

The Brazilian renewable energy initiative

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National governments and private companies spend approximately (US)\$ 250 billion per year on infrastructure for new energy supplies, more than \$ 1 trillion per year on direct energy purchases, and much larger sums on the infrastructure that consumes energy. Even small positive shifts in these investments and purchases can influence sustainable development. In particular, governments have a wide choice of policies to affect these expenditures at the national and local levels, and in rural and urban contexts.

Approximately 80 % of all energy used in the world comes from fossil fuels, which are mainly responsible for environment and health problems at the local, regional and global levels (Figure 1).

"New renewable energy sources"^[2] amount, worldwide, to 2.2 % of the primary energy supply, representing some \$ 20 billion per year of energy expenditures (Figure 1).

The advantages of new renewable energy sources over fossil fuels, which dominate the energy scene today (81 % of supply in OECD countries and 70 % in developing countries (see Appendix A), are well known. They:

- increase diversity in energy supply markets;
- secure long-term sustainable energy supplies;
- reduce atmospheric emissions (local, regional and global);
- create new employment opportunities in rural communities offering possibilities for local manufacturing; and
- enhance security of supply since they do not require imports that characterize the supply of fossil fuels.

In addition, renewables are a powerful instrument to reduce poverty for the following reasons.

- They can improve access to pumped drinking water using indigenous sources – clean water and cooked food reduce hunger (95 % of food needs cooking).
- They reduce the time spent by women and children on basic survival activities (gathering firewood, fetching water, cooking, etc.).
- They can facilitate better lighting, which permits home study, increases security and enables the use of educational media and communication in school.
- They reduce deforestation.

In order to increase the contribution of renewables, the GEF (Global Environment Facility) Roundtable on Sustainable Energy, which met in January 2002 in New York, as a parallel event to the Second Session of the Preparatory Committee (PrepCom II) of the World Summit on Sustainable Development, recommended the following as one of the possible government actions:

"Governments should adopt targets and timetables for

increasing both energy efficiency and the use of renewable fuels, building on existing targets, such as the EU target of attaining 12 percent of energy from renewables by 2010 and India's target of attaining 10 percent of new power generation from renewable energy by 2012. Setting of targets, along with the adoption of policies and measures, sends a strong economic and political message that can unleash the power of the market."

Before the above recommendation, the European Union had adopted the following Directive on Renewables:

"In September 2001, the European Union (EU) adopted the Directive on the promotion of electricity produced from renewable energy sources in the internal electricity market. According to this Directive, EU member states shall have their own national indicative targets (of renewables) at 12 % share of gross national energy consumption by 2010 and 22.1 % share of electricity generation by 2010."

The Chairman's Report of PrepCom II included as one of its items:

"Increase the share of new renewable energy sources to at least 5 per cent of total energy use by 2010 in all countries." (Chairman's Report of the Second Session of the Preparatory Committee for WSSD)

A meeting of the Ministers of Environment, from Latin American and Caribbean countries, which met in São Paulo in May 2002 before PrepCom IV, adopted as a resolution the Brazilian proposal drafted as:

"Increase in the region the use of renewable energy to 10 % as a share of total by 2010." (Draft of the Final Report of the 7th Meeting of the Intersessional Committee of the Forum of Ministers of Environment of Latin America and the Caribbean)

The Brazilian proposal allows trading of "new renewable energy" certificates among countries.

Other proposals were presented in Bali:

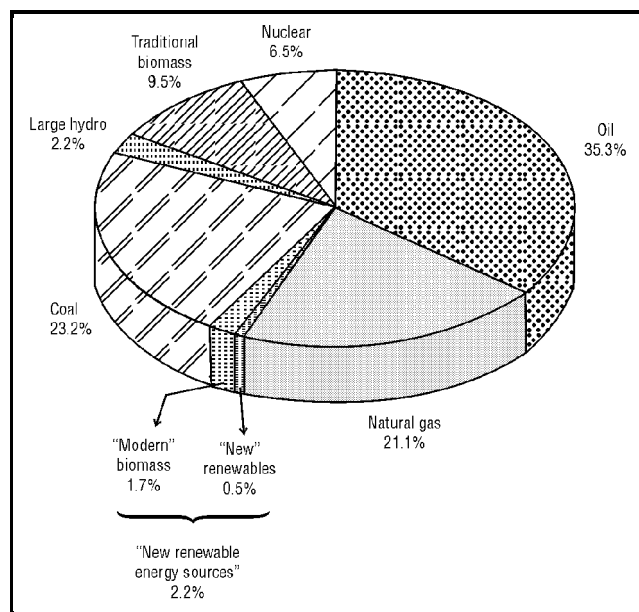


Figure 1. World consumption of primary energy and renewables, by energy type, 1998

