially from country to country.
- Assumptions have been made with regard to the connection between certain technologies and the business-as-usual emission, e.g. mini-grid PV applications replacing off-grid business-as-usual electricity generation technologies.

Methodology of impact analysis

- The analysis aims to provide an illustrative overview of the potential impact of GET FiT, assuming a fixed level of funding of US$ 3bn at the start of program implementation with a five year period for new commitments under the GET FiT scheme.
- Target metrics include the amount of new renewable energy generation capacity installed, emissions abatement potential, job creation potential as well as the number of people served through rural electrification programs.
- The *newly installed renewable energy capacity* under the GET FiT scheme is calculated on the basis of the assumed initial funding and the discounted future commitments, calculated based on the required premium level, and taking into account the FiT payment term. It is based on the average output (MWh) per installed MW.
- The *total abatement cost* is calculated by dividing the amount of incentives paid by GET FiT over the amount of emissions that would be abated.
- The number of people in remote areas who are expected to benefit from rural electrification projects (*direct social impact*) is calculated based on the electricity output of rural electrification projects and assumptions about required energy consumption per person.
- The *direct job creation potential* will heavily depend on the status of the renewable energy sector in the respective partner country. While we believe that a number of developing countries will have the know-how and capabilities to provide local input into the upstream value chain (manufacturing), least developed countries might only be able to benefit in the downstream value chain (project development, construction and installation, O&M and administration). We have therefore made conservative assumptions and not included upstream job creation potential. The assumptions are based on a range of market studies[12].

Program impact: Mini-grids under the GET FiT model

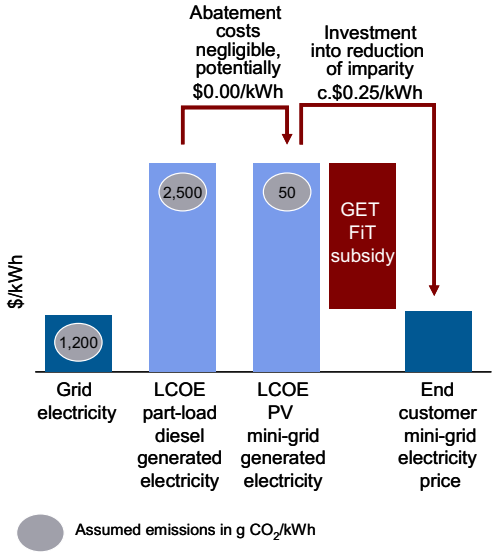
Abatement costs are typically calculated by dividing the amount of incentive paid to a given technology by the amount of emissions that would be abated. In the case of mini-grids, or comparable decentralized electricity generation systems, the incentives are not calculated based on the levelized cost of electricity of the mini-grid, but are instead calculated based on the rate that would be required to be paid to reduce the price of electricity from mini-grids to the levels paid for electricity

[12] *Reference studies include EPRI (2001), DTI (2004), Pembina (2004), EWEA (2009), EPIA (2008), BMU (2008), GEA 2005, EREC (2008), SERG (2007), SPOK ApS (2008)*

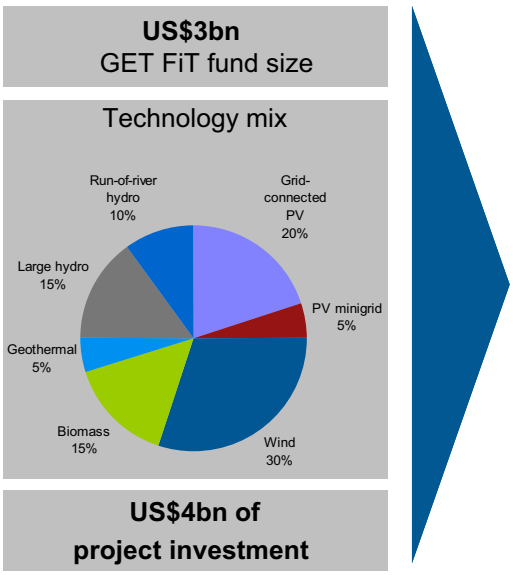
Program Impact

from national grids. The resulting costs per unit emission abatement consequently includes not only abatement costs (which might be zero) but also the additional costs to bridge the difference in energy costs between people in remote areas and people in grid-connected areas. As can be seen in the scenario below, the abatement cost to replace a part-load diesel generator with a PV mini-grid is zero. However, it would cost ~$0.25/kWh to lower the price of mini-grid electricity to prices comparable from those on the grid. These additional costs are built into the abatement cost model impacts.

Abatement vs equalizing costs in mini-grids



For every three billion US$ invested through GET FiT, it can be estimated that approximately one gigawatt of renewable electricity could be installed in developing countries, which would attract approximately 4 bn US$ in private sector investment. The graphic below shows the technology mix assumed under this scenario, whereas the statistics on the right show the additional impacts that would flow from the investment.



