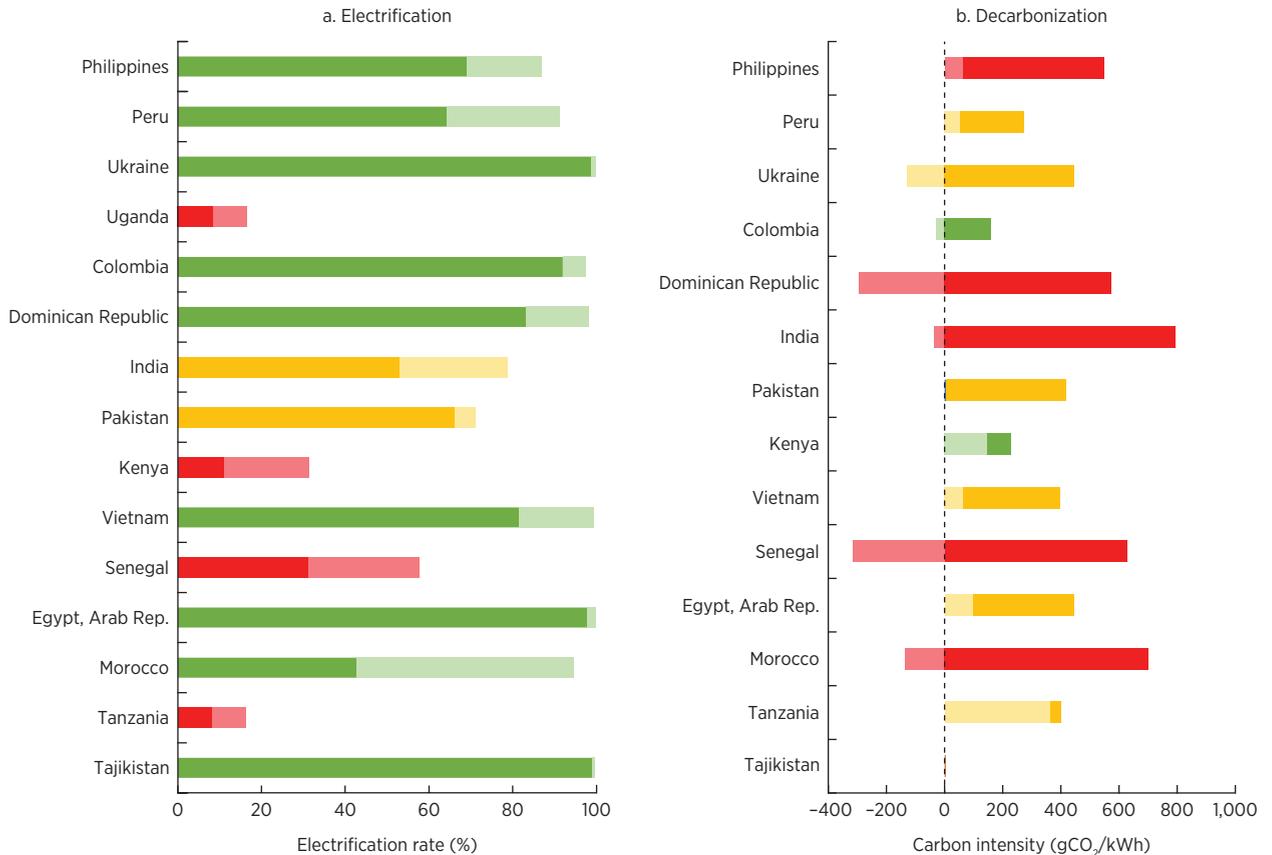


FIGURE O.14 Progress on twenty-first century policy objectives for electrification and decarbonization, 1990–2015, countries ranked in descending order of reform effort



Source: Based on data from Tracking SDG7 report and IEA.
 Note: Dark shaded bars represent prereform electrification; the light shaded bars represent the change since then. IEA = International Energy Agency; SDG7 = Sustainable Development Goal 7.

