IN-DEPTH

Energy Regulation And Markets

INDIA

LEXOLOGY

Energy Regulation and Markets

EDITION 13

Contributing Editors

Natasha Luther-Jones, Andreas Gunst and Kenneth Wallace-Mueller

DLA Piper

In-Depth: Energy Regulation and Markets (formerly The Energy Regulation and Markets Review) offers an insightful survey of the key features of energy regulatory regimes worldwide, along with analysis of their impact on commercial practice. Focusing on the most consequential recent developments in the electricity, oil, natural gas and renewable energy sectors, the review covers (among many other things) the major licensing requirements, market access restrictions, distribution regulations and regulatory enforcement activities.

Generated: June 13, 2024

India

Neeraj Menon and Akshay Shandilya

Trilegal

Summary

Introduction

The Indian economy is undergoing large-scale transformation across various key sectors, and energy security has emerged as one of the key focus areas in unlocking the country's potential for meaningful development. Along with key policy changes, the government of India is working towards improving the bankability of key energy assets by restructuring and improving the financial health as well as the operational efficiency of distribution companies (DISCOM), along with continuing its efforts to promote new areas of growth such as India's offshore wind energy sector and the solar rooftop segment. The primary concerns for the country continue to be providing reliable, uninterrupted electricity to all and finding solutions to the unutilised capacity. While the majority of the contribution to India's energy mix continues to come from conventional energy sources, the government of India remains keen on scaling up the Indian renewable energy market. Almost 44 per cent of the total installed capacity of power projects in India comprises non-fossil fuel energy. India has set a target of achieving 500GW of renewable energy installed capacity by 2030. India ratified the Paris Convention on Climate Change and aims to produce at least 40 per cent of its installed electricity capacity by 2030 from non-fossil fuels. Encouraged by the success of its initiatives in the renewable energy sector, and to ensure that commitments made to the international community are fulfilled, the government of India has considerably increased its renewable energy production targets, especially for onshore wind energy and solar energy production.

Regulation

i The regulators

Electricity is a subject mentioned in the Concurrent List of the Seventh Schedule of the Constitution of India, which means that the federal government and state governments have the power to legislate on the subject of electricity. The power sector is governed by the federal government through, primarily, the Ministry of Power and the Ministry of New and Renewable Energy (MNRE). Currently, the Ministry of Power and the MNRE are under the charge of a single minister to ensure an identity of objectives and synchronisation in objectives and policies. The Electricity Act 2003 (the Electricity Act) is the primary statute that governs generation, transmission, distribution and trading of electricity (other than nuclear energy, which is governed by the Atomic Energy Act 1962). The Electricity Act provides for the formulation of the National Electricity Policy 2005, the National Tariff Policy 2016 (the Tariff Policy), the National Electricity Plan, establishment of independent electricity regulatory commissions at the central level (the Central Electricity Regulatory Commission (CERC)) and state level (the state electricity regulatory commissions (SERCs)) and the setting up of the Appellate Tribunal for Electricity. The relevant SERCs exercise jurisdiction over intrastate electricity regulatory matters (including tariffs), whereas the CERC exercises jurisdiction over all interstate electricity regulatory issues (also including tariffs). A hallmark feature of the India's Tariff Policy is the declaration of the long-term growth trajectory of renewable purchase obligation (RPO) by the Ministry of Power in consultation with the MNRE. In October 2023, the

