

## **São Paulo State's Contribution to Rio+20: Targets for Energy Sector (Summary<sup>1</sup>)**

The 2012 United Nations Conference on Sustainable Development will address three main topics (Poverty Reduction, Green Economy and Governance), in connection to the previous decisions, specially those concerned with the 1992 Rio and the 2002 WSSD.

This proposal from São Paulo State focus the global Energy sector, revisiting the 2002 Brazilian Initiative for a global target on renewable energy (10% by 2010) and the Millennium Development Goals.

### **TARGET 1: MINIMUM LEVELS OF PER CAPITA RESIDENTIAL ELECTRICITY SUPPLY**

The first target proposed is

**TARGET 1: “All countries should provide a minimum per capita residential electricity of 600 kWh by 2030, through cleaner technologies and technical-financial support from the international community.”**

This is based on the rationale that

- (i) electricity is a versatile energy carrier, providing basic services that other types cannot achieve - communications, lighting, basic refrigeration etc. (Figure 1);
- (ii) this basic prerequisite for development is still out of reach for most of the population in the poorer countries (Figure 2)

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<sup>1</sup> SMA – São Paulo State Environment Secretariat, Climate Change and Energy Department. Based on the article “Contributions to Rio+20 on Energy” by Oswaldo Lucon and José Goldemberg, under publication. Information contacts: Ana Paula Fava, [anapaulafava@ambiente.sp.gov.br](mailto:anapaulafava@ambiente.sp.gov.br) and Oswaldo Lucon, [oswaldol@cetesbnet.sp.gov.br](mailto:oswaldol@cetesbnet.sp.gov.br) , [oswaldolucon@gmail.com](mailto:oswaldolucon@gmail.com)

- (iii) good quality energy services provide women empowerment and thus control population in an ethically acceptable way (Figure 3).
- (iv) good quality energy services provide women empowerment and thus control population in an ethically acceptable way (Figure 3).
- (v) all countries with a “Low” HDI - Human Development Index (i.e. below 0.5, Figure 4) have a per capita residential electricity consumption below 200 kWh/yr, below a minimum level necessary for development;
- (vi) countries with a per capita residential electricity consumption above 600 kWh/yr have a minimally reasonable HDI;
- (vii) the HDI is still one of the best indicators of development, encompassing income, mortality and education;
- (viii) Access to modern energy services support the Millenium Development Goals (MDGs), specially to around 1.4 billion people without electricity and more 1.3 people utilizing traditional biomass;

Population in countries with low HDI (below 0.5) is around 1.02 billion people. To supply all these people with 600 kWh by 2030 it would be necessary to generate additional 531 TWh, through 242 GW of installed capacity, at a cost of US\$ 53 billion over 18 years. Average annual growth (12%) is ambitious, although acceptable considering the rapid evolution of technologies and access to development strategies.

## **TARGET 2: INCREMENTAL SHARE OF RENEWABLES IN THE PRIMARY ENERGY MATRIXES OF ALL COUNTRIES**

The other target revisits the Brazilian proposal at the WSSD (a 10% global target on renewables by 2010) and is stated as:

**TARGET 2: “All countries should increase the share of renewables in each country’s total primary energy supply, taking as a base the levels of year 2008 (ie 13%), in additional 4% (ie 17% of total) by 2030 and in additional 14% (ie 27% of total) by 2050”**

The rationale is the following:

