

## Energy

A country's energy infrastructure is an integral part of its overall economic infrastructure, energy is also vital input for sustaining an economy as well as contributing to economic growth. Without major structural changes to an economy, economic growth implies that more energy is required or that energy is used with increased efficiency. This means that in the short run the demand for energy is to a large extent dependent upon the energy efficiency of the stock of capital. Consequently, countries seeking rapid economic growth will have a significant impact on their energy demands. In the long-run technological development and changes in the capital stock may lead to increases in energy efficiency. So there are key linkages between economic growth, energy and technology.<sup>10</sup>

Energy is also linked with the environment. The production and consumption of energy has negative spillovers, including over national borders, in the form of pollution and placing stress on ecological systems. Most importantly, energy emissions by increasing the concentration of gases, principally carbon dioxide, in the atmosphere contribute to climate change.<sup>11</sup> The warming of the earth's surface is expected to give rise to changes in climatic conditions, and this could have negative consequences, such as altering food production patterns and raising the sea level.

Environmental quality is therefore directly related to energy production and consumption patterns. A number of factors specific to each APEC economy, such as population growth, rapid industrialization, urbanization and higher per capita incomes will ensure domestic energy demand will grow. The composition of existing and expected supply of energy have significant implications for the environment. Economic growth based on hydrocarbons implies continued emission of carbon dioxide. At present, a number of APEC countries do not have a great deal of scope for fuel

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<sup>10</sup> Some variables influencing the linkages between energy and the elements of FEEEP are: the evolving structural change of economies (for example, from manufacturing to service industries); the rate of efficiency gains (for example, in the conversion to electricity and the reduction of transmission losses in moving energy through energy grids); the degree of substitution among alternative fuels, including implications for changes in economic infrastructure, and the trade-off this has for environmental conditions (for example, coal and natural gas); and the scope to expand sustainable sources such solar power.

<sup>11</sup> An example of international initiative to address global commons problems is the United Nations Framework Convention on Climate Change. Article 2, sets out the Conventions objective to "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". It is proving difficult in practice to meet this objective.