Abatement potential

- Approximately 100 million tons CO_2 over project lifetimes
- Average abatement costs (including non-abatement-related incentives for mini-grid users) of 30 US$ per ton CO_2

Rural electrification

- Conservative assumption of 60MW of newly installed mini-grid capacity
- Access to clean, affordable and reliable energy for more than half a million people

Economic impact

- Creation of new jobs in GET FiT partner countries – approx. 50,000 person years

Note: Based on preliminary modeling conducted by Deutsche Bank, the results of this analysis will vary, strongly depending on assumptions about baseline emissions, technology mix, incentive levels, and the split between on-grid and off-grid capacity. Conservative assumptions have been chosen for the decentralized projects, taking into account required technical assistance and length of implementation process.

Capitalization and Timeline

Chapter overview: Capitalization and timeline

The GET FiT concept is intended to be a flexible, but detailed, program design that could be managed and funded through a number of different existing and/or new donor channels. At this stage of concept development, neither capitalization strategies nor governance structure are addressed in detail. This chapter provides an overview of some of the considerations that need to be taken into account as these questions are explored in the future. This chapter also contains an illustrative timeline for how the GET FiT Program might be rolled out first on a pilot basis, and then expanded to a broader set of countries.

The GET FiT concept is intended to be a flexible, but detailed, program design that could be managed and funded through a number of different existing and/or new channels. To a large extent, governance and capitalization issues will be shaped by the way in which the GET FiT Program is ultimately adopted and implemented. One of the original guiding principals of the GET FiT concept was that it should serve as a template for parties seeking near term action on renewable energy development in the post-Copenhagen environment. It is conceivable that the GET FiT template could be deployed as a truly global structure as proposed in recent concept papers from international organizations. It may be challenging, however, to deploy and fund such a global structure in the near-term. Alternatively, it is also possible that GET FiT could be implemented in phases, with the initial phase prioritizing near-term bi-lateral or regional implementation opportunities. There are currently several ongoing or proposed bi-lateral national partnerships focusing on climate change and renewable energy technology deployment in developing counties that currently have feed-in tariff policies. South Africa, for example, is working closely with Germany, whereas Kenya has announced plans to work with Japan. Such bilateral partnerships could provide an avenue for deploying the GET FiT concept in an institutionalized way. It might also be possible to form specific multi-lateral partnerships in support of target regions.

Capitalization – There are a broad range of current and proposed international funding sources that the Program could actively and entrepreneurially pursue to source premium payments.

Conventional funds	Revenues from international climate policies (current and proposed)	New sources of funds
■ Contributions from multi-lateral banks ■ Contributions from national donors ■ Contributions from existing international funds ■ Burden sharing with client countries	■ Emissions auction revenues – National auctions – Assigned amount unit (AAU) auctions ■ Carbon tax revenues ■ Transport levies	■ Copenhagen Green Climate Fund ("fast start funds") ■ Bonds secured by donor country pledges and/or carbon markets ■ IMF Special Drawing Rights quantitative easing

GET FiT Program

- In order to provide developers/owners and financiers with certainty, the program sponsors will need a AAA bond rating
- It is envisioned that a AAA-rated international sponsor, such as a multi-lateral bank or a consortium of donor countries, will guarantee the GET FiT Program
- GET FiT could explore funding opportunities in bond markets secured by commitments from donor organizations and other revenue streams through long-term annual commitments.