- (i) the proposal for a global target on renewables was in practice misunderstood by many delegates at the WSSD: many countries with RE shares above 10% perceived that they should not act; some countries with RE below 10% perceived that would be a huge and uneven task; moreover, the number 10% was considered arbitrary by some;
- (ii) although the proposal for a numeric target could not reach a consensus, the Johannesburg Plan of Implementation (JPOI) has recognized the importance of renewable energy (RE) sources for all of the three pillars of sustainable development (SD);
- (iii) JPOI also recognizes the importance of targets and timetables in the energy sector;
- (iv) Increasing the share of RE in all matrixes also encompasses the implicit idea of Energy Efficiency and Conservation (EE&C), perfectly connected to any objective concerning the concept of Green Economy;
- (v) The recent Intergovernmental Panel on Climate Change Special Report on Renewable Energy (IPCC SRREN), approved under consensus by around 200 countries, recognizes the relationship RE-SD;
- (vi) The IPCC SRREN also provides scenarios (Figure 5) with the relationship between levels of RE and greenhouse gas concentration pathways – a condition to have average global temperatures stabilized at safe levels, addressing one of the major environmental threats mankind is facing today (as well as being in connection with the ultimate objective of the United Nations Framework Convention on Climate Change, proposed at the UNCED 1992);
- (vii) The window of opportunity is closing; delayed climate action is likely to entail additional costs to economy, as shown in reports such as the Stern Review.

According to the IPCC (2011), renewable energy sources (hydro, biomass, solar, wind, ocean, geothermal, marine) represented 12.9% (63.5 EJ) of world primary energy in 2008. The IPCC SRREN, a compilation of existing scientific information, shows ranges of RE supply consistent to carbon dioxide (CO<sub>2</sub>) levels below 400 parts per million (ppm), based on 164 literature scenarios. Such compilation provides the following median levels<sup>2</sup> of (i) 139 EJ/year in 2030 (17% of total primary energy supply) and (ii) year 248 EJ/ in 2050 (27% of total). This requires growths in RE of approximately 3.6%/yr in the period 2008-2030 and 2.9%/yr between 2030 and 2050. Such high rates require integrated policies with energy efficiency and conservation. Countries with low HDI could be exempted from this rule while such condition lasts, but with a commitment towards long-term convergence to this end.

## **Conclusion**

Such proposals entail the third topic to be discussed at Rio+20: governance. Under the present financial crisis, leveraging the electricity consumption would add to the consumption market more than 1 billion people. An economy driven by renewables and energy efficiency is much likely to be labeled as “Green”, in a dynamic and sustainable process.

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<sup>2</sup> Median (“middle number”) is a statistic parameter which dilutes the effects of extremes in a given range.

## ANNEX

Figure 1. Evolution in Energy Services (IEA, 2010a)

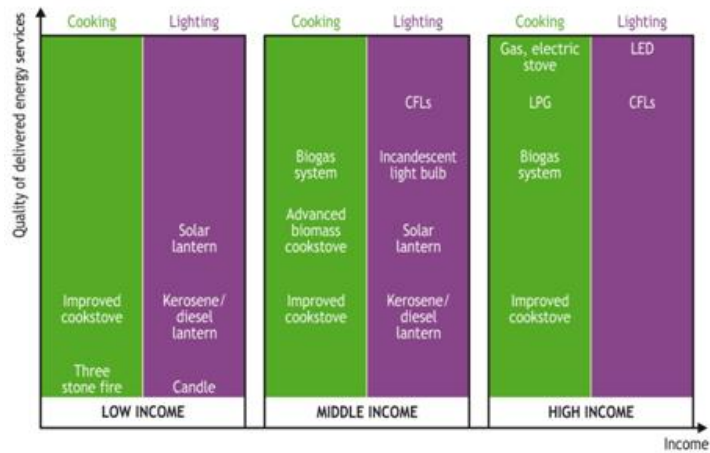


Figure 2 Population without access to electricity by country, 2009 (IEA, 2010a)

