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Best Practice Design in Feed-in Tariffs (FITs)

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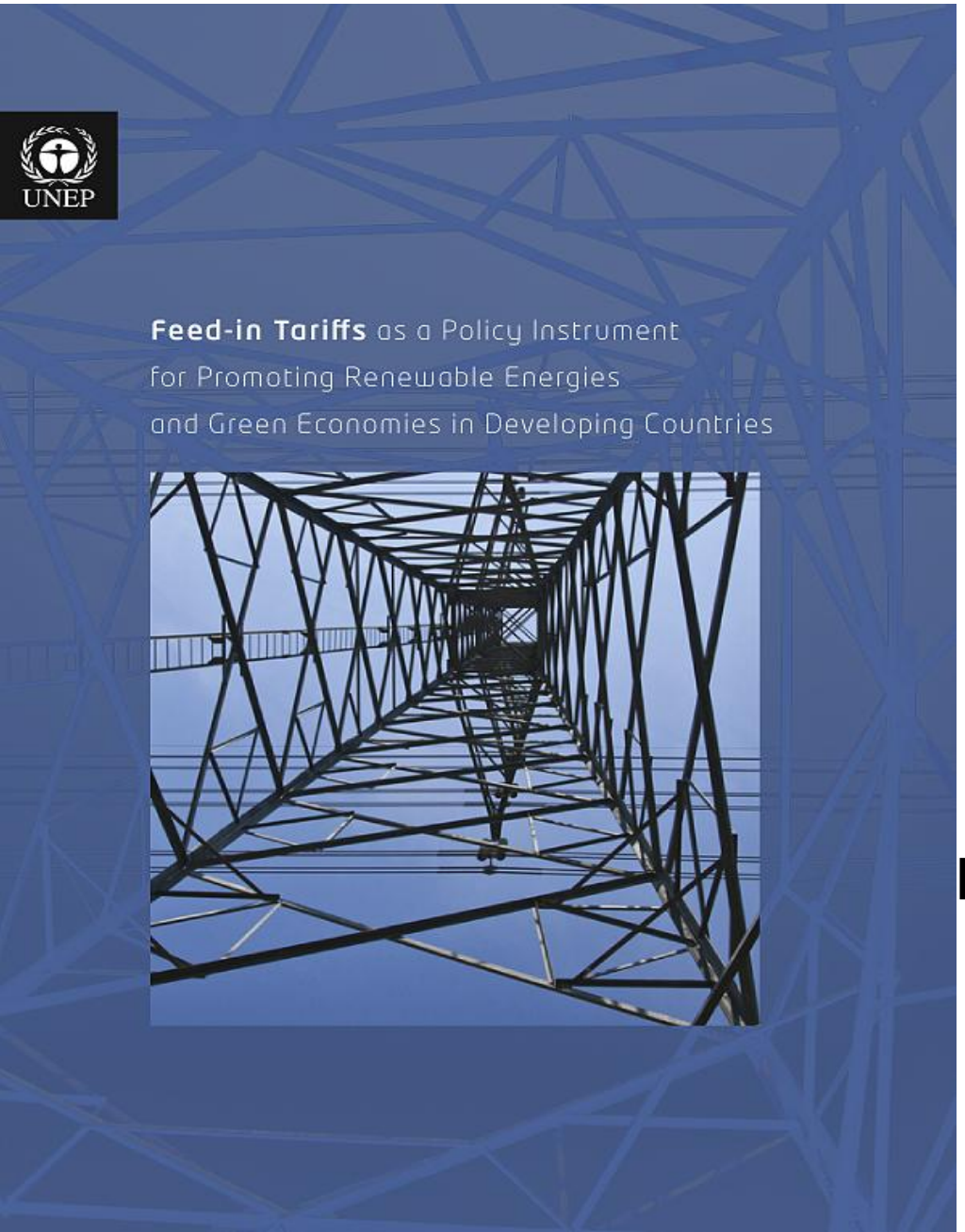
Contents