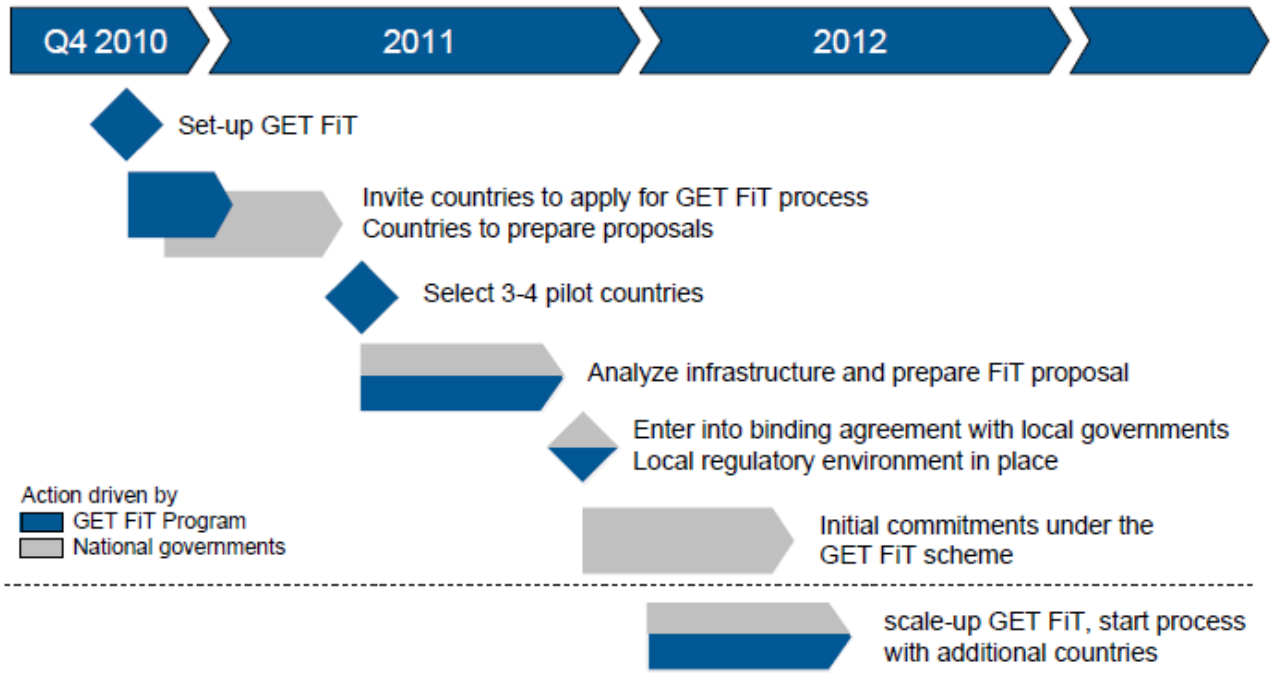
Capitalization and Timeline

The GET FiT Program capitalization plan should be structured to provide a long-term (e.g. 10-20 year), financeable payment stream to generators.

- It can be challenging to capitalize a global program that is intended to provide a financeable, long-term (i.e. 10-20 year) payment stream to generators. If the entire amount to be disbursed by the program must be collected through equity contributions at the outset, this may be too large a sum to raise. At the national level, this model has previously been considered, but rejected.
- The GET FiT Program will address this concern first by acknowledging that the Program will require a steady ramp up over time (e.g. through the use of pilot projects). Donor partners would be asked to contribute a lesser amount in the near-term, which would increase to a larger amount in later years. This is similar to the Copenhagen Green Climate Fund concept, which would start with a $30 billion annual commitment through 2012, and grow steadily to $100 billion annually after 2020.
- A second method for addressing this concern could be to cover the necessary upfront capitalization of the fund through the issuance of a bond (i.e. upfront debt, instead of upfront equity). The GET FiT Program could work with its international sponsor(s) to issue AAA-rated bonds in international capital markets. Donor organizations would commit to annual payments over time, and donor payments would be used to repay bondholders. A similar mechanism is in place to fund the International Finance Facility for Immunization (IFFIm).

Potential implementation roadmap and timeline

As can be seen in the graphic below, GET FiT could be launched in the near-term, especially if an approach involving a limited number of pilot countries is launched first in advance of broader regional or global efforts.



Appendix I: Recent Proposals for Global FiT Funds

Overview of proposed feed-in tariff funds

Name and organization	Capitalization	Management structure	Services provided	Proposed screening criteria
Feed in Tariff Fund Emissions Trading model (FFET) **EREC/Greenpeace International**	■ OECD/Annex I emissions regime revenues ■ Auctioning allowances ■ Taxes on cap and trade ■ CO2 trading revenues	■ Multilateral and regional banks ■ Existing Kyoto mechanisms	■ Pays premium ■ Technology differentiation ■ 20 year contracts ■ Paid based on actual generation ■ Environmental standards (e.g. CDM)	■ Guaranteed grid access ■ Feed-in law ■ Transparent data access ■ Clear planning + licensing procedures
Scaling up Climate Finance **Project Catalyst**	■ ETS auction revenues ■ Concessional debt + government guarantees ■ Developed country contributions ■ International maritime + aviation levies ■ Assigned Amount Unit (AAU) auctions	■ Bi- or multi-lateral Climate Partnerships Agreements ■ National trust funds ■ Global green fund targeting public goods (pre-commercial tech, market coordination, regulatory standards, strengthen safety nets) ■ Fast start fund to finance capacity building ■ Global oversight body	■ Pays premium ■ In conjunction with debt guarantees and equity investment guarantees or co-financing	■ Low carbon growth plans (NAMA and NAPA plans), commitment of financial resources, and need for additional support ■ Monitoring, reporting and verification (MRV) ■ Move from project-based to programmatic/ sectoral schemes (broader vision and strategy)
Renewable Energy Regulated Purchase Tariff (RPT) **EC Joint research centre**	■ National budgets ■ Multilateral banks	■ Varies by ownership/ regulatory structure: ■ Rural Energy Service Company ■ IPP model ■ Concession model	■ Pays premium	■ Fair grid access ■ Feed-in law ■ Renewable Energy policy ■ Clear planning + licensing procedures
Renewable Energy Policy Fund **World Future Council**	■ IMF SDR or ■ Existing funds : Emissions auctions, Carbon tax proceeds, International transportation levies ■ International Renewable Energy Policy (REP) Fund and State budget/ CDM tax	■ GEF trust fund or ■ WB Climate Technology Fund or ■ National REP Fund	■ Pays premium ■ Can also be extended to mini-grids	■ Sufficient and steady fund source ■ Separation of fund from state budget
Global FIT-Programme **AWG-LCA** Global Renewable Energy Investment fund **WWEA/ International Renewable Energy alliance**	■ Obligatory annual contributions from the Annex I countries	■ N/A	■ Pays premium ■ Large-scaled micro-credit and soft loan for off-grid and non-electrical systems ■ Alternative integration into NAMA	■ Avoid additionality and baseline
Global feed-in tariff fund (G-FIT-F) **UN DESA**	■ Emissions auctions or ■ REDD ■ Levy on carbon market transactions ■ Reallocation of revenues from fossil fuel subsidies to renewable energies ■ Country contributions based on criteria	■ N/A	■ Guaranteed purchase prices for existing generation units; lower rate for new projects ■ Yearly payments based on actual generation ■ KWh subsidy reduction linked to scale and learning economies	■ Appropriate legal and regulatory framework ■ FiT scheme coordinated with grid/off-grid expansion and targeted subsidies for the poor

