



### On the Cover

Light was turned on in June 2004 in a small village in southern Tanzania with the help of an ABB/WWF cooperation established to give rural villages 'Access to Electricity'.

Access to electricity is closely connected to economic development and inextricably linked to the United Nations efforts in eradicating world poverty through sustainable development. Assuming the global need for electricity doubles, investments in electricity generation, transmission and distribution in the period up to 2030 is estimated at US \$16 trillion. This increase in power generation is accompanied by heightening concerns related to global warming.

In this issue of ABB Review, we analyze the connection between access to electricity, sustainable development and global warming.

An article contributed by WWF is optimistic about the future use of renewable energy sources in the battle against CO<sub>2</sub> emissions. In addition, WWF stresses that households,

industry and transportation can all play a role in this battle by simply switching to more energy efficient equipment.

Other articles illustrate how ABB is helping to progress the agenda of eradicating world poverty and mitigating global warming by:

- Giving access to electricity to both the developing and developed world;
- Providing technologies for efficient generation, transmission and distribution;
- Reducing CO<sub>2</sub> emission through efficient energy consumption in industry and transportation;
- Improving industrial productivity.

## We have a role to play



As a leader in power and automation technologies, ABB not only enables utility and industry customers to improve performance, but we also help them to lower environmental impact. In fact, environmental management is one of our highest business and R&D priorities and as a company we are at the heart of environmental concerns and a pacesetter for global sustainable development. A group that is responsible for almost 60% of all US power grid installations and with an installed base of automation devices and systems of US\$ 100 billion, clearly has a word to say when it comes to the efficient use of electricity.

The International Energy Agency estimates the accumulated capital requirement in the global electricity sector by 2030 to be US\$ 10 trillion: US\$ 4 trillion will be invested in the OECD region while an investment of US\$ 5 trillion will be made in developing countries.

It is known that as wealth increases, so too does energy consumption, but its cost compared to the growing house-

hold income decreases. In other words, in developed countries as little as 2% of household earnings are spent on energy. Compare this with households in low-income countries where 10–20% might be spent. The need for greater access to electricity in developing countries is therefore imperative to help aid economic growth.

Renewables like wind or solar energy, which do not directly contribute to the generation of CO<sub>2</sub>, are still very much in their infancy. A projection for their increased use is difficult, as so many different technical, political and financial aspects influence their development. Whether or not the more optimistic view of WWF, presented in an article in this issue, becomes reality depends not only on available technologies but also on political and financial will. It would seem, at least for the foreseeable future, that the world has to live with the continued use of coal, oil and gas as a major energy source.

While this may be the case, it does not mean we cannot, at the same time, counteract an increased CO<sub>2</sub> level. Efficient use of electrical energy is one of the keys to sustainable development. If all viable motor applications, for example, were operated with AC drive systems, the overall energy saving would add up to an estimated 500 TWh. Better control of industrial processes is another way of contributing to energy savings and this indirectly leads to a reduction of green house gas emissions. The cement industry is used to illustrate this point.

ABB's expertise is needed in other areas. Electrical grids are designed to

balance demand by controlling supply. When electricity is generated by alternative energy sources, like wind power, the grid suddenly faces a varying supply. It is therefore highly likely that modifications to the network are required in order to handle this added complexity. Large wind farms may also cause the power quality to vary.

Fortunately technologies are available to address this challenge. HVDC Light<sup>®</sup> for example is a technology that can decouple the energy source effectively from the grid and transform the power to the required frequency and voltage level. With flexible AC transmission technology (FACTS), ABB offers a set of measures to cope with the growing request for more flexible electrical grids. Such flexibility and reliability of the electrical infrastructure will, to a large extent, influence the growth rate of alternative energies.

Access to electricity is based on reliable grids and an efficient use of energy and it is a task ABB feels responsible for. As a technology leader we are committed to contributing our experience, products and systems to the sustainable growth of the global society.

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