Part 1 – Introduction to UNEP

Priority Thematic Areas

- Climate Change
- Resource Efficiency
- Disaster and Conflicts
- Environmental Governance
- Harmful Substances and Hazardous Waste
- Ecosystem Management

Part 2 – Feed-in Tariffs Design Elements



UNEP FIT report

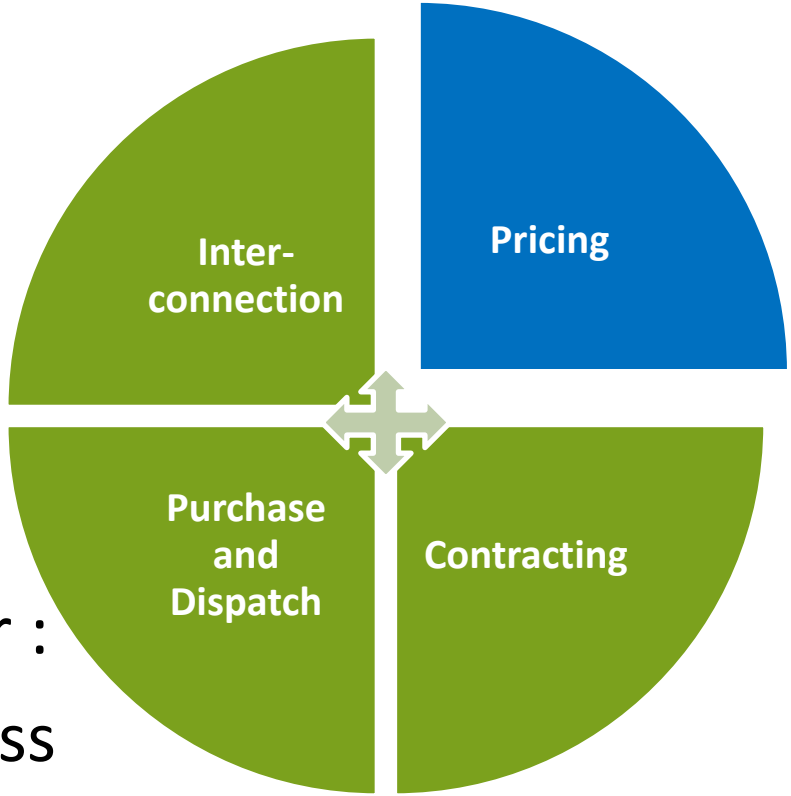
Policy design and Law drafter's guide

targeting
Developing Countries

What is a Feed-in Tariff (FIT)?

A feed-in tariff (FIT) is an energy policy focused on supporting the development of new renewable power generation.

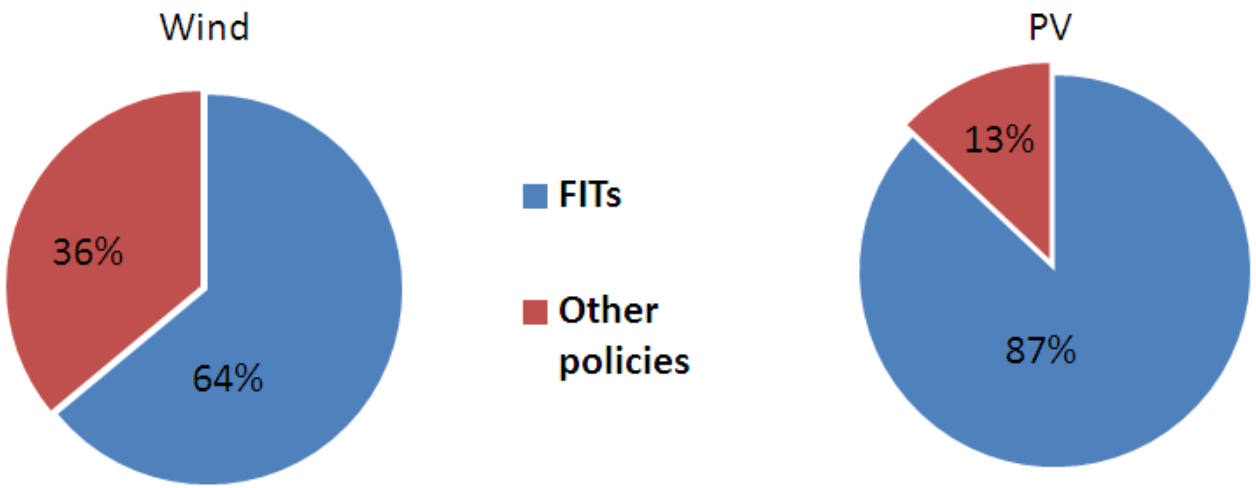
More 'Feed-in' than 'Tariff'

