

# Funding for Clean Coal Technologies

Barry K. Worthington  
Executive Director  
United States Energy Association

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First, let me thank Euromoney and Coaltrans for organizing this conference and inviting me to present my perspective. I personally, and the United States Energy Association, have made efforts to call attention to an overlooked challenge in efforts to deploy clean energy technologies, specifically large coal technology investments, and particularly those in developing countries.

The U.S. Energy Information Administration (EIA) projected the cost of producing electricity from new power plants in 2015 and in 2030. The cost differential of new advanced coal capacity compared with new advanced combined cycle natural gas technology in 2015 is very modest. The gap widens a bit by 2030 due primarily to natural gas prices. While coal beats gas in 2030, the differential is less than 10 percent, suggesting that only a modest carbon capture cost can apply for coal to remain the lowest cost option. As EIA points out “least expensive technology options are likely choices for new capacity.”

The International Energy Agency (IEA) in its World Energy Investment Outlook, has suggested that \$4 trillion in new power generation investments will be needed from 2001 to 2030 to meet global demand for electricity. IEA suggests that 1400 gigawatts of this will be coal fired capacity with nearly one half developed in China and India. Using IEA’s estimate of the capital costs of advanced power technologies, one might assume that the difference in cost between conventional coal plants and integrated gasified combined cycle (IGCC) is about \$400 per kilowatt. (Roughly – IGCC being 25% more expensive.)

If these estimates are correct, over 30 years, about \$560 billion in incremental costs would be needed to build IGCC in place of conventional coal in India and China. This represents an average of \$18.6 billion per year for 30 years. While this sounds like a lot of money, note what this really represents:

- Iran’s external debt
- Disney company revenue for two quarters
- Difference in global oil costs of \$10/barrel for 20 days
- Annual revenue for the Coco-Cola Company

A reasonable question arises as to how and why any investor, including the governments of China and India, would make these incremental investments. This highlights the difficulty of overcoming the incremental costs of deploying advanced energy technology. Most reviews of challenges to deploying these technologies in developing countries “miss the boat” on overcoming this incremental cost challenge.

Macroeconomic challenges are often cited as barriers:

- Market reform – regulation
- Commercialization – possible privatization
- Encouraging foreign/private investments
- Rule of law/property rights/contract sanctity
- Institutional structures
- Capacity development

Other barriers often cited as developing country needs are: the need for investment friendly, socially and environmentally responsible conditions; the potential for technology leap-frogging, the need for education and training on specific technologies; and the need for multilateral institutions to focus on local conditions.

All of these needs can be accommodated. However, even if met, these circumstances do not overcome the incremental costs of advanced technologies. Developing country governments find difficulty approving projects that are not “least cost” when enormous social, health, safety, security, education and welfare needs exist.

Many developing countries lack access to commercial energy resources and many others have underserved populations. Some 1.5 to 2 billion people have no access to electricity and another 1.5 to 2 billion people have inadequate access. When commercial supplies of energy are available, they often are kerosene for cooking, lighting and heating, inside inadequately ventilated homes. Also, fuel wood, animal dung and other old fashioned (some say “traditional”) methods of providing energy services are often all that is available.

Recent efforts to provide decentralized, community based systems, such as the U.S. Agency for International Development’s efforts in the Mindanao region of the Philippines (private sector support from Mirant and Shell Solar), which was implemented by Winrock International, is one illustration of a unique, successful project. Small projects can work.

But large, bulk energy, 24-7 electricity, petroleum and natural gas access can only be met from traditional, commercial energy supplies. In many countries, this means reliance on fossil fuels; and in many cases domestic coal resources. The alternative is to not develop these resources and condemn those populations to decades, if not centuries, of continual poverty.

For the global community to insist that fossil fuel resources in developing countries, again, particularly coal, be utilized only if advanced technology (including possibly carbon capture and storage) be deployed, is incredibly naïve. Where will this incremental investment come from?:

- Not likely internally generated funds
- Not likely private sector investors
- Not likely from current international development assistance accounts

Perhaps new financial paradigms are needed.

World Bank studies chart the ramping up and collapse of private sector electric power investments in developing countries, which peaked in 1997. U.S. traditional electric utilities, and most international U.S. based independent power developers have exited developing countries and many have withdrawn all foreign investments. However, a recent U.S. based power investments have witnessed a non-traditional source of finance.

Insurance companies, pension funds, investment houses and others are showing an increasing appetite for power sector investments. Whether this interest can be conveyed to international projects remains to be seen. Additionally, there is no evidence that these “non-traditional” private sector investors are willing to accept the technology risk, currency risk, regulatory risk and other well documented risks associated with power sector investments in developing countries.

It is a further stretch to think that these investors are willing to look at accepting the larger capital risk associated with advanced technology. So, where does the world go from here?

The path to any readjustment is recognizing the reality of one’s circumstances and not fool oneself as to the difficulties that you face. The global community must articulate a recognition that developing countries, those with unmet energy, societal and environmental needs will not put their internally generated funds into deploying advanced coal technology. Similarly, international development accounts are woefully inadequate to provide funding to meet basic energy needs – let alone invest in advanced technology. And, why would/should private sector investors take on risks that neither host governments nor bi-lateral or multi-lateral government organizations will take on? Of course they will not.

Development of non-traditional financing mechanisms is warranted on both bilateral and multilateral bases. The global community must increase financial commitments to provide clean energy technologies to developing countries. Funding for capital-cost buy-down, innovative long-term bond; new models of development bonds, and more creativity in reforming existing financing mechanisms.

Regulatory certainty must be provided. Work-arounds of credit “unworthy” developing countries must be addressed. All the traditionally noted barriers to clean, advanced, energy technology deployment in developing countries will not go away – and must be dealt with. However, we must now recognize that we have not adequately addressed the issue of “who pays, and why?” for the incremental cost of advanced energy technology.

Thank you.