Chapter 1

Introduction

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This edited volume is an outcome from the ESI-ISAS workshop titled “South Asia’s Challenges and Opportunities in Sustainable Energy Transitions” held on 27 November 2017 and a half day conference titled “Towards a Low Carbon Asia: The Challenges of Ensuring Efficient and Sustainable Energy” on 28 November 2017.

This book consists of papers from a range of authors with varying backgrounds. It extensively covers a range of subjects on energy demand, energy security, regional energy cooperation, energy transition, cross-border electricity, renewable sources of energy and climate change. For this publication, we adopt the definition of the International Renewable Energy Agency (IRENA) which refers to energy transition as “a pathway toward transformation of the global energy sector from fossil based to zero-carbon by the second half of this century”.¹

South Asia’s energy transition is a topic of growing interest. The region is home to a fifth of the world’s population and undergoing rapid economic growth.² With the appropriate set of policies and reforms, South Asia has the capability to reach greater heights of development and prosperity. As the region grows economically, the demand for energy is increasing each year. According to the US Energy Information Administration (EIA), India was the third largest energy consumer in the

world in 2013. In addition, EIA pointed out that after the United States, China and Japan, India was the fourth-largest consumer of crude oil and petroleum products, and also ranked as the fourth-largest net importer of crude oil and petroleum products.³ As a major global energy consumer and importer, India is expected to have a growing impact on the global energy landscape as its energy consumption continues to increase.

In the lead up to the workshop and conference in 2017 and as this volume was being prepared in 2018, we have witnessed a fast evolving global energy landscape. Notable developments include the entering into force of the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement in November 2016, US President Donald Trump's subsequent decision to pull the US from the Paris Agreement, the decision by OPEC and non-OPEC producers such as Russia to cut oil production in 2017 which later extended to the end of 2018, and the reinstating of US sanctions against Iran in November 2018. As these international events unfold, the key factors shaping South Asia's energy transition landscape have remained consistent; namely, the high level of fossil fuel dependence and the requirement to move the region towards more sustainable energy solutions.

Aim of the Book

With this book, we seek to address the following central question: How will the major economies of South Asia meet their growing energy demand? A number of related questions follow suit: How can the states diversify their energy consumption profiles and import sources? How will South Asia balance its commitment to reduce carbon emissions along with their investments in renewables? Can South Asia move towards a full-fledged renewable energy model? What are the opportunities and bottlenecks towards regional energy cooperation? What policy changes are required to overcome the challenges for both bilateral and multilateral energy engagements?

Each South Asian country needs to find a long-term and sustainable solution to meeting energy demand. At the same time, the states need to work collectively towards regional energy efficiency and the adoption of

new renewable energy sources. While initial investments in renewable energy projects will take time to materialise, the long-term benefits are plenty. Greater energy connectivity in this region can also facilitate a new phase of regional cooperation.

Overview of the Chapters

This volume is divided into two sections with the regional section covering energy transition trends across South Asia, while the section on India examines the energy transition policies, strategies and challenges the country faces. In both sections, the authors cover a range of themes related to energy demand, energy security, regional energy cooperation, energy transition, cross-border electricity, renewable energy development and climate change.

The regional section begins with S Narayan's chapter which looks at the energy issues in India, Pakistan and Bangladesh. He details an individual case study of each country's strengths in energy resources, alternative sources for energy and options to adopt renewables and nuclear energy. All three countries are major importers of fossil fuels where they will need to look for new strategies to meet their growing energy consumption. However, the focus on renewables and nuclear energy will need to complement the existing power sources.

It then moves to Mirza Sadaqat Huda's analysis on the challenges to regional energy cooperation. He identifies the bilateral and regional energy projects in the region such as Turkmenistan–Afghanistan–Pakistan–India (TAPI) gas pipeline, Central Asia–South Asia (CASA-1000) and Turkmenistan–Uzbekistan–Tajikistan–Afghanistan–Pakistan (TUTAP) projects. Using literature review and interview data, he illustrates the key challenges and policy recommendations that may increase the probability of regional energy cooperation. Many of the interviewees have said that strong leadership by India could pave way for regional energy projects.