Ministry of Power notified the minimum share of consumption of energy from non-fossil fuel sources by designated consumers up to the year 2029–30 under the following heads: wind renewable energy, hydro renewable energy, distributed renewable energy and other renewable energy (i.e., other than the sources described above that would include solar power, waste to energy and biomass), with a targeted total share of energy consumption of 43.33 per cent by 2029–30. To achieve the specified consumption targets, the Ministry of Power's notification offers the flexibility of using surplus energy from one renewable source to offset any deficiencies in another. The notification came into effect from 1 April 2024 and will supersede the RPO trajectory up to the year 2029–30 earlier specified by the Ministry of Power in 2022. Other features of the Tariff Policy are exemption on the payment of interstate transmission charges for wind and solar power projects, applicability of RPOs on co-generation power plants, compulsory procurement by DISCOMs of 100 per cent power from waste to energy plants in the respective state, development of intrastate transmission projects through a competitive bidding route for projects above a particular project cost threshold, to be decided by the SERCs, and introduction of a renewable generation obligation on thermal power producers, requiring them to set up or contribute towards renewable generation capacity. The government of India has also proposed significant amendments to the Electricity Act, particularly in terms of enabling consumers to choose their electricity supplier by segregating the entities that distribute and supply power, imposing stricter penalties for non-compliance with the RPOs. While the proposed amendments have not yet been finalised, the government of India is exploring other initiatives with the state governments on measures to make the power sector more competitive.

The Department of Atomic Energy[2] and the Atomic Energy Regulatory Board regulate nuclear energy in India. The government of India is also in the process of setting up a statutory, independent and autonomous Nuclear Safety Regulatory Authority to replace the Atomic Energy Regulatory Board.

In the past few years, the Ministry of Coal and the state-controlled Coal India Limited (CIL) have been at the receiving end of nationwide criticism for failure to supply the requisite quantity and grade of coal, leading to strong lobbying on the part of power producers for assured coal supplies by the government of India. In September 2014, the Supreme Court of India cancelled 204 out of 218 coal blocks allocated to various entities between 1993 and 2010 by holding the procedure of allocation to be illegal and arbitrary. However, with the enactment of the Coal Mines (Special Provisions) Ordinance 2014, and subsequently, the Coal Mines (Special Provisions) Act 2015 (Coal Mines Act), there has been a push towards ensuring continuity in mining operations and transparency in allocation of coal blocks. In accordance with the Coal Mines Act, which now governs the coal block allocation process, the government of India has restarted auctioning the cancelled coal blocks, and out of the re-auctioned blocks certain blocks are now operational as well. Further, with the Coal Mines Act having lifted end-use restrictions on the coal mined from some of the re-allocated blocks to enable the sale of coal in the open market, the government of India has recently approved the methodology for auction of coal mines for the commercial mining of coal without any restrictions on sale or utilisation of coal. This methodology envisages that the auction will be an ascending forward auction with the bid parameter being the price (in Indian rupees per metric tonne) paid to the government of India on the actual production of coal from the mine. The government of India's release in this regard also sets out that this

is the most ambitious coal sector reform since 1993 and is expected to better the energy security scenario in India.

In February 2023, to meet the increasing demand of electricity, the Ministry of Power has directed all the imported coal-based power plants to run on full capacity till June 2024.-[3] Along with this, the Ministry of Power has also directed all the generating companies to continue the use of imported coal for blending (imported coal should be blended at the rate of 6 per cent by weight) purposes. The government of India has also put in place the Scheme for Harnessing and Allocating Koyala (coal) transparently in India (the SHAKTI policy), where the government coal companies will grant coal linkages on notified prices for a minimum of three months and up to a maximum of one year on an auction basis for coal-based power projects, including private generators without power purchase agreements (PPAs). The bid parameter for this auction will be the levelised discount on the existing tariff that the independent power producer is willing to provide. The first bid under the scheme was completed in 2017 and saw nearly 27.18 million metric tonnes per annum of coal being booked by power developers. This scheme has since received a favourable response from generating companies. During the period of January to November 2023, five tranches of linkage auction under B(viii) of SHAKTI policy were conducted by CIL, where 27.99 million tonnes of coal was booked by successful bidders. During the same period, the fourth round of linkage auction under B(iii) of SHAKTI policy was also conducted by CIL where 4.30 million tonnes of coal was booked by successful bidders.[4] The growth of the captive and commercial coal mining in India is evidenced by the fact that during the period from 1 April 2023 to 26 February 2024, the total coal production from captive and commercial mining was around 125.33 million tonnes, against 99.50 million tonnes from the same period during FY 22–23, indicating a growth of around 26 per cent.