Sources: Greenpeace/EREC, 2009; Moner-Girona, 2008; O'Connor & Soltau, 2009; Project Catalyst, 2010; REN21 & AWG-LCA, 2009 UNDESA, 2009; WFC, 2010

Appendix II: Global PV and wind capacity generated under FiTs

Global Wind and PV Capacity Generated by Feed-In Tariffs[13] as of 2008

	Year FIT Created	Solar PV From FIT (MW)	% of Total Global Solar Capacity (2008)*	Year FIT Created	Wind From FIT (MW)	% of Total Global Wind Capacity (2008)*
Australia*	**Regional**	**1.1**	0.01%	**None**	**N/A**	0.00%
Austria	**2002**	**30.2**	0.23%	**2002**	**500**	0.41%
Brazil	**None**	**N/A**	0.00%	**2002-2008**	**319**	0.26%
Bulgaria	**2007**	**1.341**	0.01%	**2007**	**120**	0.10%
Croatia	**2007**	**0.048**	0.00%	**2007**	**1**	0.00%
Cyprus	**2003**	**2.089**	0.02%	**2003**	**0**	0.00%
Czech Repub.	**2002**	**54.3**	0.42%	**2002**	**150**	0.12%
Denmark	**None**	**N/A**	0.00%	**1993-2001**	**2500**	2.07%
France	**2001**	**91.155**	0.70%	**2002**	**3404**	2.81%
Germany	**1991**	**5351**	41.16%	**1991**	**23903**	19.75%
Greece	**1994**	**18.5**	0.14%	**1994**	**985**	0.81%
Hungary	**2003**	**0.45**	0.00%	**2003**	**200**	0.17%
India	**Regional**	**5**	0.04%	**None**	**N/A**	0.00%
Ireland	**2006**	**0**	0.00%	**2006**	**458.09**	0.38%
Italy	**1992**	**317.5**	2.44%	**None**	**N/A**	0.00%
Kenya	**2010**	**0**	0.00%	**2008**	**5.5**	0.01%
Latvia	**2008**	**0**	0.00%	**2005**	**23**	0.02%
Lithuania	**2002**	**0.05**	0.00%	**2002**	**65**	0.05%
Luxembourg	**1993**	**24.41**	0.19%	**1993**	**35**	0.03%
Portugal	**1999**	**67.95**	0.52%	**1999**	**2862**	2.37%
Slovakia	**None**	**N/A**	0.00%	**2003**	**5**	0.00%
Slovenia	**1999**	**2.15**	0.02%	**1999**	**0.019**	0.00%
South Korea	**2003**	**352**	2.71%	**2002**	**348**	0.29%
Spain	**1994**	**3404.76**	26.19%	**1994**	**16740**	13.83%
Switzerland	**1991**	**47.9**	0.37%	**1993**	**14**	0.01%
Thailand	**2006**	**6.2**	0.05%	**2006**	**0**	0.00%
Turkey*	**None**	**N/A**	0.00%	**2005**	**313**	0.26%
Total		***9,778.10***	***75.22%***		***52,950.61***	***43.75%***

[13] *These tables were created using a review of published data from international and national sources and follow-up interviews with national experts where possible to confirm capacity figures.*

