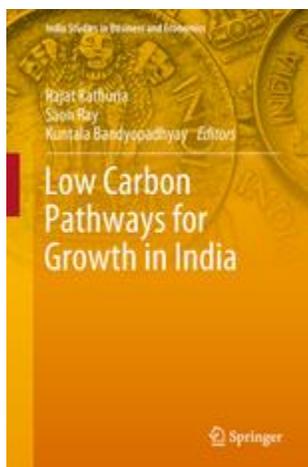


## BOOK REVIEW

### India's Quest for Low Carbon Transition

P. Balachandra \*

Rajat Kathuria, Saon Ray and Kuntala Bandyopadhyay, eds. 2018. *Low Carbon Pathways for Growth in India*, New Delhi: Springer, ISBN: 978-981-13-0904-5 (HB); 978-981-13-0905-2 (eBook), xviii + 188 pp; Euro 114.39 (Hardbound).



Globally, low carbon transitions have become a necessity, especially for large emerging economies like India. The good news is that since 2000 Indian economy is already in the midst of meaningfully trying to reduce its carbon intensity — emissions per unit of GDP produced. According to the estimates based on data from the *BP Statistical Review of World Energy* and the Reserve Bank of India, carbon intensity of Indian economy in terms of kgCO<sub>2</sub> emissions for every 100 Rupees of real GDP produced (Base year: 2011-12) has reduced from 2.23 in 2000 to 2.09 in 2009 and further to 1.76 in 2018. This is a reduction of 6.5% during the first decade and a significantly

high 15.6% during the current decade. The trends are positive, and the future appears promising. Several factors have contributed to these reductions — policy push for renewable energy and low carbon technologies in the energy sector, energy efficiency in the consuming

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sectors and ever-growing ‘energy light’ services sector. The future too appears more promising for these sectors with the government’s aggressive encouragement for renewable energy in the power and transport sectors. However, to achieve India’s intended commitment to reduce its emissions intensity by 30% to 35% by 2030 from the 2005 levels, initiatives will need to be more aggressive and creative. Given such a context, the volume edited by Rajat Kathuria, Saon Ray and Kuntala Bandyopadhyay provides us with an interesting collection of articles that map out the complex challenges involved in addressing India’s quest for effecting a low carbon transition.

The edited collection comprises 13 articles. The opening chapter introduces the debates and the concluding chapter rounds up the various discussions. The remaining 11 articles, contributed by experts on India’s current energy scenario, are distributed under three broad themes. In the first theme, the articles offer a macro perspective on the likely pathways India will aim to achieve low carbon goals. In Chapter 2, Kaushik Deb and Manoj Kumar give a short summary of India’s four-decade growth trends in the energy sector (supply and demand) and its relationship with the GDP growth. No significant learnings, in my opinion, are captured. In Chapter 3, Saon Ray and Kuntala Bandyopadhyay review various climate change models with a focus on understanding their likely economic impacts. It gives a good tabulated summary of India-specific climate change models. The chapter, however, ends abruptly without offering any insights. Chapter 4 by Himanshu Gupta contains an elaborate discussion on the NITI Aayog’s *Reference Energy Scenario for 2047*, which explored possibilities for India adopting several low-carbon pathways. Interestingly, it is noted that such low carbon pathways require an investment of about 0.7% of GDP between 2012-2047 for a 40% reduction in carbon emissions compared to a reference scenario. According to the author, such investment is worthwhile, and reductions are achievable given that India is yet to produce 90% of steel and build 80% of residential buildings required till 2047. In Chapter 5, Vaibhav Chaturvedi estimates the costs of inaction in reducing the country’s carbon footprint. The author’s estimates are wildly speculative and fraught; such an exercise would be akin to predicting the world of 2020 by experts drawn from the 1920s.

The second theme deals with discussions on potential interventions in specific economic sectors with case studies drawn from Indian Railways and Municipal Water Supply. In Chapter 6, Zeba Aziz argues for the adoption of the “Avoid-Shift-Improve” approach for low carbon transition. This approach advocates that urban systems be optimally designed to “avoid” motorized transport, and if that is inevitable then there should be a “shift” to public/non-motorized transport while simultaneously working to

“improve” fuel efficiencies. The authors, Saon Ray and Nandini Kumar, in Chapter 7, similarly urge for adopting energy efficiency and renewable energy for mitigating carbon emissions in the industrial sector. The plea for significant de-carbonization of the Indian Railways through electrification from renewable energy sources is the topic for discussion by T.S. Ramakrishnan in Chapter 8. This chapter is a summary of the detailed feasibility study carried out to explore the possibility of carrying out the complete de-carbonization of the Indian railways by 2030-31. The projections for 2030-31 suggest that the railways require to install 90-150 GW (Gigawatt) of solar capacity to generate 136-225 TWh (Terra Watt-hour) of electricity.

Chapter 9 by Indro Roy and Chapter 11 by Nilanjan Ghosh, in the third segment, contain discussions on water resources management and their linkage to climate change and low carbon growth from two divergent perspectives – urban water supply and irrigation water supply for agriculture. In Chapter 10, Indro Roy brings out the unique aspects of solar energy, given its modularity and ease of scale-up, in terms of its ability to meet both the needs of India’s energy security through large-scale power generation and the universal energy access through off-grid electrification. The author here touches upon the important issue of geopolitics in India’s quest for energy security, especially given its over-dependence on the Middle East for crude oil and on China for solar infrastructure. The expanded geopolitics of energy security is discussed in Chapter 12 by Subhomoy Bhattacharjee. He discusses the India-China dynamics in the context of energy logistics in the Indian Ocean. On the whole, the articles and the discussions are predominantly dependent on secondary sources — literature, databases, scenarios, estimates, perceptions, etc. It is basically, a synthesis of already available knowledge.

The editors, in my opinion, appear to argue for practical and commonsense positions while stating that “the world is likely to be very different in 2030,” and predicting “the future is hazardous” (p. 187). Given rapid technological changes, and the disruptive transitions in human lifestyles and business models (including energy delivery), the India of 2030 cannot be visualized from the data of 2010–15. This is one of the weaknesses of this book. This is evident from the recommendations from the authors – energy efficiency and renewable energy as strategies for achieving low carbon growth across sectors. Since India has already made significant progress concerning these two interventions, it is natural for any reader to expect a novel and unique set of strategies that could be effective in accelerating the low-carbon transition in the Indian economy.

Overall the book is well written, and a useful addition to the collection of books on sustainable development and climate change mitigation. This book would be of help to researchers, policy makers, NGOs, practitioners from the public and private organizations, donor agencies, etc. It can function as a reference book for all the above stakeholders in planning for a low-carbon transition.