ENERGY for Development in the Real World

by Pieter van Geel

Two billion people in this world have no access to modern energy. For them, a log fire may be their only source of energy — yet it creates serious environmental and health problems.

According to World Health Organisation (WHO) figures, around 1.6 *million* people a year die as the result of air pollution in the home. Most of them are women and children. And that is caused by their open fires, on which they burn wood or dung.

But that isn't the only problem. Air pollution and smog in cities also threaten the environment and public health. The main causes are heavy traffic and the use of fossil fuels. Around 800,000 people die every year from breathing in this polluted air, most of them the poorest city dwellers.

If we do nothing, the problems will only get worse. The International Energy Agency (IEA) says that demand for energy will increase by 60% by 2030. If we do not change our policies, carbon dioxide emissions will increase at the same rate, and as we know, carbon dioxide is a major cause of the greenhouse effect. Implementation of the Kyoto Protocol is essential, but is nowhere near enough to restrict carbon dioxide emissions. We need to do more. Otherwise the consequences for the environment, public health and poverty will be unimaginable. And, as always, it will be the poorest people who suffer the most.

Energy for Economic Growth

Developing countries have a *right* to economic growth. They need it to combat poverty. But growth is impossible without access to modern energy. If we are to do something about that, we must start with the basic needs of developing countries.

Let me give you an example. At least one-third of humanity, most of whom live in rural areas in developing countries, do not have an adequate supply of energy to meet their daily needs, or for health care and education. This limited and unreliable energy supply is a *direct* obstacle to economic development. Just imagine: millions of people spend a lot of time trying to gather enough firewood to survive. Companies cannot operate because of power cuts.

Schools and hospitals cannot function properly. Energy is also needed to cool medicines, and to provide light so that children can do their homework in the evenings.

The industrialised world must help developing countries to secure an energy supply. And more importantly, an energy supply that is sustainable. And that requires a lot of money.

Investment Essential

The IEA estimates that it will take about $16 trillion dollars to secure a worldwide energy supply by 2030. And the help of governments, the private sector and civil-society organisations will be needed, because developing countries cannot do it alone. After an ambitious start some ten years ago, the private sector has become more reluctant to make significant investments in the energy sector in developing countries. Companies think that the financial risks are too high.

And this is where the governments of developing countries come in. They need to provide a stable investment climate and good governance. The rich countries can help them, with financial resources or by improving the conditions for investment. The wind turbine project in Costa Rica is a good example. Today, thirty wind turbines provide enough energy for 25,000 households. The Netherlands financed the preparatory and start-up costs of the project. Dutch energy company Essent was then prepared to take the risk of placing the turbines. That is the way to get results.

Saving Energy

So it takes money, but we can also save money by using the energy we have more economically. We could achieve 30% to 40% savings on energy in developing countries by taking cost-effective energy-saving measures. The investments that this requires would be recovered very quickly. What is more, innovation and environmentally friendly technologies stimulate the economy. Saving energy also reduces carbon dioxide emissions and helps to reduce air pollution locally. So the economies of developing countries can grow and the global climate benefits as well.

In the coming decades the demand for energy will be so great that only part of it can be met through sustainable energy sources. Fossil fuels will continue to dominate the picture. So we will have to make sure that non-sustainable energy sources — like coal, oil and gas – harm the environment as little as possible. Under the Kyoto Protocol, the Clean Development Mechanism will become even more important. I am proud to say that the Netherlands is playing a pioneering role in this. With this mechanism, we can do something for the environment *and* for the poor.

And that is the main issue at stake — how to make sure that there is enough energy available for everyone in developing countries. What do we need to do to make that happen? The energy problem is global and should be tackled at that level. If we do nothing, the problems will just get worse, especially given rapidly increasing demand for energy.

It is therefore not a matter of whether we act, but how. By 2015, the international community wants to reduce poverty by half, bring down the illiteracy rate drastically and ensure environmental sustainability. We cannot achieve these aims without a sustainable energy supply — and to achieve that, we need to invest.

Clear Messages

In December 2004, we helped to get this strategy off the ground at the Energy for Development Conference, organized in Noordwijk, Netherlands with the Minister for Development Cooperation, Agnes van Ardenne; the World Bank; the United Nations Environment Program; and the World Business Council for Sustainable Development.

The main messages can be summarised as follows:

① Energy is essential for economic growth and must be a high international and national priority;

② We must do everything we can to make sure that poor people have access to a modern-day energy supply;

③ We must pay attention to energy-related environment and health issues before it is too late;

④ Good governance, market reform and a good investment climate are needed to attract investment; and

⑤ We must reverse the downward trend in official development assistance for energy projects.

Without access to energy, the opportunities for enterprise development are limited. It's a cycle whereby energy fuels economic growth, which in turn increases the demand for energy. We have before us the great task of charting a path to sustainable development. It must be a path that will allow us to achieve maximum environmental benefits in the face of hard economic realities.

The Dutch government is working with a core group of partners to act as a catalyst for action. Much more needs to be done, and can be done. This is a message that should ring loud and clear at the UN Millennium review summit in 2005.

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For more information on the Energy for Development conference, visit: www.energyfordevelopment.org

Nuclear Science Helps Mexico City Breathe Easier

Nobody likes breathing lungfulls of pollution from big cities. Least of all the citizens of Mexico City, whose air is so contaminated it is a serious health hazard. Now the IAEA, through its Technical Cooperation programme, is helping Mexicans breathe a little easier. The Agency has teamed up with local scientists and regulatory authorities on a project aimed at making the air in the capital safer for its people.

For the past two years nuclear "know-how" has been used to analyse air samples collected from across the city. These nuclear techniques give important new data about the size, type and level of contaminants in dust particles suspended in the air. Armed with this knowledge, scientists and health care experts can better understand and tackle the health dangers associated with pollution, like cancer and respiratory disease. Air pollution in Mexico City contributes to around 12,000 deaths per year, with trends showing children and the elderly increasingly treated for respiratory disease. Exhaust fumes from the city's four million motor vehicles are a main source of contamination.

Unlike traditional methods for analysing air samples, nuclear tools are sensitive enough to extract key information about contaminants in small, fine particles. The smaller a toxic particle the more damaging to human health because it can penetrate deeply into the lungs. It is hoped that better information about release rates of elements like sulphur, nickel, copper and zinc in fine particles will help authorities improve health care and preventative strategies.

Regular air samples taken throughout Mexico City are analysed using a technique known as PIXE (proton induce x-ray emission). The IAEA is providing around $300,000 in equipment and training to scientists at the National Nuclear Research Institute of Mexico (ININ) who conduct the analysis. The scientists use an accelerator to shoot a beam of protons at a dust sample collected from the air. The results of the reaction reveal a wealth of information which helps scientists to pinpoint the exact source of toxic emissions. That's valuable information in a city where industry and the city's 20 million inhabitants often live side by side. Importantly, it gives decision makers and regulators better information on which to act and develop laws to control harmful emissions — all part of the effort to help Mexico City breathe easier.

—Kirstie Hansen, IAEA Staff Report