



Unlocking a clean energy future for Asia: Challenges and opportunities

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Over the past decade, Asia has made huge strides in economic growth and poverty reduction, with the region (excluding Australia and New Zealand) accounting for 28.3 per cent of global gross domestic product (GDP) in 2011. According to recent Asian Development Bank (ADB) estimates, this figure could rise to 44 per cent by 2035 based on annual average growth of 6 per cent for the region.

While ongoing economic growth is expected to see developing Asia's share of the world's energy consumption rise from 34 per cent in 2010 to over 50 per cent by 2035, most of the increase in consumption will come from fossil fuels. This will lead to an emission level of greenhouse gases of about 20 billion tonnes out of a total global cap of between 22 billion and 30 billion tonnes which is the threshold to avoid a catastrophic tipping point in the climate system. Clearly, this level of emissions is not sustainable for the planet. Asia needs to change its development paradigm to use less energy per unit output, thereby requiring less primary energy overall, as well as to generate more renewable energy within that lowered energy requirement scenario, in order to further limit greenhouse gas emissions.

Also problematic is the ability of the region to deliver power to all. Despite impressive economic growth, some 600 million people in the Asia-Pacific region still lack access to electricity. If the policies of governments in developing Asia do not focus on affordable access, then around 330 million Asians could still be without electricity in 2035.

The challenge for Asia, therefore, is twofold. We must fuel the region's continued economic growth to increase living standards, by engaging in an energy strategy that is low-carbon and environmentally sustainable. At the same time, to make growth sustainable and beneficial to all, Asia must increase its energy access investments. Asia can do this only by embracing the three "I"s – to become more innovative, inclusive, and integrated.

Innovation requires an enabling environment which encourages the public and private sectors to grow and use their creativity and resources to support technology development and new jobs. ADB's contribution to innovation involves the "Finance++" model – i.e., finance, plus leverage, plus knowledge. We offer loans and grants to support renewable energy and energy efficiency projects, and we seek to leverage finance from external sources, primarily the private sector. The ADB also shares its knowledge with regional stakeholders, drawing on its experience in designing

and implementing a range of clean energy projects.

In India's Rajasthan state, for example, the ADB provided US\$103 million to help finance a 100 megawatt (MW) concentrating solar power plant, with the aim of demonstrating the feasibility and operational performance of such projects for Asia. In Viet Nam, the ADB is providing US\$74 million to fund thousands of biogas plants of varying sizes which will convert agricultural and rural household waste into biogas and bio-slurry. In the People's Republic of China, the ADB is helping bus operators shift their fleets to cleaner fuels and technology, including compressed natural gas, liquefied natural gas, and electric and hybrid buses. All these examples show the ADB's desire to support emerging technologies which can sharply reduce harmful environmental impacts and deliver long-term economic savings.

To meet the goal of inclusiveness, there is a need to expand overall energy access in the region, and to facilitate a shift to cleaner, modern energy as demand rises. Nearly half of the world's people without electricity live in Asia, as do the majority of people who rely on traditional fuels such as wood, charcoal, and dung.

The ADB's Energy for All Partnership, launched in 2009, has already benefited 67 million people and is on track to provide access to modern energy for 100 million by 2015. It brings together the private sector, financial institutions, governments, and non-government organisations to scale up investments in energy access through better knowledge management, capacity building, and project development.

Integration calls for a stronger regional focus, with the end goal of creating a pan-Asia energy market. To this end, the ADB is supporting the development of cross-border energy markets and infrastructure connectivity through its regional power coordinating programmes which have already established a number of cross-border interconnections. "Smart" grids which integrate renewables into the electricity system could also help to optimise the use of intermittent resources like solar and wind, and the ADB is facilitating investments in this area. Integration also requires global resources and solutions to be mobilised for local action. With its rapidly increasing integration into the global supply chains, Asia is today both a recipient as well as a donor of both ideas and resources. The ADB, through its external networks, seeks to bring global knowledge and resources to create and adapt technologies and processes to solve Asian problems. At the same time, the best practices of

Asia have been shared with regions that are following Asia in the development curve.