Source: Based on data from Tracking SDG7 report and IEA.
 Note: Dark shaded bars represent average value in 2010–15; light shaded bars represent the change in values from prereform era. gCO₂/kWh = grams of carbon dioxide produced per kWh; IEA = International Energy Agency; SDG7 = Sustainable Development Goal 7.

CONCLUSIONS

Overall, it is recommended that future reforms be increasingly shaped by context, driven by outcomes, and informed by alternatives.

First, there is a need to shift from a context-neutral approach to reform to one that is shaped by context. An overarching message is that the design of reforms should be sensitive to country conditions. The 1990s power sector reform model was largely derived from economic first principles and first tested in

relatively sophisticated environments. As a result, it lacks a framework for adapting reform to the country context. In practice, numerous preconditions—both economic and political—have emerged as important in shaping its applicability. A more structured approach to mapping out such prerequisites should figure prominently in future efforts along the lines offered in this report.

Second, there is a need to shift from process-oriented reform to outcome-oriented reform. The 1990s model focused

primarily on a particular package of institutional reforms, which, it was argued, would lead in time to better overall sector outcomes. Rather, it is important to design a reform process by identifying the most critical outcomes and working backward from there to identify the measures most likely to remove key bottlenecks and roadblocks preventing achievement of the desired outcomes.

Third, there is a need to shift to a more pluralistic range of institutional models. Although the 1990s power sector reform blueprint has demonstrated its ability to deliver in certain country contexts, the results have been quite disappointing in other settings. Moreover, some countries that adopted only limited reforms have achieved outcomes at least as good as those achieved by countries that went further with the reform agenda. These findings make the case for a more pluralistic approach to power sector reform going forward, recognizing that there is more than one route to success.

NOTES

1. The Rethinking Power Sector Reform Observatory includes Colombia, Dominican Republic, the Arab Republic of Egypt, India (states of Andhra Pradesh, Odisha, and Rajasthan), Kenya, Morocco, Pakistan, Peru, the Philippines, Senegal, Tajikistan, Tanzania, Uganda, Ukraine, and Vietnam.
2. Demand response is defined as when the end user changes their electricity usage in response to price signals or incentives payments.
3. A simple Power Sector Reform Index was constructed to aggregate data across the four dimensions of power sector reform considered in this study. The index gives each country a score in the range 0–100 on each dimension of reform. The scores give equal weight to each step of each dimension on the reform continuum. The simple average of the four 0–100 scores is used to summarize the extent of reform. The index is purely descriptive and has no normative value. This index is described in greater detail in Chapter 2, and full technical definitions are provided in the annex of the chapter.
4. Merchant plants are typically nonutility power generation plants that compete to sell power. They usually do not have long term power purchase agreements and are mostly found in competitive wholesale power market places.
5. A Utility Governance Index measures the extent to which specific utilities conform to good practices. It is difficult to say exactly when and how good governance and management practices have been adopted over time, because such measures are usually implemented within institutions and do not necessarily involve major legal or structural changes that can readily be tracked in the public record. Nevertheless, it is possible to measure the current rate of adoption of such practices. Based on a sample of 19 state-owned and 9 privatized utilities from the 15 observatory countries, the Utility Governance Index measures the existence of best practices in utility rules and regulations. For example, a utility may, on paper, allow managers to hire and fire employees based on performance—and the index captures this—however it is unable to tell whether the manager actually does so. This index is described in greater detail in chapter 4 and the full technical definitions are provided in the annex of the chapter.
6. The survey conducted in each of the 15 Observatory countries included 355 categorical and quantitative questions on the regulatory system. The questions were both descriptive and normative. Normative questions aimed to capture regulatory best practices based on the literature. To synthesize the normative data in a convenient and intelligible format, a Regulatory Performance Index was created. Two versions of the same index were calculated for each country. First, a *de jure* index derives from the country's regulatory framework as captured on paper in laws, regulations, and administrative procedures. Second, a perception index determines whether the paper provisions are applied in practice. The local consultant in each country provided the perception index; his or her professional opinion was informed by some 20 interviews with key stakeholders in the reform process. The perception index was also reviewed by the World Bank country energy team knowledgeable about local context. Despite best

efforts, this second index is more subjective than the first. This index is described in further detail in chapter 6 with technical definitions in the annex of the chapter.