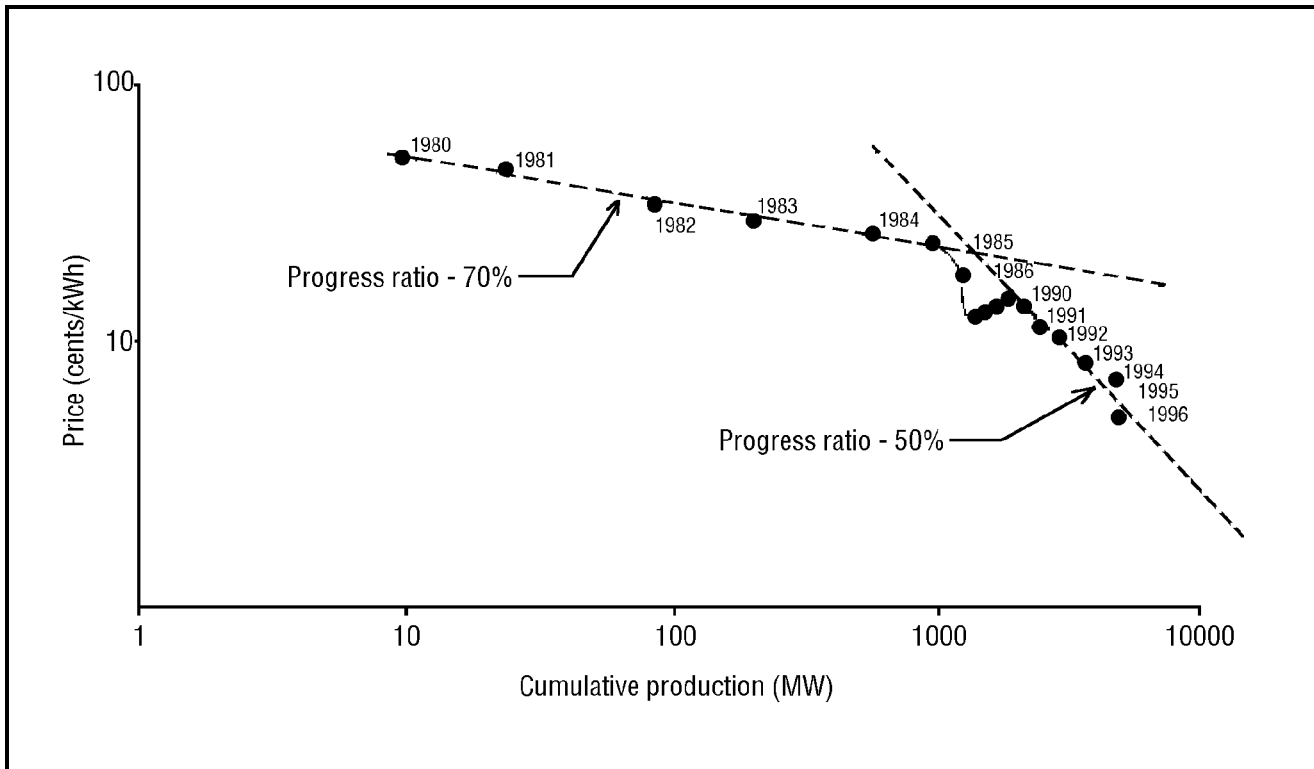


Figure 2. Wind energy learning curve

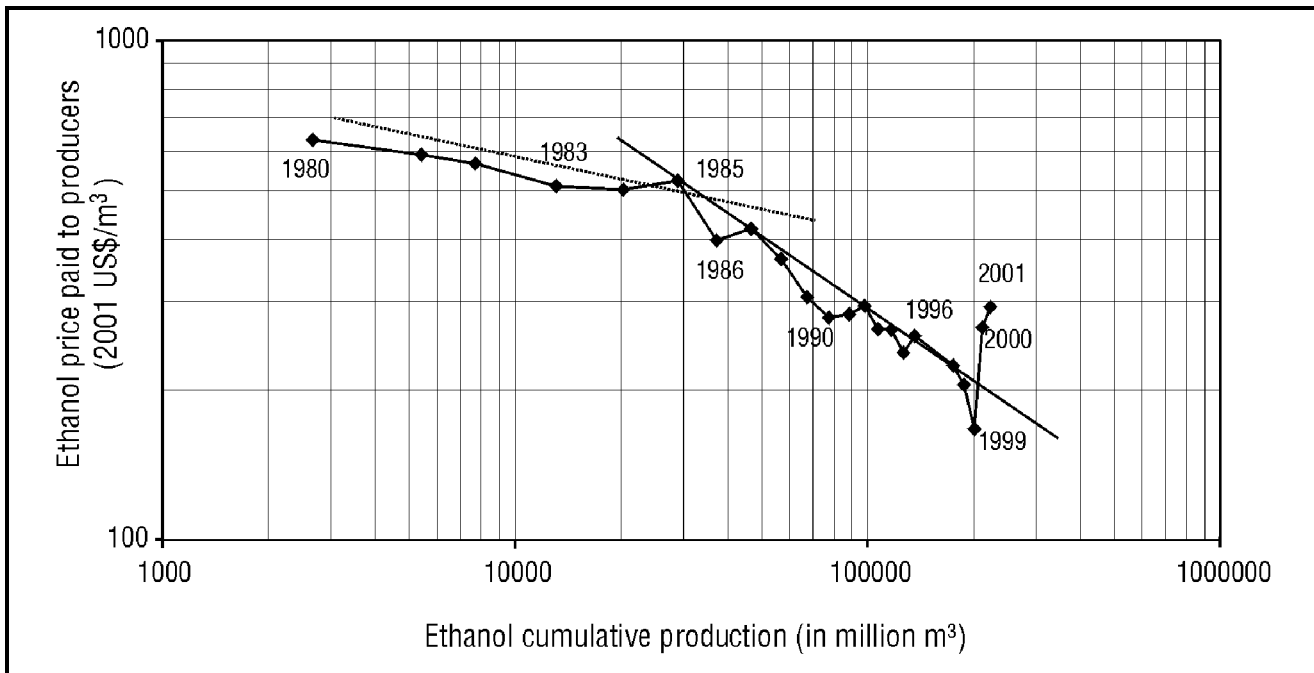


Figure 3. Ethanol learning curve. The prices quoted are for alcohol producers in Brazil.

“Diversify energy supply by developing cleaner, more efficient and innovative fossil fuel technologies, and promote the increase of the share of non-hydro renewable energy sources to at least 5 % of total primary energy supply by 2010” (Switzerland) and “Diversify energy supply by developing cleaner, more efficient and innovative fossil fuel technologies, and promote the increase of the share of new renewable energy sources by at least 2 % with the objective of increasing the global share to at least 15 % of total

primary energy supply by 2010. To achieve this all countries should adopt and implement ambitious national goals. For industrialized countries, these goals should aim at an increase of the share of renewable energy sources of total primary energy supply by at least 2 percentage points of total energy supply by 2010 relative to 2000.” (European Union)

They were all consolidated in a bracketed text at Prep-Com IV in Bali and included in the Chairman’s Report (June 2002), which means it will be the object of further