Appendix III: Summary of Developing Countries FiT Designs

Applying TLC criteria to developing countries: Kenya

FIT Design Features	Key Factors	TLC at the Right Price	Kenya
Policy & Economic Framework	"Linkage" to mandates & targets	Yes	Yes, co-generation for sugar; mandate to promote RE
Core Elements	Eligible technologies	Appropriate technologies targeted	Wind, Hydro, Biomass, Geothermal, PV, Biogas
	Specified tariff by technology	Yes	Yes
	Standard offer/ guaranteed payment	Yes	Yes
	Interconnection	Yes	Yes
	Payment term - all Biomass only	15-25yrs 5-10 yrs	15 Years
Supply & Demand	Must take	Yes	Yes
	Who operates	Private entities	Open to all
Fixed Structure & Adjustment			
How to Set Price	Fixed vs. variable price	Peg to inflation for generators with high O&M*	Fixed
	Generation cost vs. avoided cost	Generation	Rates are a price ceiling, not a price floor
	IRR target	Yes	No
How to Adjust Price	Degression	Yes	No
	Periodic review	Yes	Yes, every 3 years
	Grid parity target	Yes	No
Caps	Project size cap Volume Cap	Depends on context Based on ratepayer impact or transmission constraints	Wind (50MW); Biomass (50MW); Hydro (10MW); biogas (70MW); PV (available for 500kW-10MW only) No
Policy Interactions	Eligible for other incentives	Yes - eligible to take choice	---
Electricity Market Structure	IPPs eligible for participation	Yes	No
Transparency	Developers/owners able to navigate the process	Yes	No
Social Adder	Bonus paid for local project support and involvement	---	No
Eligible for CDM	Ability for projects to receive carbon offsets in addition to FiT	Yes	---
Streamlining	Transaction costs minimized	Yes	Yes, by eliminating conventional bidding process

Source: MCG Research, 2010

Appendix III: Summary of Developing Countries FiT Designs

Applying TLC criteria to developing countries: Sri Lanka

FIT Design Features	Key Factors	TLC at the Right Price	Sri Lanka
Policy & Economic Framework	"Linkage" to mandates & targets	Yes	Yes, 10% by 2015
Core Elements	Eligible technologies	Appropriate technologies targeted	Wind, Hydro, Biomass, Geothermal, PV, Biogas
	Specified tariff by technology	Yes	Yes
	Standard offer/ guaranteed payment	Yes	Yes
	Interconnection	Yes	Yes
	Payment term - all Biomass only	15-25yrs 5-10 yrs	15-20 years for all
Supply & Demand	Must take	Yes	Yes
	Who operates	Private entities	Private entities
Fixed Structure & Adjustment			
How to Set Price	Fixed vs. variable price	Peg to inflation for generators with high O&M*	Choice of Fixed or Variable
	Generation cost vs. avoided cost	Generation	Generation cost
	IRR target	Yes	No
How to Adjust Price	Degression	Yes	No
	Periodic review	Yes	Yes, Yearly
	Grid parity target	Yes	No
Caps	Project size cap Volume Cap	Depends on context Based on ratepayer impact or transmission constraints	10 MW ---
Policy Interactions	Eligible for other incentives	Yes - eligible to take choice	---
Electricity Market Structure	IPPs eligible for participation	Yes	Yes
Transparency	Developers/owners able to navigate the process	Yes	Yes, by statute
Social Adder	Bonus paid for local project support and involvement	---	No
Eligible for CDM	Ability for projects to receive carbon offsets in addition to FiT	Yes	Yes
Streamlining	Transaction costs minimized	Yes	Yes (statute calls for streamlined permitting process)

Source: MCG Research, 2010

Appendix III: Summary of Developing Countries FiT Designs

Applying TLC criteria to developing countries: South Africa

FIT Design Features	Key Factors	TLC at the Right Price	South Africa
Policy & Economic Framework	"Linkage" to mandates & targets	Yes	Produce 10,000 GW of electricity per year by 2013 Eskom (utility company) must derive 30% of new RE power from IPPs
Core Elements	Eligible technologies	Appropriate technologies targeted	Wind, solar (PV & CSP), hydro, biomass, biogas, landfill gas
	Specified tariff by technology	Yes	Yes
	Standard offer/ guaranteed payment	Yes	Yes
	Interconnection	Yes	Yes
	Payment term - all Biomass only	15-25yrs 5-10 yrs	20yrs ---
Supply & Demand	Must take	Yes	Yes – up to specified limits within the National Integrated Resource Plan (IRP1)
	Who operates	Private entities	Rules for selection under consultation
Fixed Structure & Adjustment			
How to Set Price	Fixed vs. variable price	Peg to inflation for generators with high O&M*	Fixed
	Generation cost vs. avoided cost	Generation	Generation
	IRR target	Yes	No
How to Adjust Price	Degression	Yes	No- to be reviewed on an annual basis in the initial years
	Periodic review	Yes	Yes
	Grid parity target	Yes	No
Caps	Project size cap Volume Cap	Depends on context Based on ratepayer impact or transmission constraints	No Yes, set within IRP1
Policy Interactions	Eligible for other incentives	Yes - eligible to take choice	Not defined
Electricity Market Structure	IPPs eligible for participation	Yes	Yes
Transparency	Developers/owners able to navigate the process	Yes	Yes
Social Adder	Bonus paid for local project support and involvement	---	Yes
Eligible for CDM	Ability for projects to receive carbon offsets in addition to FiT	Yes	Yes
Streamlining	Transaction costs minimized	Yes	Unknown at present

