

Energising Ties:

India-Singapore Cooperation on Clean Energy Systems

Karthik Nachiappan and Mriganika Singh Tanwar

Summary

India and Singapore can strengthen energy security through cooperation on grid modernisation, battery storage, project finance and nuclear regulation. Institutionalised collaboration could accelerate both countries' clean-energy transitions while advancing regional connectivity and resilience.

The Gulf war and standoff over the Strait of Hormuz, through which roughly one-fifth of global oil and gas shipments pass, have exposed the fragility of energy markets, driving price spikes, higher freight costs and renewed supply concerns. These disruptions have also highlighted the economic and strategic risks facing import-dependent countries during periods of geopolitical instability.

The crisis strengthens the case for India and Singapore to expand renewable power, energy storage, modern grids and clean-technology manufacturing, meeting rising electricity demand while reducing exposure to volatile energy supply chains. Their complementary capabilities create opportunities for deeper cooperation. India offers a large energy market, manufacturing capacity and renewable potential, while Singapore contributes finance, technology, regulatory expertise and regional connectivity. How can both countries advance clean-energy cooperation?

India

India imports over [85 per cent of its crude oil and 47 per cent of its natural gas](#), leaving the country highly vulnerable to supply chain disruptions and price volatility. India has also revised its Nationally Determined Contributions to achieve [500 gigawatts \(GW\) of non-fossil fuel capacity](#) by 2030 and targets achieving net-zero by 2070. India has already reached over 50 percent of installed electricity capacity ahead of its 2030 goal.

India currently has over [288 GW of installed non-fossil capacity](#) (297.36 GW adding nuclear power), including solar, wind, large hydro, small hydro and bioenergy. The government also launched the [National Green Hydrogen Mission](#) – a comprehensive programme aiming for five million metric tonnes (MMT) of annual production capacity by 2030, annual emissions cuts by 50 MMT and reduction in overall fossil fuel imports.

New Delhi also launched the [Production Linked Incentive \(PLI\) scheme](#) under which high-efficiency solar photovoltaic module manufacturing grew from 2.3 GW in 2014 to 67 GW in 2024. The PLI scheme establishes a domestic pipeline in solar modules and cells and strengthens India's ability to export clean-energy equipment globally. However, as India

continues to import 90 per cent of solar wafers, it remains vulnerable in upstream supply chains.

One of the major challenges for India is balancing growth with sustainability. India's clean energy systems deployment has not yet matched its ambitious targets. Installed capacity growth has outpaced the quality of power generation, grid flexibility and load management.

Singapore

Singapore's clean energy strategy is structurally different as it does not rely on domestic renewable endowments. In 2021, Singapore launched its [Green Plan 2030](#) to achieve net-zero emissions by 2050. The policy laid out concrete targets like two GWp of solar deployment by 2030, six GW of low-carbon electricity imports by 2035 and 100 per cent cleaner energy vehicle pathway by 2040. Singapore successfully surpassed its initial target of two GWp earlier than the set date and updated its domestic solar deployment target to three GWp by 2030.

Additionally, Singapore's Energy Market Authority introduced the '[Four Switches' strategy](#) to decarbonise Singapore's power sector while ensuring energy security and affordability. The strategy focuses on four key pillars: natural gas, solar, regional power grids and low-carbon alternatives. Singapore views hydrogen as a long-term solution for supply of almost 50 per cent of the country's power demands by 2050. The 2022 [National Green Hydrogen Strategy](#) requires all new and repowered natural gas plants to be 10 per cent more efficient and be able to draw at least 30 per cent hydrogen.

Singapore's main constraint is its import dependence on external producers. As the geopolitical disruptions expose the chokepoints of energy supply chains, Singapore must secure and diversify its regional supply chains to withstand political, commercial and regulatory frictions.

India-Singapore Cooperation in Clean Energy Systems

India and Singapore can better align their clean energy strategies around sustainability, electricity connectivity and energy technologies through the India-Singapore Ministerial Roundtable in 2025. Both governments are increasingly viewing bilateral energy ties as a formative agenda, encompassing cooperation across grids, storage, finance and regulatory systems. A bilateral Green and Digital Shipping Corridor was established to develop infrastructure and near-zero emission fuels for the maritime sector. Both countries are discussing plans to establish a renewable energy corridor and partner in developing green data centres to support joint economic, financial and sustainable infrastructure goals. This agenda can be expanded further:

1. **Institutionalised Energy Mechanism:** Bilateral clean energy cooperation could use a focused channel or mechanism, focused on grid interoperability, storage integration and project finance for cross-border clean power. A working group focused on financing and regulatory bottlenecks would be easier to establish than a full-fledged power corridor.

2. **Grid modernisation, storage and market design:** India needs stronger transmission and flexibility tools, while Singapore needs robust systems for managing imported power, certification and integration with regional grids. Joint work on batteries, digital grid management and demand-side flexibility would be comparatively low-risk and could generate value.
3. **Nuclear energy:** Despite promise, nuclear energy cooperation comes with substantial regulatory, safety and policy risk. Singapore has engaged India on Small Modular Reactors technology for future energy needs. India's deep experience could help Singapore understand best practices, safety standards and regulatory frameworks.

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Dr Karthik Nachiappan is a Research Fellow at the Institute of South Asian Studies (ISAS), an autonomous research institute at the National University of Singapore (NUS). He can be contacted at isaskn@nus.edu.sg. Ms Mriganika Singh Tanwar is a Research Analyst at the same institute. She can be contacted at m.tanwar@nus.edu.sg. The authors bear full responsibility for the facts cited and opinions expressed in this paper.