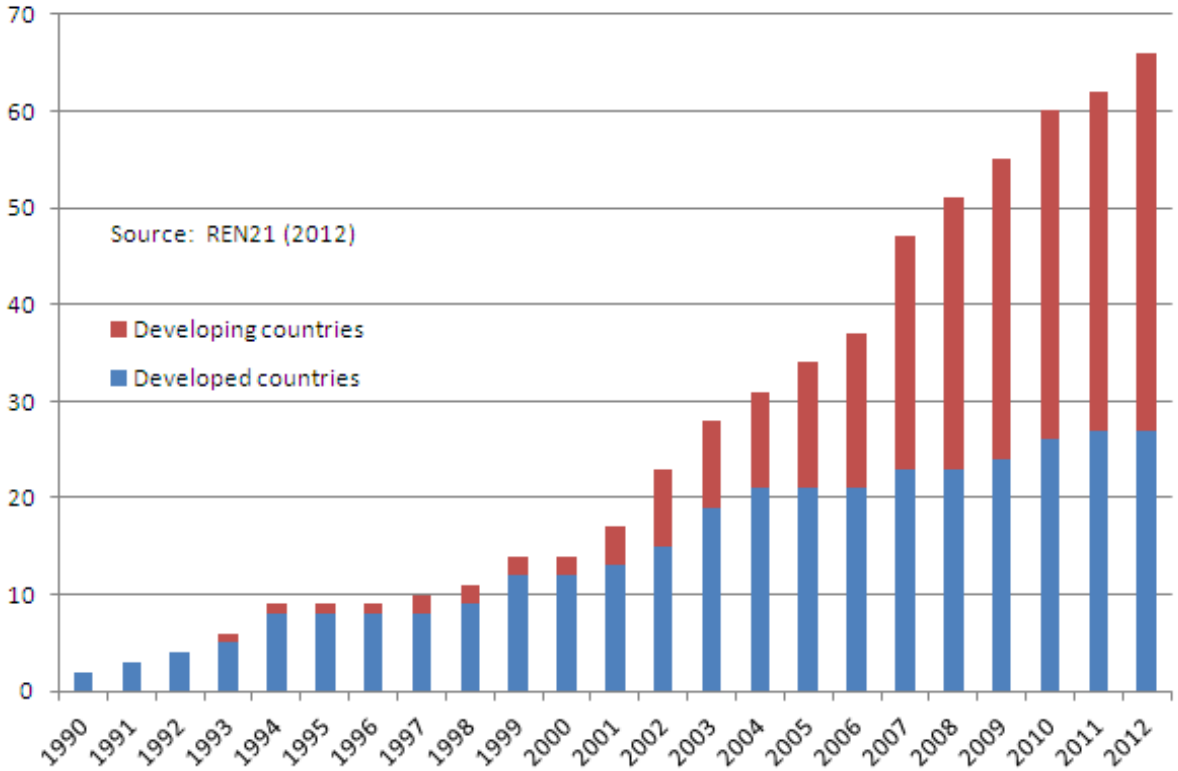


Typically, FITs provide for :

- A guaranteed grid access
- A long-term contract for the electricity produced
- Eligible generators receive an attractive price for their renewable energy sales