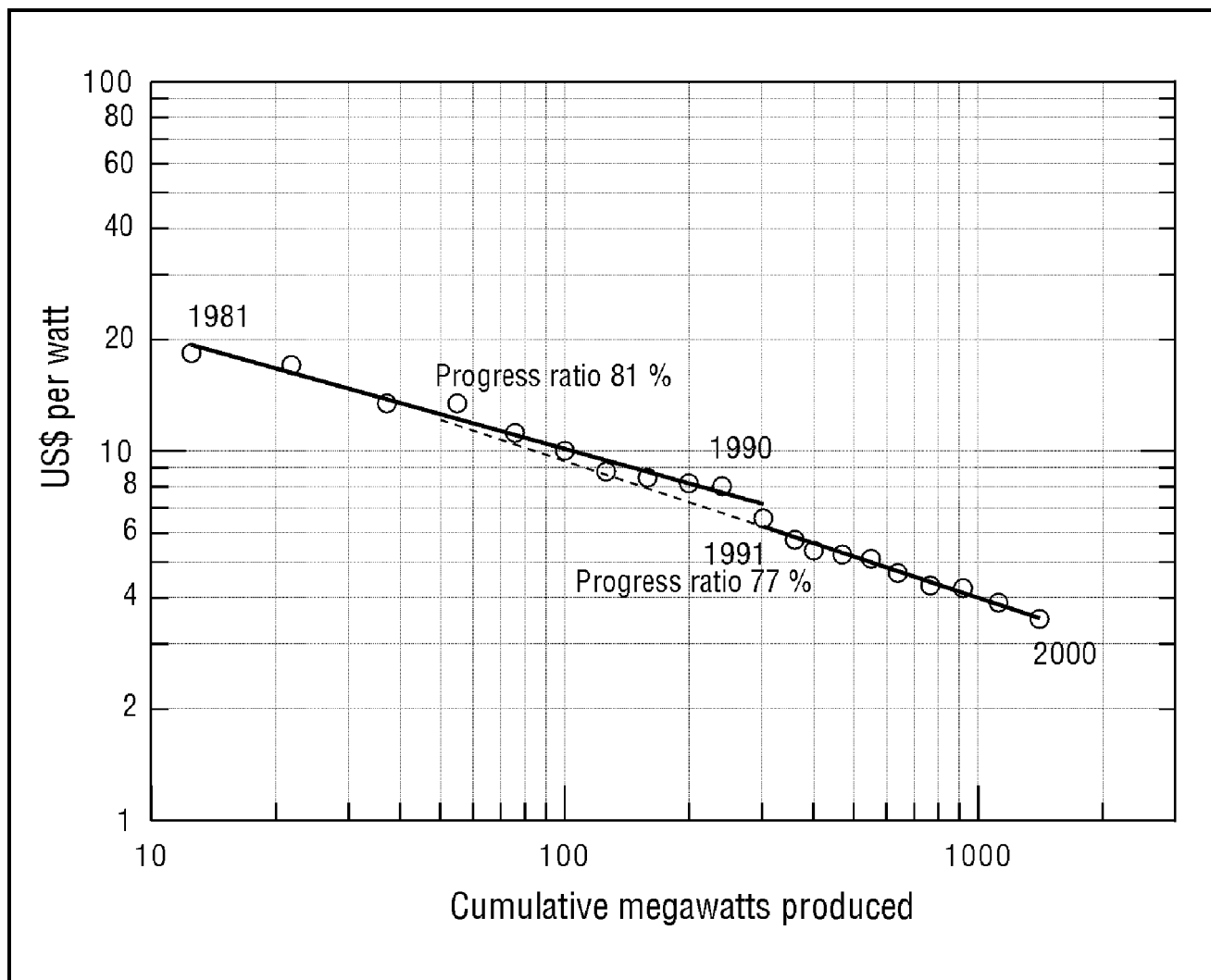


Figure 4. Photovoltaics learning curve

negotiations before or at WSSD in Johannesburg.

[[Diversify energy supply by developing cleaner, more efficient and innovative fossil fuel technologies, and promote the] increase of the share of [non-hydro]/[new] renewable energy sources [by at least 2 %]/[with the objective of increasing the global share to at least 15 % of total primary energy supply by 2010.] [To achieve this all countries should adopt and implement ambitious national goals.][For industrialized countries, these goals should aim at an increase in the share of renewable energy sources of total primary energy supply by at least 2 percentage points of total energy supply by 2010 relative to 2000.]/[to at least 5 % of total primary energy supply][by 2010]. [at the goal level by 2010. To achieve this, all countries should adopt and implement specific national goals;]]

Recent discussions between Brazil and Sweden led to the following formulation for a target^[3]:

“increase the share of modern renewable energy in the world’s energy supply by 10 % by 2012”

Since new renewable energy sources seem so attractive, one can ask why these proposals were opposed so fiercely by most oil-producing countries, despite guarded support

from some leading oil companies such as Shell and BP.

The strongest argument is high cost and therefore lack of competitiveness with conventional fuels. This was indeed the case in the past but, as consumption of renewable energy increases, its cost falls, as is usual for most products.

