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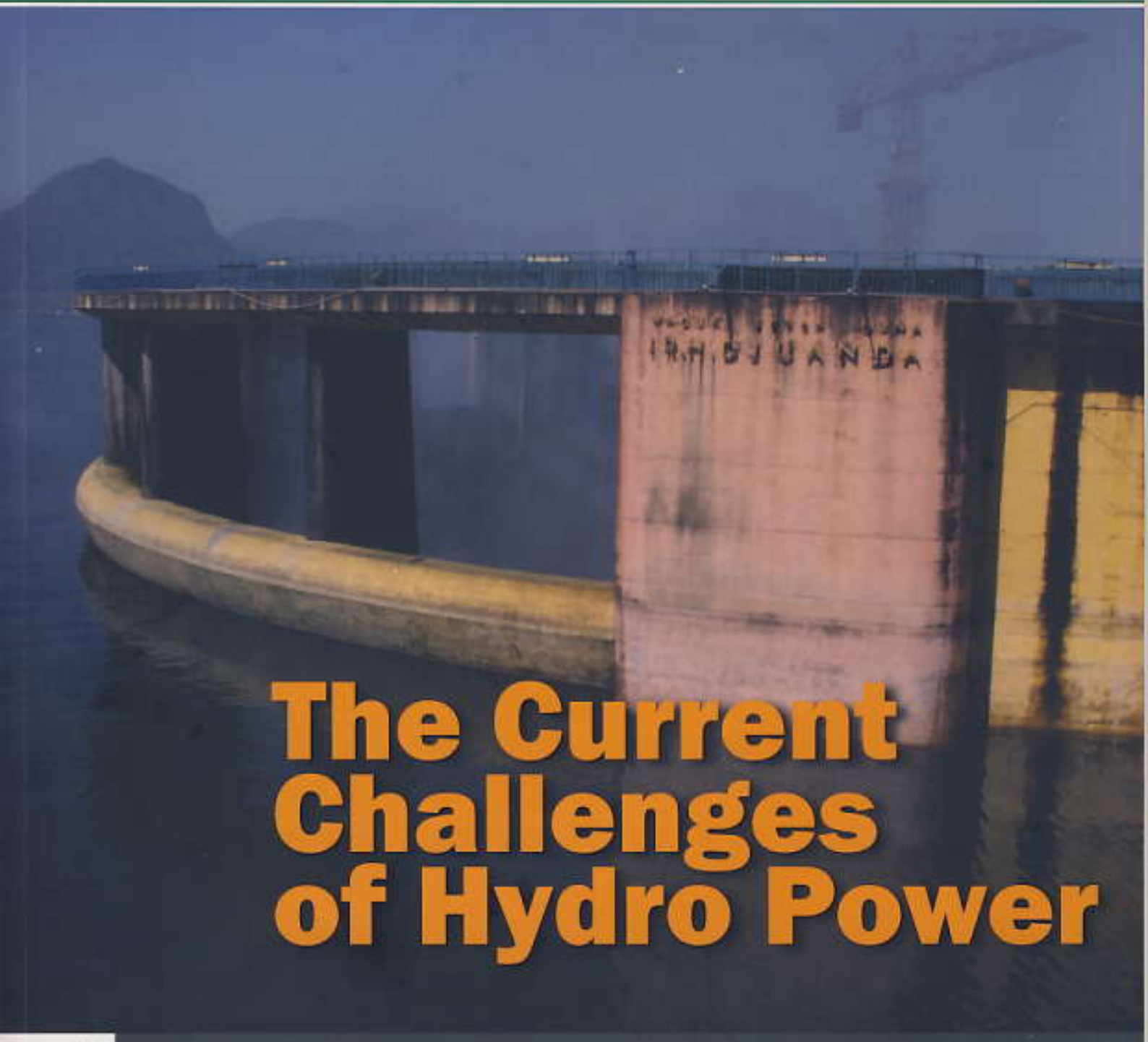
RESPECTS

CLEAN AND RENEWABLE ENERGY REVIEW



The Current Challenges of Hydro Power

Small or Large Hydro Power Plants, Is Not The Question

Renewable Energy For Rural Development

Achieving Parity for Renewable Energy Technologies in Indonesia

Renewable energy is essential for our future. It is not an option but a necessity for survival. Our current dominant energy system is still based on non-renewable resources, but these are depleting. Indonesia once saw itself as energy resources rich but now we are a net importer of oil.

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Energy resource depletion is a global problem. The International Energy Agency (IEA) chief economist Fatih Birol, predicted that global oil production was now likely to peak within 10 years. This was based on IEA data from more than 800 oil fields. The average rate of decline is now 6.7 per cent a year, much worse than the official estimate of 3.7 per cent in 2007. He said that governments were woefully under-prepared for this.

