

The Brazilian Government's Alternative Energy Program PROINFA (Program for Incentive of Alternative Electric Energy Sources)

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Abstract

The Brazilian Government launched in 2002, through the law 10438/02, the Incentive Program for Alternative Electric Generation Sources (PROINFA – Programa de Incentivo a Fontes Alternativas), which provides incentives to renewable sources, to be connected to the national grid.

The PROINFA plan is divided into two phases. In the first phase, long-term contracts (of 20 years) are supposed to be made over 3.300 MW by the Eletrobrás (Holding of the Brazilian Power System). The fixed amount is supposed to be achieved equally by the following energy sources: wind power, small hydropower projects and biomass. The purchase of this energy will be defined by the economic value for each specific technology.

Reaching the first 3.300 MW, the second phase will begin. The program is designed aiming that the renewable sources to achieve 10% of the Brazilian power production. This goal is supposed to be reached within the next 20 years, as in the first phase with contracts.

This paper presents a general overview of this program, as well the expected results and discusses the perspectives and its implementation in Brazil.

1. Introduction

The Brazilian Government launched in 2002, through the Law 10438/02, the Incentive Program for Alternative Electric Generation Sources (PROINFA – Programa de Incentivo a Fontes Alternativas). The main objective of this program is to provide incentives to renewable energy in Brazil, contributing to the development of clean technologies and the improvement of the quality of the environment.

PROINFA aims at increasing the share of electricity produced by Independent Power Producers (wind, small hydro and biomass thermoelectric plants) based upon connection to the grid of energy from wind, small hydro and biomass sources.

To achieve such objectives, some regulations will need compliance, as further described:

- Purchase contracts will be signed up by Eletrobras (*Centrais Elétricas Brasileiras S. A.*) in 24 months from issue of Law 10438, to implement 3,300 MW of installed capacity, starting up by December 2006. It is guaranteed the purchase of the produced energy during 20 years;
- This mandatory purchase will be distributed equally, in terms of installed capacity, for each of the 3 renewable sources established by the program. Price paid for the energy will follow the so-called “economic value” for each technology and source, to be established by the National Council for Energy Policy (CNPE – *Conselho Nacional de Política Energética*);²
- The selection of projects will be made by a call for projects, starting, for each of the three renewable sources, with the projects that were first to get their environmental license;
- Federal government will be responsible for purchasing energy from generators and selling it to deliverers and distributors.

The main advantage of PROINFA is to establish incentives to make renewable energy economically competitive in the Brazilian electric sector. This incentive is the first step to the implementation of a more diversified matrix for producing electric energy, as well as the re-organization national generation, transmission and distribution, helping with preventing further crises.

After the mandatory purchase of 3.300 MW from renewables until 2006, the second phase of PROINFA aims at achieving a share of 10% of alternative renewable sources for electricity production in the next 20 years. The 20 years guaranteed electricity purchasing contracts with ELETROBRAS (the federal electricity utility) will have the price based upon the weighted average cost of generation from natural gas thermoelectric plants and hydro plants above 30 MW. Price paid for energy will be equally distributed to final consumers. Producers will be inspected and provided with Renewable Energy Certificates.

PROINFA is expected to generate 150 thousand jobs and to leverage private investments of around USD 2.6 bln. The projects must have a minimum nationalization of 60% in total construction costs, as well as a regionalization criteria, where each State has maximum limits of 20% of total capacity for wind and biomass (220MW) and 15% for small hydro (165MW). Such limits are preliminary: if part of the 1.100 MW for each source is not contracted, this available potential will be distributed according to the older environmental permits. And if more than 1.100MW for a source was achieved with all these criteria, Eletrobras plans to make a draw.

² CNPE is a ministerial level Council, headed by the President of Republic, with duties of establishing the national energy policy

2. Implementation and First Results

Usually, power projects are financed by the state-owned bank, BNDES (the National Development Bank). For PROINFA, BNDES finances up to 70% in 10 years, first instalment in 6 months after operation start-up. The following interest rates are applied:

- (a) BNDES direct, TJLP³ + 3,5% p.a. or
- (b) indirectly, through a private bank: TJLP + 2% p.a. + administration fees charged by financial agent.

In this financing, BNDES excluded imported goods and services and also land acquisition.