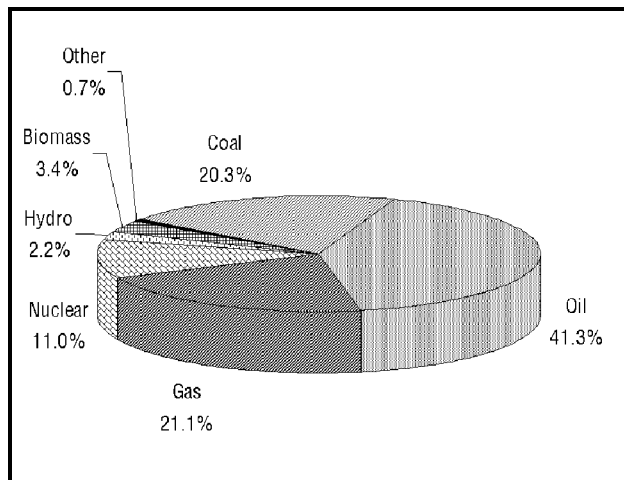
The “learning curves” (cost versus cumulative production) (Figures 2, 3, and 4) show that some new renewable energy sources are already competitive (wind, ethanol) and others, such as photovoltaics, are promising.

Brazilian ethanol, for example, is now competitive with gasoline without any subsidies. ■

Notes

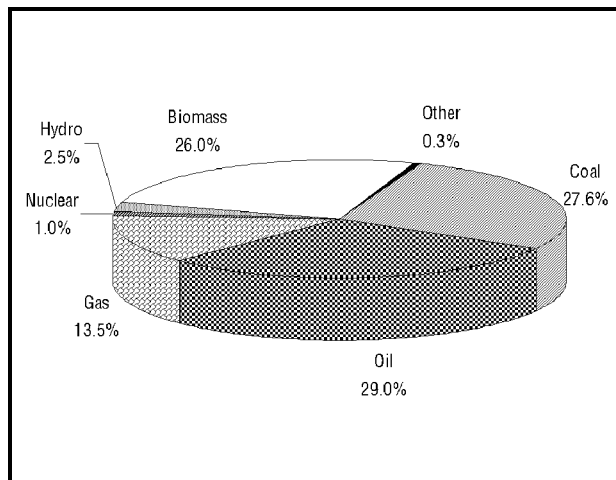
1. The author is currently Secretary for the Environment of the state of São Paulo, Brazil.
2. “New renewable energy sources” include modern biomass, small hydropower, geothermal energy, wind energy, solar energy (including photovoltaics) and marine energy. “Modern biomass” excludes traditional uses of biomass such as fuelwood and includes electricity generation and heat production and liquid fuels for transportation from agricultural and forest residues and solid waste.
3. The target refers to modern renewable energy (MRE). This includes small-scale hydropower, wind energy, geothermal, marine energy, solar energy, and biomass converted to liquid or gaseous fuels, or electricity (modern biomass). These comprise about 2 % of world energy supplies. In some countries MRE contributes significantly to national energy supplies, in others less. The proposal is to create an intergovernmental process at WSSD with the task of defining mechanisms (such as trading in green certificates) to implement the target in a fair manner.

Appendix A. Primary energy use, 1999



OECD

Population: 1.1 billion
 Total energy use: 231.6 EJ
 Per capita energy use: 208 GJ
 Average growth rate in the last 30 years: 2.1 % per year



Developing countries

Population: 4.4 billion
 Total energy use: 153.1 EJ
 Per capita energy use: 35.4 GJ
 Average growth rate in the last 30 years: 3.8 % per year

Appendix B. Energy and the millennium development goals (MDGs)

Energy services can play a variety of direct and indirect roles in helping to achieve the MDGs.

To halve extreme poverty: Access to energy services facilitates economic development – micro-enterprise, livelihood activities beyond daylight hours, locally-owned businesses, which will create employment – and assists in bridging the “digital divide”.

To reduce hunger and improve access to safe drinking water: Energy services can improve access to pumped drinking water – clean water and cooked food reduce hunger (95 % of food needs cooking).

To reduce child and maternal mortality, and to reduce diseases: Energy is a key component of a functioning health system, for example, operating theatres, refrigeration of vaccines and other medicines, lighting, sterile equipment and transport to health clinics.

To achieve universal primary education, and to promote gender equality and empowerment of women: Energy services reduce the time spent by women and children (especially girls) on basic survival activities (gathering firewood, fetching water, cooking, etc.). Lighting permits home study, increases security and enables the use of educational media and communications in schools (including information and communication technologies, or ICTs).

Environmental sustainability: Improved energy services help to reduce emissions, protecting the local and global environment. Efficient use of energy sources and good management can help to achieve sustainable use of natural resources and reduce deforestation.

Source: DFID Consultation Document *Energy for the Poor* downloadable from <http://enpov.aeat/ENPOV/pdf/DFIDConpaperfortheweb.pdf>