To streamline the availability and to regulate the price of coal, the government of India in February 2022 approved the mechanism for e-auction of coal by the coal companies. Under this new mechanism, all non-linkage coal would be sold through a single e-auction window of CIL or Singareni Collieries Company Limited. According to the approved mechanism, all entities including the power sector and non-regulated sectors including traders can participate in the e-auctions. In February 2024, the government of India approved an 85 billion Indian rupees scheme to promote the development of coal/lignite gasification projects to meet the future energy needs of the country.

With a view to make India a self-sufficient mineral ecosystem, the government of India has recently amended the mining laws to introduce the exploration and auction of mineral blocks of critical and strategic minerals such as lithium, graphite, cobalt, titanium and rare earth minerals that are essential for energy transition, economic development and national security. The Mines and Minerals (Development and Regulation) Amendment Act 2023 introduced the concept of an exploration licence as a single licence for reconnaissance and/or prospecting operations for certain minerals. The holder of an exploration licence is entitled to a share of the amount from the auction of the subsequent mining lease by the relevant state government. In January and February 2024, the rules made under the Mines and Minerals (Development and Regulation) Act 1957 have also been amended to provide the procedure for auction of critical and strategic minerals and the procedure for exploration licence.

The Ministry of Petroleum and Natural Gas (MoPNG) deals with issues relating to petroleum, natural gas, coal bed methane, shale gas and other petroleum products.

Along with exploration and production, the MoPNG also monitors its supply, distribution, marketing and pricing. The Directorate General of Hydrocarbons (DGH), which is under the administrative control of the MoPNG, regulates the upstream segments for issues relating to exploration and production of oil and gas. The Petroleum and Natural Gas Regulatory Board (PNGRB) is the midstream and downstream regulator that regulates the refining, storage, transportation, distribution, marketing and sale of petroleum, petroleum products and natural gas.

ii Regulated activities

Electricity generation, including captive generation, is a de-licensed activity. While generation activities can be freely undertaken without a licence, approvals and procedures under other laws for land acquisition, environmental, corporate safety of electrical equipment and labour compliance must be adhered to.

The licensed activities under the electricity regulatory framework in India primarily constitute distribution, transmission and trading. Electricity distribution activities (except for distribution of electricity in rural areas) require a licence from the relevant SERC. In relation to transmission, licences are awarded by the CERC for interstate transmission activity by way of a competitive bidding procedure in accordance with CERC regulations. For intra-state transmission services, licences are awarded by the relevant SERC. Electricity trading is a distinct recognised activity for which a separate licence is required from the CERC or a SERC (for interstate and intrastate trading respectively). The proposed amendments to the Electricity Act provide for disaggregation of distribution activities by requiring the supplier of electricity and distribution network provider to be separate entities so as to enable consumers to choose their supplier. If these amendments come into force, supply of electricity will also require a licence from the relevant SERC, and the supply and distribution of electricity will be governed by separate operative codes to be issued by the relevant SERC.

Exploration of oil and gas are separately licensed activities. The DGH awarded licences through international competitive bidding for natural gas exploration blocks under the New Exploration Licensing Policy (NELP) rolled out in 1999. The production-sharing contract (PSC) under the NELP programme stipulated conditions regarding pricing and sharing of total product obtained with the government of India. The DGH has successfully carried out nine rounds of bidding under NELP, in which 254 oil and gas blocks have been awarded.

The MoPNG notified the New Domestic Natural Gas Pricing Guidelines 2014, which provide for the prices to be fixed on the basis of the annual average of the price of gas at specified international hubs and require notification of the prices determined by the government of India on a biannual basis. The MoPNG further revised the guidelines in April 2023 for gas produced from nomination fields of Oil and Natural Gas Corporation/Oil India Limited, NELP blocks and pre-NELP blocks, where PSC provides for government's approval of prices.[5] The 2023 amendment provides that the price of natural gas will be 10 per cent of the monthly average of Indian crude basket price that will be notified on a monthly basis and for the gas produced by Oil and Natural Gas Corporation and Oil India Limited from their nomination fields, the administered price mechanism price will be subject to a floor and a ceiling.