BNDES used to have specific programs for renewable energy, specially biomass, with better conditions, but this previous programs are not available anymore and this program is not see as attractively for many entrepreneurs (BRIGHENTI, 2003 and PALETTA, 2004). At PROINFA, biomass projects did not reach the maximum because entrepreneurs didn't consider the economic value competitive.

PROINFA was regulated in 30 March 2004 by Decree 5025⁴ and the electricity purchasing prices paid by Eletrobras, the "economic value", was defined in the same date by Portaria 45, as showed in table 1. After this publication, a call for projects was open, to receive the projects that wants to participate on PROINFA.

Table 1: Electricity purchase prices

RET	RS/MWh
Small hydropower plant	117.02
Wind energy	180.18 – 204.35
Biomass	
Sugarcane	93.77
Wood residues	103.20
Rice husks	101.35
Landfill biogas	169.08

Source: Ministry of Mines and Energy – Portaria #45, March 30th, 2004
 (http://www.mme.gov.br/Proinfa/Portaria/Portaria_MME_n_45-2004.pdf)

This first Public Call of this program has indeed attracted enough projects to generate 6.601 MW (Table 2), or double the amount to be included in the incentive program. However final results of this 1st. phase were not so positive.

Eletrobrás, the Federal power holding company, had chose projects to generate about 3.300 MW, divided equally between wind, biomass and small-scale hydroelectric plants. The selection will be made according to technical and economic viability, starting with the projects that were first to get their environmental licenses (all projects are required to have a previous installation licence).

³ TJLP is the official long term interest rate, equivalent to Libor. Presently, it is 9.75%, according to BNDES , in <http://www.bndes.gov.br/produtos/custos/juros/tjlp.asp>

⁴ https://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2004/Decreto/D5025.htm

In this first call for projects, more than 50% of the projects were from wind, with the amount of 3.681 MW. The total of small hydropower projects was 1.924,17 MW and biomass 995,25 MW. Only biomass didn't achieved the total target was expected. The preliminary results are in Table 2.

Table 2: Preliminary results for PROINFA

Region	Projects (MW)
Northeast	2.688
South	1.502
Southeast	1.266
Middle West	981
North	164
Total	6.601

Source: Ministry of Mines and Energy (<http://www.mme.gov.br>)

In fact, the first call for projects didn't achieved the amount of 1.100MW for biomass. The total of projects with biomass was only 327,46 MW. Consequently, a second call for projects is happening for biomass. It began in October, and will finish in November 19th, in order to achieve the total of 1.100 MW. For wind energy and small hydropower plant, its stated objectives were achieved, and Eletrobrás had to organize draws to decide which projects will be selected to PROINFA. The projects selected must be in operation until December 2006.

3. Conclusion

With the implementation of the Renewable Energy Incentive Program PROINFA, Brazil has become the leading market for renewable energies in Latin America. It is expected to be generating 150 thousand jobs in this program and leverage private investments of around R\$8,6 bln. The national industry expected to produce more than R\$4 bln in equipments and materials. Other advantage of PROINFA is the growth in renewable energy, with provides more flexibility in Brazilian power production. The efficient use of renewable energy can contribute significantly to sustainable development as well as to local and global environment conservation.

For the wind energy and small hydropower plant, we can say that PROINFA has achieved its objectives, as it has approved 1.100 MW in projects for each source.

However, in the biomass case, it was different, as it has reached only 30% of the target. It was necessary a second call for projects to try to reach 100%. Although for this second call for projects the economic value wasn't changed. So it is not expected to have more participants than in the first call.

It is known that only in the southeast region the theoretical electricity generation potential with bagasse is 2.500MW⁵. From 2001 to 2004, only in the State of Sao Paulo, a total of 1184 MW projects with bagasse as fuel were licensed in the Secretariat of State for the Environment of São Paulo. But in PROINFA only 327 MW of biomass projects were select, which is a very low number compared with the potential it represents.

⁵ Fonte: CENBIO, 2001

Besides other difficulties, one of the main problems is the sale's price of electricity. If there is no change on economic value of biomass, in order to make it more attractive to the investor, biomass will never reach its target of 1.1000 MW, and the difference will be completed with other wind energy projects or small hydroelectric projects. So, in the biomass case, we can affirm that PROINFA still has to improve in order to promote this kind of energy.

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