Source: MCG Research, 2010

Appendix III: Summary of Developing Countries FiT Designs

Applying TLC criteria to developing countries: Thailand

FIT Design Features	Key Factors	TLC at the Right Price	Thailand
Policy & Economic Framework	"Linkage" to mandates & targets	Yes	Yes
Core Elements	Eligible technologies	Appropriate technologies targeted	Biomass, Biogas, Waste, Wind, PV, Micro-hydro
	Specified tariff by technology	Yes	Yes
	Standard offer/ guaranteed payment	Yes	Yes
	Interconnection	Yes	Yes
	Payment term - all Biomass only	15-25yrs 5-10 yrs	10 Years 7 Years
Supply & Demand	Must take	Yes	Yes
	Who operates	Private entities	Open to all
Fixed Structure & Adjustment			
How to Set Price	Fixed vs. variable price	Peg to inflation for generators with high O&M*	Fixed
	Generation cost vs. avoided cost	Generation	Generation
	IRR target	Yes	Yes
How to Adjust Price	Degression	Yes	No
	Periodic review	Yes	No-but will review if having a “significant” impact on ratepayers
	Grid parity target	Yes	No
Caps	Project size cap Volume Cap	Depends on context Based on ratepayer impact or transmission constraints	Yes, 10 MW No
Policy Interactions	Eligible for other incentives	Yes - eligible to take choice	Yes, tax holiday and tax credits
Electricity Market Structure	IPPs eligible for participation	Yes	Yes, PURPA-like laws in place
Transparency	Developers/owners able to navigate the process	Yes	Yes
Social Adder	Bonus paid for local project support and involvement	---	Yes
Eligible for CDM	Ability for projects to receive carbon offsets in addition to FiT	Yes	Yes, up to individual developer/owner to pursue
Streamlining	Transaction costs minimized	Yes	Yes, developers/owners only need to interact with the two distribution utilities

Source: MCG Research, 2010

Appendix III: Summary of Developing Countries FiT Designs

Applying TLC criteria to developing countries: Tanzania

FIT Design Features	Key Factors	TLC at the Right Price	Tanzania
Policy & Economic Framework	"Linkage" to mandates & targets	Yes	No
Core Elements	Eligible technologies	Appropriate technologies targeted	All renewables
	Specified tariff by technology	Yes	No
	Standard offer/ guaranteed payment	Yes	Yes
	Interconnection	Yes	Yes
	Payment term - all Biomass only	15-25yrs 5-10 yrs	1 Year 1 Year
Supply & Demand	Must take	Yes	Yes
	Who operates	Private entities	Private entities
Fixed Structure & Adjustment			
How to Set Price	Fixed vs. variable price	Peg to inflation for generators with high O&M*	Pegged to inflation
	Generation cost vs. avoided cost	Generation	Avoided cost
	IRR target	Yes	No
How to Adjust Price	Degression	Yes	No
	Periodic review	Yes	Yearly
	Grid parity target	Yes	No
Caps	Project size cap Volume Cap	Depends on context Based on ratepayer impact or transmission constraints	Yes, 10 MW No
Policy Interactions	Eligible for other incentives	Yes - eligible to take choice	Yes
Electricity Market Structure	IPPs eligible for participation	Yes	Yes
Transparency	Developers/owners able to navigate the process	Yes	Yes
Social Adder	Bonus paid for local project support and involvement	---	Yes for mini-grids
Eligible for CDM	Ability for projects to receive carbon offsets in addition to FiT	Yes	Yes
Streamlining	Transaction costs minimized	Yes	Yes

Source: MCG Research, 2010

Appendix IV: Guiding principles for GET FiT

GET FiT will contribute to the achievement of the Millennium Development Goals and follow the aid effectiveness principles of the Paris Declaration.

- There are 8 Millennium Development Goals (MDGs) for the international community to achieve by 2015: End poverty and hunger, universal education, gender equality, child health, maternal health, combat AIDS/HIV, environmental sustainability and global partnership.
- Energy is not a specific MDG, but the importance of energy access and renewables in MDGs is clear and a key driver for the other goals.
- The Paris Declaration seeks to streamline and improve aid effectiveness through 5 guiding principles, which GET FiT weaves into its program design.

