

Sustainable Energy for All

Rio+20 Online Dialogues

Facilitators Report

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1. Introduction

In the introduction of a special issue of the journal, *Science on "Sustainability and Energy,"* concerning energy issues, Holdren (2007) stated "Nothing is more important to the human condition in the 21st century than rising to this set of challenges". Energy is a crucial resource that impacts upon the quality of life in contemporary societies. Our world is rich in its diversity, and each region of the world is rich in at least one sustainable source of energy. Yet, statistics still indicate that more than 1.5 billion people globally have no access to electricity, and a billion more have access in name only because their power supply is highly unreliable. An estimated 2.5 to 3 billion people rely on biomass and transitional fuels, such as coal and kerosene for cooking and heating.

In both developing and developed countries, the problematic of equitable of distribution of energy impacts our health, economy, environment and the development of many regions. In order to meet energy demands for increasing populations living in underdeveloped regions, i.e. isolated islands, deserts, forests and dense urban settings; major breakthroughs in harvesting, storing, transmitting huge quantities of energy is required. Furthermore, regions and economies with already relatively ample access to the world energy supply should reflect on how they could improve the efficiency of their own energy use.

The *Sustainable Energy for All* on-line dialogue therefore separated this complex problematic in three sub-topics: 1) Improving efficient use of energy in regions with relative ample access, 2) improving access to energy in regions currently without such access, and 3) improving global governance of issues related to sustainable access to energy.

2. Process

In a first phase, a kick-off paragraph was posted in these forums inviting the participants to brainstorm and debate ideas along such lines. This kick-off message invited the participants to focus on relevant questions related to energy access, efficiency, and governance. One important conclusion was within the goal of achieving more equitable distribution of energy, the aspects of efficiency in developed areas could not be decoupled from the problematic of granting better access in lesser developed areas.

In a second phase, participants were invited to craft more specific recommendations to be addressed to the heads of states. *In a third phase,* the facilitators gathered and posted twelve or so recommendations that had emerged from the forums to be evaluated for relative support. The participants themselves posted up 40 or so additional recommendations for evaluation in the weeks that followed.

In a final phase, the ten recommendations with most support were transferred to public site for voting. These ten recommendations and results of this voting process are summarized in next section.

3. Results of On-Line Recommendation Voting

#1: Take concrete steps to eliminate fossil fuel subsidies (66 %)

Recent estimates of global fossil fuel subsidies for production and consumption are staggering, putting the total at US\$730 billion annually or higher. In a time of economic hardship, dangerous climate change, and growing demand for reliable and cleaner sources of energy, these fossil fuel subsidies arguably represent an irrational use of taxpayer money. A substantial percentage of this amount should rather be redirected towards the development and deployment of alternate and more sustainable sources such as solar power, wind, and geothermal energies.

#2 Educate children and adults about energy efficiency (29 %)

In Washington, more than 4,000 sixth grade students participated a program last school year where the students combined efforts saved more than 11 million kilowatt-hours of electricity by installing measures such as compact fluorescent light bulbs and making behavioral changes such as reducing shower time. The measures and the students' new energy-saving habits also saved an average of more than \$185 per family.

#3 Establish ambitious targets for moving towards renewable energy (29 %)

The status of renewable energy has evolved rapidly during the last years. Investment and installed capacity have experienced double-digit growth; however renewable energy share in final energy consumption is still only at 16 % globally. At the same time, a number of scenarios and initiatives emerge stipulating that, for both environmental reasons and from a business perspective, renewable energy should become the mainstream energy source of the future. Doubling the share of renewable energy in the global energy mix by 2030 is challenging but absolutely feasible and much of the needed energy transformation is already happening in this direction.

#4 Incentivize the construction of energy efficient buildings and revamp existing ones (28 %)

There are examples of eco-friendly architecture that use recycled materials for constructing walls. Daylight can be used with acrylic pieces on the roof that can permit the light entrance. The use of green roofs can help to diminish the temperature inside buildings. Governments should be the first to construct eco-friendly buildings, and reduce the need for electric lights during the day and for air-conditioner. Homes and workplaces should be created using such technologies. Governments could stimulate such deployment in new construction as well as in existing ones through strong tax incentive and more aggressive regulations.