7. Prosumers are entities that consume as well as produce electricity.

REFERENCES

- Andres, L., J. Guasch, and M. Diop. 2007. *Assessing the Governance of Electricity Regulatory Agencies in the Latin American and Caribbean Region: A Benchmarking Analysis*. Washington, DC: World Bank.
- Bacon, R. W., and J. Besant-Jones. 2001. "Global Electric Power Reform, Privatization and Liberalisation of the Electric Power Industry in Developing Countries." *Annual Review of Energy and the Environment* 26 (November): 331–59.
- Banerjee, S. G., A. Moreno, J. Sinton, T. Primiani, and J. Seong. 2017. *Regulatory Indicators for Sustainable Energy: A Global Scorecard for Policy Makers*. Washington, DC: World Bank.
- Besant-Jones, J. 2006. "Reforming Power Markets in Developing Countries: What Have We Learned?" Energy and Mining Sector Board Discussion Paper No. 19, World Bank, Washington, DC.
- Eberhard, A., and K. Gratwick. 2008. "Demise of the Standard Model of Power Sector Reform and the Emergence of Hybrid Power Markets." *Energy Policy* 36 (10): 3948–60.
- Foster, V., S. Witte, S. G. Banerjee, and A. Moreno. 2017. "Charting the Diffusion of Power Sector Reforms across the Developing World." Policy Research Working Paper 8235, World Bank, Washington, DC.
- Gavin, M., and D. Rodrik. 1995. "The World Bank in Historical Perspective." *American Economic Review* 85 (2): 329–34.
- Gilardi, F., and M. Maggetti. 2011. "The Independence on Regulatory Authorities." In *Handbook on the Politics of Regulation*, edited by D. Levi-Faur, 201–14. Edward Elgar Publishing.
- IEA (International Energy Agency), IRENA (International Renewable Energy Agency), UN (United Nations), WBG (World Bank Group), and WHO (World Health Organization). 2018. *Tracking SDG7: The Energy Progress Report*. Washington, DC: World Bank Group.
- Jamasb, T., R. Nepal, and G. R. Timilsina. 2015. "A Quarter Century Effort Yet To Come of Age: A Survey of Power Sector Reforms in Developing Countries." Policy Research Working Paper 7330, World Bank, Washington, DC.
- Jamasb, T., D. Newberry, and M. Pollitt. 2005. "Core Indicators for Determinants and Performance of the Electricity Sector in Developing Countries." Policy Research Working Paper No 3599, World Bank, Washington, DC.
- Jayarajah, C., and W. Branson. 1995. *Structural and Sectoral Adjustment: World Bank Experience, 1980–92*. Washington, DC: World Bank.
- Nepal, R., and T. Jamasb. 2012. "Reforming the Power Sector in Transition: Do Institutions Matter?" *Energy Economics* 34 (5): 1675–82.
- Pollitt, M. 2008. "The Arguments for and against Ownership Unbundling of Energy Transmission." *Energy Policy* 36 (2): 704–71.
- PPI Database. 2018. Private Participation in Infrastructure Database. <https://ppi.worldbank.org>.
- Vagliasindi, M. 2012. "Power Market Structure and Performance." Policy Research Working Paper 6123, World Bank, Washington, DC.
- Williams, J., and R. Ghanadan. 2006. "Electricity Reform in Developing and Transition Countries: A Reappraisal." *Energy* 31: 815–44.
- World Bank. 1993. "The World Bank's Role in the Electric Power Sector: Policies for Effective Institutional, Regulatory, and Financial Reform." Policy Paper, World Bank, Washington, DC.