The Coal Bed Methane (CBM) Policy 1997 offered blocks for exploitation of CBM through biddable revenue-sharing based on production-linked payment. The Policy specified modalities regarding the commercial development of CBM, identification and allotment of blocks and fiscal incentives or provisions. The government of India has also approved the marketing and sale of CBM by contractors on arm's-length prices in the domestic market. Recognising the constraints experienced in the present PSC format and differences in the fiscal and contractual regime for oil and gas and CBM, the government of India has framed the Hydrocarbon Exploration Licensing Policy (HELP), which provides for a uniform licensing system to cover all hydrocarbons, such as oil, gas and CBM, under a single licensing framework, allowing the possibility of exploring overlapping resources in a single block. Under HELP, both foreign and domestic companies can have a 100 per cent participating interest without the involvement of a government company in a joint venture. Among the ostensible reasons for concluding the NELP is the fact that blocks that were bid for under numerous PSCs are mired in disputes over the inflating costs of production and deteriorating production of oil and gas. Through HELP, a revenue-sharing arrangement has been implemented, where bidders will be selected based on their upfront revenue-sharing commitment offered to the government of India, which will be payable from the first batch of production. The revenue-sharing model will not be subject to cost recovery and therefore aims at eliminating the often-tedious process of cost scrutiny that the government of India was required to undertake under the previous regime. Although the move to a revenue-sharing model has largely been well received, a few industry participants are likely to get discouraged under the new model as the investment recovery periods for companies will increase. The HELP has also introduced an open acreage licensing policy in India (OALP), which permits the licensee to exploit the full range of hydrocarbons accessible in a single block and allows companies to approach the government of India at any time, expressing their interest in bidding for one or more blocks, after which the government of India would invite competitive bids from others interested in the same blocks. Contracts have been signed for nearly 144 blocks under OALP Bid over eight rounds and the government of India has launched OALP Bid Round IX in January 2024 for 28 blocks with an area of approximately 136,596 square kilometres.[6] The government of India has also introduced policy guidelines for exploration and exploitation of shale gas and oil by national oil companies. As per the policy guidelines, three assessment phases have been given to the national oil companies for exploration of shale gas and oil viz. Phase I (55 blocks selected for exploration), Phase II (80 blocks selected for exploration) and Phase III (55 blocks selected for exploration) with a total of 190 areas selected for exploration, pursuant to which, the oil companies have started the first phase of assessment and have initiated exploration activities in over 70 areas. While the potential shale gas reserves overshadow those of conventional gas, India has a long way to go in identifying shale gas-rich basins and acquiring the necessary technology and experience to extract shale gas, specifically in the absence of private participants.

Petroleum, natural gas and city gas distribution (CGD) networks can be developed either through an expression of interest to the PNGRB or under competitive bids invited by the PNGRB. Under the expression-of-interest route, the PNGRB must publicise upon receipt of such an expression of interest, to receive proposals or comments from different entities, and may invite competitive bids or allow for the proposal (with or without modification).

iii Ownership and market access restrictions

Over the past decade, the government of India has progressively liberalised the energy sector, although government companies continue to be active players. Up to 100 per cent foreign direct investment (FDI) is permissible in generation (except nuclear power), transmission, distribution of electricity and power trading, as well as in the coal, oil and gas sector,[7] and up to 49 per cent in power exchanges without prior regulatory approval. Such investments are subject to sector-specific laws and policies. The revised Consolidated FDI Policy, while maintaining the 49 per cent cap on FDI in power exchanges, has done away with the restriction that FII/FPI could only invest in power exchanges through the secondary market.