#5 Promote the use of sustainable energy and energy access as a public health policy (27 %)

To protect our environment and our lives, we are indeed in great need of new low carbon emitting energy generation methods. Energy generation, while important, needs to occur in a clean and safe manner so as to address the issue of climate change while also providing health benefits. According to the WHO, women and children are the most affected by household pollutants primarily arising from traditional usage of biomass for cooking. A few indicators were suggested for data collation at baseline as well as impact assessment level such as;

- Percentage of households with access to affordable, reliable, and clean generated electricity at a minimum level of 100kWh/person/year.
- Proportion of electricity generation with emissions that are low carbon and low in health-damaging pollution across the energy life cycle (i.e., generation, distribution, point-of-use).
- Proportion of regularly staffed health facilities with a 24-hour supply of electricity.
- Rates of adult and child disease burden attributed to both household and outdoor air pollution.

Apart from the indicators mentioned, a few experts also expressed concern on women and child health arising from the traditional use of biomass.

While this specific recommendation found its way to top 10 recommendations, barely any link existed between title and content. As a result, no concrete and actionable recommendation had been articulated. The important aspect of access is further discussed in section 4.

#6 Encourage the use of bicycles (27%)

27 per cent of trips are made by bicycle in The Netherlands. In Denmark, this figure is 18 per cent. In comparison, just 1 per cent of trips are made by bicycle in the UK and the USA. While cultural factors, good weather and flat lands all affect use of bicycles government policies are probably even more important. For instance, Denmark, Germany and The Netherlands have made their cities bicycle-friendly and car-unfriendly. A range of taxes, restrictions on car ownership, parking and use have made driving expensive and inconvenient. Extensive bike-parking facilities, especially at train and tram stations and bus stops, have increased cycling's convenience and encouraged 'bike-and-ride' travelling.

#7 Enforce regulations requiring energy-saving features on all new automobiles (27 %)

Hybrid and fully-electric vehicles with unprecedented fuel efficiency are readily available to the population. This being said, the price tag of such vehicles remain high given the higher cost associated to manufacturing these technologies at their current smaller scales. Governments are in position to accelerate the process by simply enforcing stricter legislations along such lines, as it is already the case in some countries of Europe.

#8 Provide more ambitious tax incentives for the acquisition of energy-efficient products (25 %)

Aggressive tax incentives remain the politically easiest tools to promote energy efficiency. More aggressive tax incentives rather than tax increases and legislation will always fly better with the electoral population and the targeted industries, respectively.

#9 Require “ecolabels” on products with clear information about the product’s energy efficiency (24%)

Ecolabels and green stickers are labeling systems for food and consumer products. Ecolabels are often voluntary, but green stickers are mandated by law in North America for major appliances and automobiles. They are a form of sustainability measurement directed at consumers, intended to make it easy to take environmental concerns into account when shopping. The last few years have seen a few key trends in the ecolabels space. One is the explosion in the numbers of different ecolabeling programs across the world and across business sectors, with many schemes broadening their issues to cover social, ethical and safety issues as well as just environmental. This has led to some confusion and perhaps fatigue amongst consumers and brand awareness of most labels (such as the EU Ecolabels) remains low. World governments should better coordinate and create uniform standards relating to ecolabelling of all products.

#10 Create incentives to encourage work from home (20 %)

Promotion of telecommuting through tax breaks to employers would theoretically reduce costs related to transportation. Direct social interaction is however an important part of one’s general well-being. As such, even if given a choice, a majority of workers would rather choose work at a common workplace rather than in isolation. This being said, availability of such telecommuting technologies would at least give such option to those under strenuous circumstances (physical handicap, need to care of children, required geographical relocation due to personal or family circumstances, etc). As such, deployment of such technologies would at least provide such option.

4. Additional Recommendations on *Energy Access*

All three facilitators agreed that the aspect of energy access in underdeveloped economies ended up somewhat under-represented in the ten recommendations that went for public site. The facilitators therefore wish to add the following items for consideration by the panel.