Principle	GET FiT model
Ownership. Developing country takes active role in development planning	GET FiT will work with developing countries that are seeking assistance in meeting renewable energy and energy access goals through their national development planning. For energy access efforts, GET FiT will work to encourage ownership at the community level
Alignment. Donors align efforts with recipient development strategies and local resources	GET FiT support will be accessible to countries that have already or want to implement or strengthen FiTs as a national renewable energy strategy. FiT design will be flexible to work within the context of the country
Harmonization. Create adequate networks for transfer of know-how, collaboration and to minimize duplicative efforts	GET FiT will help aggregate and coordinate existing capacity building efforts, risk insurance and hedging services, and private sector initiatives that complement the GET FiT mission. GET FiT will offer technical assistance on feed-in tariff design when needed
Managing for results. Indicators are identified and results measured	GET FiT will work to ensure that the Program and the developing country are achieving joint goals through measurement of key indicators and monitoring of program results
Mutual accountability. Donors and recipients are accountable for results	GET FiT will coordinate with developing country governments, local financiers and developers/owners, and (especially in the case of mini-grids) civil society, to establish transparent policies, joint expectations and accountability for achieving results

Bibliography

Charles Kirubi, Arne Jacobson, Daniel M. Kammen, and Andrew Mills, "Community-Based Electric Micro-Grids Can Contribute to Rural Development: Evidence from Kenya," World Development (2009), vol. 7(7), pp. 1208-1221.

Chris Greacen, "Energy sector development in the Mekong region: current plans, key concerns and alternatives", Palang Thai, Workshop on Mekong Environment and Livelihood: The Changing situation and Trans-boundary Implications. February 3-4, 2010.

Chris Greacen, "Selling renewable energy profitably to the grid: The evolution and results of Very Small Power Producer (VSPP) Regulations in Thailand and Tanzania", Presentation for Mekong Regional Energy Conference, Intercontinental Hotel, Phnom Penh, Cambodia September 30, 2009.

Chris Greacen, "The Story of Thailand's Centralized Power Sector. Renewable Energy and Energy Efficiency in Thailand". Presentation for Mekong Ecology and Energy Network (MEE-Net), Fortune Hotel, Bangkok, October 5, 2009.

CICERO – Center for International Climate and Environmental Research-Oslo, www.cicero.uio.no, 2010.

Climate Works and European Climate Foundation, Project Catalyst, "Scaling up Climate Finance", Finance Briefing Paper, September 2009.

Climate Works Foundation, Project Catalyst, "Enabling Technologies for Low Carbon Growth", April 27, 2009.

DBCCA, "Global Climate Change Policy Tracker: An Investor's Assessment", October 2009.

DBCCA, "Paying for Renewable Energy: TLC at the Right Price", December 2009.

Deacon Harbor Financial, KEMA, Meister Consultants Group, Sustainable Energy Advantage, "Feed-in Tariff Design Implications for Financing of Renewable Energy Projects Over 20 MW", May 29, 2009.

Deacon Harbor Financial, "Financing and FiTs", EUCI Conference on Feed-in Tariffs, San Francisco, CA, February 2, 2010.

D. O'Connor, and F. Soltau, UN DESA, "Cracking the deployment nut – policy options for accelerating renewable energy in developing countries", 2009.

Danyal Reiche and David Jacobs. "Erneuerbare-Energien-Politik in Norwegen – eine kritische Bestandsaufnahme", Energiewirtschaftliche Tagesfragen (2009), vol. 59(10), pp 2-4.

E.R. Yescombe, "Principles of Project Finance", Academic Press, 2002.

ESMAP, „Scaling up Developing County Deployment of Grid-Tied Renewable Energy Technologies", Advanced Market Commitments for Low Carbon Technology, Chatham House, London, January 28, 2010.
EU, "Microgrids", www.microgrids.eu, 2010.

Eurobserv'ER, "Eurobserv'ER Barometer", www.eurobserv-er.org, 2010.

Government of South Africa, Department of Public Enterprises and the Department of Trade and Industry, "Advancing South Africa's Low Carbon Industrial and Economic Strategy", The South Africa renewables Initiative (SARI), February 28, 2010.

Greenpeace and EREC, "Energy [r]evolution, A Sustainable World Energy Outlook", 2007.

Greenpeace and EREC, "Scaling up for a renewable future, Reforming existing mechanisms and shaping approaches post-2012", Energy (R)evolution report, www.greenpeace.org/raw/content/canada/en/documents-and-links/publications/energy-revolution-report-2009.pdf, 2009.

GSI and IISD, "Untold Billions: Fossil-fuel Subsidies, Their Impacts and The Path to Reform", The Politics of Fossil-Fuel Subsidies, 2009.

GTZ and BMZ, "Clean Development Mechanism, What is it? How does it work?" www.gtz.de/de/dokumente/en-climate-cdm-info.pdf, est. 2000-2010.