In 2008, the ADB set a target of US\$2 billion in annual clean energy investments by 2013. This target was met two years ahead of schedule in 2011, with investments rising to US\$2.3 billion in 2012. About 59 per cent of the investments went to renewables and 41 per cent to energy efficiency measures.

Energy efficiency, with its least-cost, low-carbon potential for meeting regional power needs, is an area where Asia has substantial scope to make gains. The ADB estimates that a 1-4 per cent investment in energy efficiency – as a share of overall energy sector investment – can meet as much as 25 per cent of the projected increase in primary energy consumption in developing Asian countries by 2030. For this reason, the ADB is looking to ramp up its assistance, with a focus on demand-side interventions which reduce energy use at the point of final consumption across the residential, commercial, industrial, and public sectors. Examples include switching to more energy-efficient lighting and appliances, optimising industrial and manufacturing processes, and green building construction and renovation practices.

To drive energy efficiency activities forward, the ADB aims to enhance its technical support capacity. The bank will establish and fund a pool of energy efficiency experts under a technical assistance project, whose knowledge will help to facilitate energy efficiency interventions in developing member countries.

Next steps

The 21st century has the potential to become the Asian Century if clean energy is strategically tackled. Along with support for specific technologies and resources, we must design whole systems which capture the next level of energy savings and environmental gains. This task is especially vital in Asia's fast-growing cities, and implies a shift to mixed-use urban development, public transit and more efficient vehicles, and improved infrastructure to maximise efficiencies in buildings and in industry. Such investments, however, require an urgent shift in planning, and may necessitate additional public finance for the higher upfront capital and maintenance costs.

But for clean energy to advance significantly, we must confront the issue of fossil fuel subsidies. The ADB is now working to evaluate macro and micro impacts of removing

fossil fuel subsidies in developing Asia. Such knowledge could help countries develop action plans to support the gradual withdrawal of fossil fuel subsidies as appropriate social protection measures are established. This could help level the playing field for clean energy uptake.

To establish a more effective enabling environment for clean energy, the ADB advises governments on the creation of national energy policy frameworks which support the sector's development. The bank sees a need for policy models which address the high upfront costs of some renewable energy projects, as well as transaction costs which often hinder investments in dispersed energy efficiency projects. Progress here can enhance the commercial viability of such investments.

In financing, the ADB sees an increased need for more leveraging of bilateral official sources of finance, private sector finance, and public-private partnerships. A notable example of ADB success in attracting leveraged funds is the Clean Energy Financing Partnership Facility. As of the end of 2012, it had a leverage ratio of 1:21, with US\$72.3 million in cumulative commitments, resulting in the mobilisation of US\$1.6 billion in clean energy investments. Another example is the Asia Solar Energy Initiative through which the ADB is looking to provide US\$2.25 billion in finance, and to leverage an additional US\$6.75 billion for solar power investments.

No time to waste

The need for bolder action to reduce greenhouse gas emissions was recently highlighted by sobering news from the scientific community. According to the World Meteorological Organisation, observed concentrations of carbon dioxide (CO₂) have reached 400 parts per million (ppm) at a number of Global Atmosphere Watch stations. As suggested by the US National Oceanic and Atmospheric Administration, the rate of increase now observed in global average CO₂ is 100 times faster than the increase that occurred at the close of the last ice age.

As countries throughout the world confront the threat of climate change, the challenge for the Asia and Pacific region is to transition to a low-carbon development pathway, in ways that are sustainable and secure the region's long-term economic prosperity.

In Asia, the ADB is committed to investments and approaches that deliver this outcome, and simultaneously lift millions out of poverty. It is a challenge worthy of our best efforts, and the time to act is now. 