4.1 Free access to modern energy for basic cooking and lighting needs in remote areas for initial years

IEA 2011 reports that over 1.3 billion people are without access to electricity and 2.7 billion people are without clean cooking facilities. More than 95% of these people are either in sub-Saharan Africa or developing Asia and 84% are in rural areas. No such figures exist for remote locations. Provisions of modern energy facilities in such isolated areas are both physically and financially challenging, and most of the times these areas fall far below in priority lists because of lesser population in comparison to the main land.

Foremost requirement to implement this recommendation is to develop a *definition* of remote areas with criteria such as road connectivity, availability of public transport, distance from nearest wholesale market for agricultural produce, so on., isolation limits livelihood options directly linking to affordability (in case the model of pay for services is applied). Access to free modern energy for initial few years in remote areas will not only help in achieving the goal of modern energy for all but is also expected to boost the economic development of such areas. The facilitators feel that the governments in general must understand that the access to modern energy is the vector of social and economic development. It also contributes towards reduction of the poverty in the most special countries, in Latin America, Africa, and Asia.

4.2 Modern cooking options for all: Improved cook stoves as an entry point

Women in some localities of Africa walk 15 km every two days in search of wood for cooking and heating, often exposed to harsh climatic conditions and threatened of being attacked by snakes or wild animals. The women and children are exposed to harmful carbon gases while cooking with open fires. The scenario is similar for developing and least developed countries in other regions of the world.

Some of the forum discussions indicated the need to emphasize on modern cooking options for all. UNDP and ESMAP (2003)² account Liquid Petroleum Gas (LPG) and Kerosene as clean cooking fuel options. LPG or kerosene needs to be linked with complex issues of robust supply chain, affordability, fuel transition and demand management. The improved cook stoves can be an entry point towards modern cooking energy access for all. However, cleaner options such as solar cookers, LPG and kerosene shall definitely be provided to rural populace along with improved cook stoves.

¹ International Energy Agency, World Energy Outlook, 2011

² United Nations Development Programme and World Bank Energy Sector management Assistance Programme, India: Access of the poor to clean household fuels, 2003

4.3 Develop global guidelines and web based system to track and monitor energy access

Globally accredited guidelines for energy monitoring needs to be developed to track energy access scenario at local and global level. The guidelines should comprise well-defined indicators, information collation processes and reporting framework. A revised definition of 'Energy Access' to be developed incorporating the contexts of productive usage and livelihood generations, reliability, minimum quantum along with the duration of supply is also required. Such definitions would guide the development of indicators for tracking and monitoring energy access.

The targets for energy access should be split into regions, states/ provinces, clusters and on an annual basis so as to enhance the monitoring and tracking mechanism. The targets should be site specific as well as fuel specific. The sites should be defined for the monitoring purpose.

4.4 Promote development of context specific sustainable energy approach/options

The discussions revealed that the concept of decentralized generations and technology neutrality to an extent tries to address accessibility and reliability issues based on community and site specific needs. However, majority of the electrification policies linked to grids and sites at remote locations are adversely affected (Oda and Tsujita, 20113). Discussions also indicated that energy access programmes of past particularly in context of developed countries barely accounted users perception and thus suggested to follow a participatory implementation process.

Technology neutral approach based on local needs, local preferences, local resources, local economic and political conditions should be conceptualized to ensure reliability and sustainability of energy services rather than supply based technology specific approaches. The approach is also suggested by reviewers of rural electrification programmes of developing world as well as programmes linked to dissemination of renewable energy devices for cooking needs such as improved cook stoves.

Again, the approach of technology neutrality should be customized for broad economic strata residing in the area considering the energy needs are linked to lifestyle and affordability factor. Thus, micro level plans should be developed for sites, following the definition of "energy access" and global guidelines on monitoring.

The site specific plans should be guided by state specific policies on energy access. These state specific policies should be framed side by side with the globally defined indicators for energy access success.

³ Hisaya Oda and YukoTsujita, The determinants of rural electrification: The case of Bihar, India, Energy Policy39(2011)3086–3095