FIT as the Most Prevalent Mechanism





FITs have driven 64% of global wind and 87% of global PV capacity (BNEF, 2012)

Major interactions of the design issues and policy considerations

FIT Design Issue	Investor security	Energy access	Grid stability	Policy costs	Price stabilization	Electricity portfolio diversity	Administrative complexity	Economic development
Integration with Policy Targets	✓						✓	
Eligibility		✓	✓	✓		✓		✓
Tariff Differentiation		✓		✓		✓	✓	✓
Payment Based On	✓			✓	✓	✓	✓	
Payment Duration	✓			✓	✓			
Payment Structure	✓			✓	✓		✓	
Inflation	✓				✓			
Cost Recovery	✓			✓				
Interconnection Guarantee	✓		✓					
Interconnection Costs	✓		✓	✓				
Purchase and Dispatch Requirements	✓			✓				
Amount Purchased	✓						✓	
Purchasing Entity	✓						✓	
Commodities Purchased	✓			✓			✓	
Triggers & Adjustments	✓		✓	✓	✓		✓	
Contract Issues	✓							
Payment Currency	✓			✓				
Interaction with Other Incentives	✓			✓				

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FIT policy design considerations

1. Integration with policy targets : Voluntary or binding , with or without links to energy and climate targets; Has implications for investor security and for the amount of administrative complexity.

2. Policy objectives in law : May or may not have direct impact on policy implementation. Can influence policy development if law sets stage for subsequent rounds of policy making.

3. Eligibility : Some of the more common eligibility decision points for decision-makers include technology (impact portfolio diversity), resource, vintage (new vs. existing), ownership (the types of entities that can own generation under the FIT), size (project caps), and grid connection (whether to restrict on-grid interconnection to certain voltage levels, and whether to allow mini-grid or isolated grid systems to participate in the FIT). e.g. In Thailand, eligible ownership types include private, public or an individual.

FIT policy design considerations

4. Tariff Differentiation

- Renewable energy type (wind, PV, etc.)
- Project size
- Resource quality (strong wind regime vs. weak wind regime)
- Technology application (e.g. ground mounted PV, roof-mounted PV, building-integrated PV, etc.)
- Ownership type (e.g. publicly owned vs. privately owned)
- Geography (e.g. mainland vs. island locations)
- Local content

5. Setting the FIT Rate

Cost-based approaches establish the FIT payments according to the cost of renewable energy generation, plus a targeted return. Some FIT laws explicitly state the assumptions in the generation cost calculation (e.g. the minimum return on equity) whereas others simply state that the rate must be cost based.

FIT policy design considerations

6. Payment Duration

Various categories : Short-term (e.g. 3 to 7 years), medium-term (e.g., 8 to 14 years), and long-term (e.g., 15 to 20+ years). FIT policy may also specify what occurs to project revenue streams at the end of the policy term.

7. Payment structure

- Fixed price : guaranteed payment for a pre-established period of time; price unaffected by fluctuations in market price of electricity.
- Premium design : payment on top of the wholesale market price. Given that wholesale prices are variable, some countries have included floor prices and/or ceiling prices for the total incentive (i.e. the wholesale price plus the premium) that a generator can receive.
- “Spot market gap” approach combines elements of both fixed price and premium designs. A total guaranteed payment level is set, similar to the fixed price design. The generator must also sell electricity into the wholesale market, however. The FIT payment is equal to difference between the guaranteed payment level and the wholesale market price. As wholesale electricity prices rise, the amount of the FIT payment decreases, and vice versa.

FIT policy design considerations

8. Inflation : Accounted in rate setting model or by adjusting the rate that the generator gets paid annually; adjustment often targeting a percentage of the rate to reflect that not all of a project's costs are operating costs.

9. Cost recovery : Sources include primarily ratepayers or the national budget (i.e. from taxpayers) – sometimes involving both when electricity is subsidised. To a lesser proportion, subsidy reform or international funds.