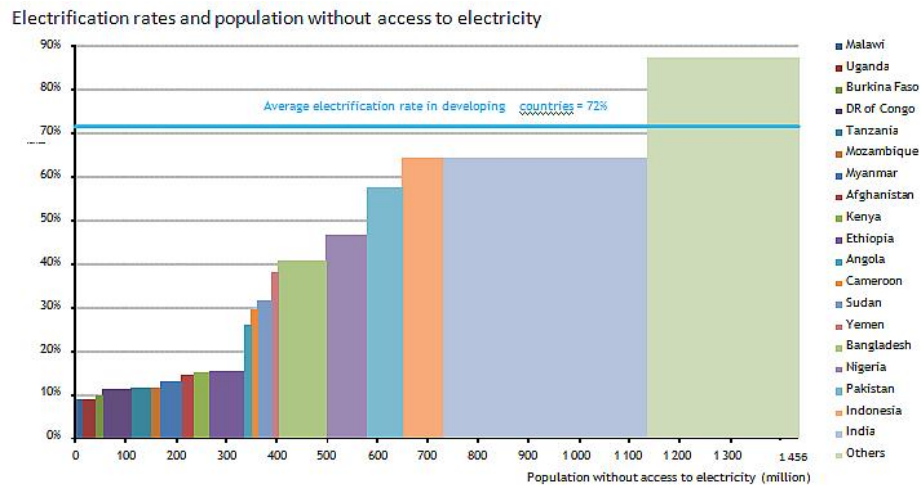
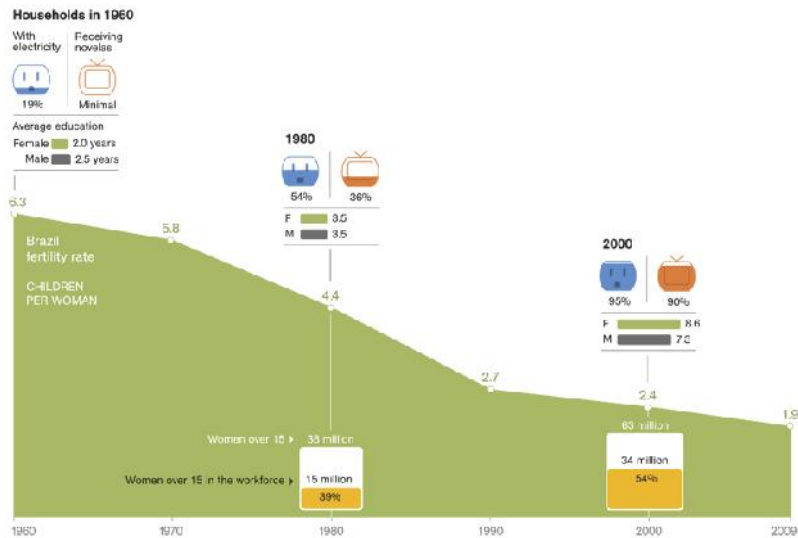
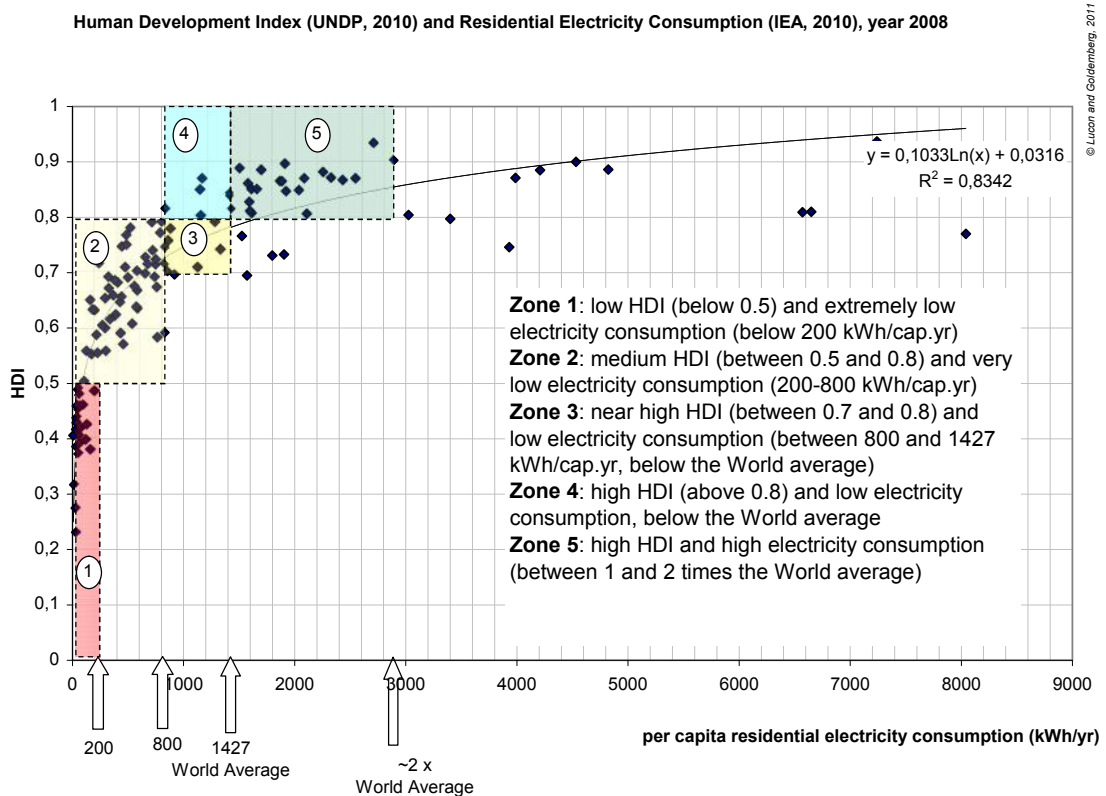