The following chapter by Syed Munir Khasru argues that energy connectivity and trading can be a game changer to forge greater integration among the states. He explores the impediments to regional

connectivity such as non-trade barriers, copious amount of time for border clearance, inefficient seaport facilities and complex rules of origin. Bilateral trade on electricity and petroleum products trading is limited too. Khasru looks at these existing power trading agreements and provides policy recommendations on how to enhance regional cooperation. One key recommendation is to establish a centralised structure for a power agreement to connect the existing power exchanges platforms with operational adaptations.

Thusitha Sugathapala then looks at the potential for renewable energy in the region. He contends that not only technical and financial factors but also environmental and social factors affect the utilisation of renewable resources. He also looks at the drivers and challenges for renewable energy development in the region. The development of renewable energy technologies will reap multiple benefits such as job creation and business opportunities for the local population and the growth of the renewable energy sector will have an imprint on the bigger cross-section of the society.

Riasat Noor's chapter following on analyses the gaps in each country's energy supply and the existing trade in the region. The signing of the South Asian Association for Regional Cooperation (SAARC) agreement and development of the Bangladesh, Bhutan, India, Nepal (BBIN) network on energy collaboration were two hallmarks for energy trading but their scope is limited. On a bilateral level, India exports electricity to Bangladesh, Nepal and Bhutan but the power trading is limited too. He thinks that the energy trade if realised can be a game changer for South Asia since the region has enormous untapped and unutilised energy potential that can be optimised if institutional, political and technical barriers are addressed.

The last chapter in this section by Nitya Nanda makes a strong case for regional cooperation on energy issues. While some level of engagement has taken place, there is room for greater discourse to combat climate change. Cooperation has been initiated during expert meetings which led to the adoption of a three-year regional action plan in 2008. He proposed exploring the possibility of regional cooperation in adaptation and mitigation areas. Challenges exist though as some countries have set

preconditions, while others have flagged the need for external assistance to reduce their mitigation costs.

The following section focuses on India's energy issues profile. It starts with Vikram Mehta's case study on India's energy profile in the long-run. He explores factors that will shape the country's energy profile and argues that the country shift towards a low carbon energy system if necessary. Despite India's interest in investing in renewable energy, fossil fuels will make up 77% of the country's energy requirements in 2040. As a result, non-renewable energy will continue to serve as the base for India's energy system.

Lydia Powell then examines the energy access transition in India and how biomass such as wood and agricultural products will gradually be replaced with petroleum products. However, there are contestations on the shift from biomass to petroleum projects. The chapter also explores the past and present day market transition.

Finally, Amitendu Palit's chapter examines the challenges of financing renewable and non-fossil fuel projects in India, with a primary focus on solar energy development. Early investments in renewable energy projects take time to materialise and bring in returns. He looks at the early days of India's journey to increase solar energy projects, the progress made and future trends. The green bond market in India has grown substantially to include commercial banks, financial institutions and corporates and this chapter explores India's approach towards clean energy finance through green bonds.

This volume ends with a closing chapter by Christopher Len and Roshni Kapur which highlight the key issues covered in this volume and offers some concluding thoughts on South Asia's energy transition path ahead.

End Notes

1. Energy Transition, International Renewable Energy Agency (IRENA), available on IRENA website: <https://www.irena.org/energytransition> <https://www.irena.org/energytransition>, accessed December 10, 2018.
2. "South Asia positioned to remain the world's fastest-growing region: UN report", United Nations Information Centre for India and Bhutan,

December 12, 2017, <http://www.unic.org.in/pressrooms/south-asia-positioned-to-remain-the-worlds-fastest-growing-region-un-report/>, accessed December 10, 2018.

3. India, US Energy Information Administration, June 14, 2016, <https://www.eia.gov/beta/international/analysis.php?iso=IND>, accessed December 1, 2018.