Indonesia oil production reached a peak in the mid-80s, and again in mid-90s, and oil production has been declining ever since to below 1 million barrel oil per day. With current levels of production, we expect to continue producing crude oil over the next 15 years. But it is unlikely production will surpass that of the 80s or mid 90s.

We still have coal to fuel electricity production over the coming decades. However, with current level of production, coal will face more difficulties sustain production levels and logistics and coping with export pressures versus domestic needs.

We need to prepare for an upcoming energy crisis. Unlike the oil

crises of the 1970s and 1980s, this is not a cyclical problem, but it reflects long term depletion of fossil fuel. Our energy demand, as well as the world's, is increasing but conventional energy production is stalled or not likely to catch up with growth in demand. The era of cheap oil and cheap coal may soon end. Therefore, we must shift energy supply from conventional fossil fuel to renewable energy.

There is no silver bullet to do this overnight. Clean and renewable energy technologies need to mature technically and financially to replace conventional fossil fuels. Developing renewable energy technologies to this level of technical and commercial viability may require more than 30 years. We can shorten the learning curve, using the experience of other countries but this will still require time and cannot work without strong support from new policies and regulations.

The International Energy Agency (IEA) suggested (2008) that the effectiveness and efficiency of renewable energy policies are determined by adherence to key policy design principles:

- To remove non-economic barriers, including administrative hurdles, obstacles to grid access, poor electricity market design and failure to tackle problems of social acceptance.
- Information and training on these help improve functioning of policy and markets.
- The need for a predictable and transparent support framework to attract investments.
- The introduction of transitional (or smart) incentives, decreasing over time, to foster and monitor technological innovation and move technologies to market competitiveness.
- The development and implementation of appropriate incentives guaranteeing specific levels of support to different technologies based on their technology maturity, to help exploit the significant potential of a basket of renewable technologies over time.
- To look at the impact of large-scale penetration of renewable technologies on energy systems, in liberalized energy markets, in terms of cost efficiency and system reliability.

Taking these five principles in an integrated approach allows two simultaneous goals to be achieved, namely to exploit the renewable energy technologies which are closest to market competitiveness while preserving and implementing the long-term strategic vision of providing cost-effective options for a low-carbon energy system.

Penetration of massive renewable energy utilization into our energy system will also require an evolution of today markets - characterized by exclusion of externalities in energy costs (most renewable technologies needs incentives) and subsidies, and work to remove additional noneconomic barriers preventing renewable energy deployment into markets - so renewable energy technologies can compete with other energy technologies on a level playing field.

The evolved market should place an appropriate price on carbon and other externalities reflecting in the production cost of energy. To do so, Indonesia requires a strong carbon regulation for the energy sector, including removing the harmful fossil fuel subsidies. We also need to develop infrastructure to facilitate large-scale renewable integration (on grid). Also to encourage off-grid applications of renewable energy to enlarge the market. Once this process starts the need for subsidies in favor of renewables should decline, clean and renewable energy (CARE) deployment will be accelerated by consumer demand and general market forces.

This transformation requires nation-wide renewable energy targets with specific time frames, support by policy frameworks which combine different technology-specific support schemes as a function of its maturity. Governments should develop a combination policy framework increasingly applying market principles as technology maturity and deployment increases. This is possible with a range of policy instruments, including price-based and quantity-based tariffs, research and development (R&D) support, and regulatory mechanisms.

As a general principle, less mature technologies far from economic competitiveness such as Photovoltaic (PVs) and other solar powered technologies may need R&D support, and low-risk incentives, such as capital cost incentives, feed-in-tariffs (FITs), regulated purchased tariff (RPT) or tenders. For low-cost gap technologies, other more market-oriented instruments like feeding-premiums and renewable green certificates (RGC) systems with technology banding may be more appropriate. Depending on the specific market and resource conditions, and level of market integration across countries, technology banding may be necessary only in a transitional phase or may be bypassed in favour of a technology-neutral RGC system. In the early stage, various fiscal incentives may require in promoting public and private investment.

Once the technology is competitive and ready to be deployed on a large scale, and when appropriate carbon incentives are in place, these support systems can be phased out altogether. At that stage, renewable energy technologies will compete on a level playing field.

To conclude, policies and regulatory framework supporting renewable energy development and deployment shall cover the entire value chain of renewable energy technologies: research and development, investment, production, and consumption.

To be effective the framework should incorporate key elements including national targets for renewable energy development with specific time frames and milestones, grid connection priorities, different tariff set-ups for specific renewable technologies, funding support for R&D, and financial mechanisms, including risk support mechanisms to enhance investment in CARE technologies, and if necessary CO_2 limitations/reductions targets.

Above all we need public awareness and capacity building for local investors and technology developers, to further enhance the market development for renewable energy technology. We will have to show that we can have CARE! ■