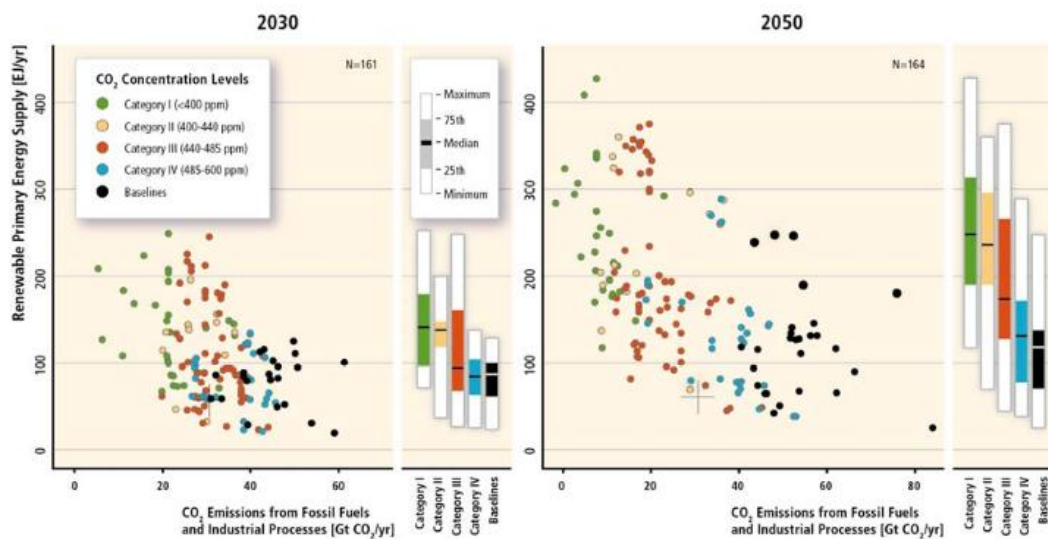
Figure 3. Reduction in birth rates, access to electricity and empowerment through television programs in Brazil (Gorney, 2011)



**Figure 4. Human Development Index as a function of per capita residential electricity consumption by country (UNDP, 2011 and IEA, 2010)**



**Figure 5. Synthesis of 164 scenarios (IPCC, 2011), considering RE supply, CO2 emissions and CO2 concentration pathways in the atmosphere. Central thick lines correspond to the statistical medians.**



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