

## **Book Review**

Investing in Low-Carbon Energy Systems: Implications for Regional Economic Cooperation, by Anbumozhi, V., Kalirajan, K., Kimura, F., & Yao, X. (Ed.), Singapore: Springer Nature, 2016, 496 pp.

This book discusses the adverse effects of fossil fuels and greenhouse gas (GHG) emissions and suggests strategies for low-carbon energy. The authors begin with a discussion on fossil fuel consumption, GHG emissions and plans to boost the production of renewable energies. The book also examines advanced countries' dedication, namely Australia, Japan, New Zealand and the European Union, to develop low-carbon energy systems. It is revealed that regional cooperation between developed and developing countries is important to enhance renewable energy production in the latter.

It has been statistically proven that population increase leads to urbanisation, industrialisation, and increased exports. Industrialisation requires human capital and fossil fuels such as natural gas and oil, coal, petroleum, traditional biomass (firewood and dung cake) among others. The majority of Asian countries have seen an increase in their real Gross Domestic Product (GDP) (for example, in 1981, China's GDP growth was 5 percent and to attain 14 percent in 2008. The fossil fuel consumption in Vietnam, Thailand, Myanmar, Malaysia and Indonesia had increased steadily between 2000 and 2010. There is also concurrent high energy demand from transportation, residential, commercial, agriculture, mining, and construction sectors. The transportation sector was the second largest energy consumer in China, India, and Malaysia.

As a consequence, the level of GHG emissions increased and fossil fuel reserves declined, leading to climate change and pollution. Asian countries have been forced to take various steps to create green growth policies and increase their investments in renewable energy development. China for example, has been implementing renewable energy policies and control its coal consumption since the 1980s. This book has emphasised that regional cooperation is vital for low-carbon energy production but this is not applicable for countries such as Lao and Cambodia which require technical assistance and huge foreign investments for its development.

Additionally, there is clear evidence that a country is capable of handling its own GHG emissions. India, for example, has energy cooperation with Nepal and Bhutan, while Malaysia has a sound Renewable Energy Policy and Indonesia has introduced a National Plan on Renewable Energy. The outcome is reduction in GHG emissions and increased investments in low-carbon energy systems.

There is a discussion on developed countries' motivation to invest in low-carbon energy systems. Australia's per capita emissions level was very high compared with other OECD countries because non-renewable energies were a major contributor to the Australian economy. In 1998, Australia agreed to reduce GHG emission by approximately 20 percent in addition to adopting other measures to achieve this such as participating in the Kyoto protocol in 2008, setting up Task Force in 2006 and introducing the Emission Reduction Bills in 2009 to reduce dependency on fossil fuels. Australia had also introduced the short-lived Carbon Tax scheme (in force for only two years). This scheme had successfully cut down tonnes of emission because the tax system slowed down investments.

Japan on the other hand has introduced Joint Credibility Mechanism (JCM) which aimed to reduce GHG emission, facilitate diffusion of leading low carbon technologies among others. Meanwhile, New Zealand adopted renewable energies policies which did not adversely affect its economic activities. The main sources of renewable energies were hydro, gas, geothermal, coal and wind. The EU targets to reduce about 20 per cent of emission. Even though EU has multi-strategies to achieve this it is nevertheless challenging. Thailand, Indonesia, and Vietnam receive New Zealand's geothermal expertise and technology transfers. Tax schemes against carbon are not particularly helpful for densely populated countries such as China, India, Indonesia, and Thailand because it will slow down their development and affect foreign investments.

This book asserts that regional cooperation between developed and developing countries will boost investments in low-carbon energy. But this regional cooperation requires a high volume of financial aid to implement green growth in developing countries. Current economic circumstances are not favourable for this in countries such as Vietnam, Lao, India, Thailand and Cambodia because of their slow GDP growth. This book also proposed new policies for strengthening regional cooperation such as "expand the ongoing trade negotiation to include low-carbon goods, establish a regional low-carbon fund, start a formal public-private dialogue on the role of the integrated carbon market and etc".

Green growth is necessary to reduce GHG emissions and low-carbon development. In order to achieve sustainable development, developing countries should reduce their dependency on non-renewable energy by slowly replacing it with renewable energies via technology transfers, financial and technical assistance from developed countries. Additionally, active participation of government and private sectors to develop green growth economy is essential in every country. This book has discussed succinctly with evidence the developing countries' reliance on fossil fuels, its implication to the environment and human beings, the importance of regional cooperation and strategies to invest in low-carbon energy. This book

is useful for students, researchers, policy makers and environmentalists because it highlights the reasons behind GHG emissions, sources of and investments in renewable energy and the importance of regional cooperation to achieve a low-carbon economy.

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