10. Interconnection guarantee : Either shifts much (or all) of the risk associated with interconnection from generators to the utilities and their ratepayers OR can be coupled with interconnection cost recovery rules that can be highly favourable to the generators. In some countries, interconnection is regulated separately from FITs.

11. Interconnection costs : Includes the costs of connecting to the grid , and can also include costs of grid upgrade (paid by generator or to various extents by ratepayers).

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FIT policy design considerations

12. Purchasing and dispatch requirements : Utilities cannot refuse any renewable electricity that is offered for sale under the FIT, even if there is conventional generation available that could be purchased at a lower price. On some countries, base load generators are compensated. It raises questions about how priority dispatch policy should be implemented when confronted with real technical limitations of intermittent supply.

13. Amount purchased : "Gross" FITs, under which 100% of electricity is purchased from onsite generators, and "net" FITs under which only excess electricity is purchased. Gross FITs is usually preferable from an investor and financing perspective, as with net FITs the onsite electricity consumption is variable and not secured contractually.

14. Purchasing entity : Utilities, transmission system operators, government agencies, and/or third party entities. Administrative burden is highest with government (or a state-owned utility) as FIT off-taker. With utility or a third-party FIT off-takers, public administrative requirements shift from management functions to less intensive regulatory and oversight functions

FIT policy design considerations

15. Commodities purchased :

- Only electricity and generators retain ownership of all other commodities and environmental attributes
- The rights to other commodities are bundled with electricity and transferred to the FIT "purchaser" (e.g. the utility).

A single contract that transfers all commodities to the purchase and provides investors with their required financial return maximizes investor security, and reduces administrative and monitoring requirements.

16. Triggers and Adjustments

•Policy adjustment currently in practice include tariff degression, the introduction of annual or overall hard caps, periodic reviews, etc.

•Triggers (time-based or capacity-based)must be transparent.

17. Contract Issues

Many FITs laws specify whether or not a contract is required and whether the contract is standard or not. Contracts are usually not used for premium FITs. Contracts can be standard or negotiated.

FIT policy design considerations

18. Payment Currency

FIT laws can specify if payments will be in local currency or denominated in and/or indexed to a foreign currency. A key driver for this decision is whether the project developers are likely to be engaging in transactions that expose them to foreign exchange risk.

•Local currency payment are particularly useful for small scale projects.

•Currency risk can be mitigated by denominating the FIT payments in hard currency or by indexing the payment to foreign currency exchange rate. But this approach shifts currency exchange risk to ratepayers.

19. Interaction with other incentives

Some countries utilize the FIT as their only renewable energy policy incentive. Other countries have a more complex renewable energy policy landscape in which the FIT functions in parallel with other local, state, national and/or international incentives. Policy makers can utilize FIT legislation to specify how FITs and other incentives interact.

Generators receiving cost-based rates should theoretically not require additional incentives, although cost-based rates may be set assuming availability of other incentives.

Part 3 – Implementation issues

FIT policies development pathways

Legislative pathway

- Feed-in tariffs are often established in law. The language of the legislation can be very narrow or very broad in its scope. For example, the legislation can include the specifics of a FIT policy including terms like price, contract length, and technology, or the legislation can be very general, only specifying that a FIT is authorized and grant authority to a utility commission or regulatory body to promulgate the specifics of the FIT policy in the form of regulations.

Pros
- Strength of law
- Greater investor confidence and security

Cons
- Difficult to include all relevant details in law alone
- Less opportunity for stakeholder consultation and buy-in

Non-legislative pathway

- Regulatory bodies (e.g. utility commissions) may have constitutional or legal authority to develop rules and regulations. Assuming that authority over renewable electricity is properly established, they may have the power to develop a FIT program independent of FIT legislation or upon direction from the executive branch (e.g. a President or Minister).

Pros
- Potentially streamlined policy development
- Creates opportunity for regulatory process and stakeholder buy-in

Cons
- Not a law
- Less investor confidence

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UNEP Energy Branch
http://www.unep.org/energy/

UNEP FIT Report
http://www.unep.org/pdf/UNEP_FIT_Report_2012F.pdf