Bibliography

Guey-Lee, L. (1999). Renewable electricity purchases: History and recent developments. In Renewable energy 1998: Issues and trends. (DOE/EIA-0628(98)). Washington, DC: US Energy Information Administration.

Heidi Elizabeth Staff Mestl, Gunnar S.Eskeland (2008). “Richer and healthier, but not Greener? Choices concerning household energy use in India”, Energy Policy (2009), vol. 37, pp 3009–3019.

Helio International, “Indicator Selection and Rationale”, Sustainable Energy Watch, 2005/2006.
DEG, CERES and Risk Metrics Group. “Addressing Climate Risk, Financial Institutions in Emerging Markets” September 2009.

Ingi Salgado, “Eskom’s World Bank loan runs into opposition”, Business Report, February 23, 2010, pp 6.

J.E.Besant-Jones, “Reforming power markets in developing countries: what have we learned”, The World Bank Group, Energy and Mining Sector Board Discussion Paper, Paper No. 19, 2006.

Jennifer Caplan, “Political Risk: Run for Cover?” www.cfo.com/article.cfm/3003066?f=related, January 22, 2002.

KEMA, “California Feed-In Tariff Design and Policy Options”, Final Consultation Report, May 2009.

Major Economies Forum, “Technology Action Plans – Solar Energy, Wind Energy, Bioenergy,” December 2009.

Miguel Mendonca, David Jacobs and Benjamin Sovacool, “Powering the Green Economy: The Feed-in Tariff Handbook”, Earthscan, 2010.

Miguel Mendonca, “Feed-in Tariffs for Developing Countries: Theory and Practice”, Policy Brief for Making It; Industry for Development, 2010.

Katharine Nawaal Gratwick and Anton Eberhard, “Demise of the standard model for power sector reform and the emergence of hybrid power markets”, Energy Policy (2008), vol. 36, pp 3948–3960.

Magda Moner-Girona, European Commission, Joint Research Centre, “A New Scheme for the Promotion of Renewable Energies in Developing Countries: The Renewable Energy Regulated Purchase Tariff”, May 2008.

Magda Moner-Girona, “A New Tailored Scheme for the Support of Renewable Energies in Developing Countries”, Energy Policy (2009), vol. 37, pp 2037-2041.
MIGA, www.miga.org, 2010.

NERSA, “South Africa Renewable Energy Feed-in Tariff (REFIT)”, Regulatory Guidelines March 26, 2009.

OPIC, www.opic.gov, 2010.

Political Risk Insurance Centre, www.pri-center.com, 2010.

OECD, 2010, www.oecd.org/document/18/0,3343,en_2649_3236398_35401554_1_1_1_1,00.html, 2010.

Project Catalyst, www.project-catalyst.info, 2010.

Ren21 and AWG-LCA, "Scaling up for a renewable future", www.hydropower.org/recent_statements/REN_Alliance-COP_15-Position_Statement-LR-2009_12_11.pdf, 2009.

Samantha Ölz, OECD/IEA, “Deploying Renewables, Principles for Effective Policies”, 2008.

Stern Review (2006). Policy responses for mitigation: Accelerating technological innovation (Part IV, Chapter 16). The economics of climate change. Cambridge, UK, Cambridge University Press.

Shai Oster, “Chinese Law Aims to Increase the Use of Renewable Energy”, New York Times, December 28, 2009.

The Wind Power, www.thewindpower.net, 2010.

UN, www.un.org/millenniumgoals, 2010.

Bibliography

UNDESA, “Climate Change and the Energy Challenge”, Policy Brief No. 24, www.un.org/esa/policy/policybriefs/policybrief24.pdf, 2009.

UNEP, “Investing in a Climate for Change, Engaging the Finance Sector”, 2008.

Wathanya Amatayakul and Göran Berndes, Chalmers University of Technology Joergen Fenhann, ENEP Risø Centre, Technical University Denmark, “Electricity sector no-lose targets in developing countries for post-2012: Assessment of emissions reduction and reduction credits”, CD4CDM Working Paper Series, Working Paper No. 6, www.cd4cdm.org/Publications/ElectricityTargetsDCpost2010.pdf, December 2008.

WFC, http://www.worldfuturecouncil.org/arguing_fits.html, 2010.

WFC, “Renewable Energy Policies for Sustainable African Development”, April 2009.

WFC, “Unleashing Renewable Energy Power in Developing Countries, Proposal for a global Renewable Energy Policy Fund”, Hamburg, November 2009.

World Bank, “(HIPC) The Enhanced Heavily Indebted Poor Countries Initiative”, www.worldbank.org, 2010.

World Bank, “Illustrative Investment Programs for the Clean Technology Fund”, Design Meeting on Climate Investment Funds, Potsdam, Germany, May 21-22, 2008.

Xinhua Writer Li Huizi, “China amends law to boost renewable energy law”, www.xinhuanet.com, December 2009.

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