A majority of generation, transmission and distribution capacities are with either public sector companies or with state electricity boards (SEBs); however, private sector participation is increasing, especially in generation and distribution. The interstate transmission system (ISTS) is mainly owned and operated by Power Grid Corporation of India Limited, a state-owned company, and the intrastate transmission system is owned and maintained by state utilities. However, the public–private partnership (PPP) structure is increasingly preferred by the government of India for setting up interstate and intrastate transmission networks. Electricity distribution is largely in the control of government DISCOM, with privatisation being slow largely on account of the huge legacy liabilities of the state DISCOM and public interest litigations challenging the privatisation processes in few cases. However, a few examples of privatisation in certain areas (such as Delhi, Orissa, Ahmedabad, Kolkata, Agra and Mumbai) have been met with success. Apart from private participation in the distribution sector, DISCOMs in several states (particularly Maharashtra, Rajasthan and Odisha) have engaged distribution franchisees to discharge their universal supply obligations (i.e., to ensure that electricity is provided to all the consumers within the designated service area of the DISCOMs). Given that a distribution franchisee does not require a licence to function (unlike a DISCOM), there has been considerable private interest in the sector with several companies submitting bids in recent auctions. The role of a distribution franchisee typically includes supply of electricity on behalf of the DISCOM with related functions such as meter reading, tariff collection and operation and maintenance of distribution assets. That said, there have been multiple bid processes for selection of franchisees that have faced delays on account of reports of considerable aggregate technical and commercial losses that have to be borne by private franchisees.

In India, the ownership of all mineral resources, including oil and gas, vests with the government of India, and is administered through the MoPNG. The Gas Authority of India Limited and the Oil and Natural Gas Company are the largest owners of oil and gas pipelines in the country. Private players are increasingly entering the CGD space in urban areas.

iv Transfers of control and assignments

While there are no specific restrictions on transfer of control or assignment of a generating company, PPAs issued pursuant to certain renewable energy policies and bidding documents for thermal and renewable power procurement provide for shareholding restrictions for a certain period post-commercial operation. For instance, the Ministry of Power's revised standard bidding documents for long-term (seven to 25 years)

procurement of power from thermal power projects (Revised SBDs), provide for a lock-in period (though on a sliding scale) of up to 10 years following commercial operations.

Holders of licences for oil and gas exploration can transfer or assign all or part of their participating interest under the PSC, including any change in control of a party, with prior consent of the government of India.

Other than these sector specific restrictions, provisions of the Companies Act 2013, Competition Act 2002, and the Securities and Exchange Board of India (Substantial Acquisition of Shares and Takeovers) Regulations 2011 (applicable to listed companies) will apply with respect to change in shareholding through mergers and acquisitions.

Transmission/transportation & distribution services

i Vertical integration and unbundling

Under the Electricity Act, SEBs were required to be unbundled into separate generation, distribution and transmission companies and most states have now completed the process. Transportation, distribution and marketing activities in the oil and gas sector are yet to be unbundled. The PNGRB regulations provide for legal separation of entities engaged in marketing of natural gas and laying, building, operating or expanding pipelines for transportation of gas on common carrier or contract carrier basis on or before 31 March 2017. However, these regulations have been stayed by the Delhi High Court and the matter is currently sub judice.

ii Transmission/transportation and distribution access

In the electricity sector, transmission licensees must provide non-discriminatory open access to its transmission system for use by other persons (including electricity distributors, traders and generating companies). Open access to distribution networks is also granted to bulk power consumers (i.e., consumers of more than 1MW), to procure electricity at unregulated prices from entities other than the area's DISCOMs. In June 2022, the Ministry of Power notified the Electricity (Promoting Renewable Energy Through Green Energy Open Access) Rules 2022 for the promotion of generation, purchase, and consumption of green energy (Green Open Access Rules). The Green Open Access Rules entail lower load limit requirement for grant of green energy open access by reducing the sanctioned load limit for grant of open access from 1MW (as stipulated under the Electricity Act) to 100kW for green energy (either through single connection or through multiple connections aggregating 100kW or more located in same electricity division of a distribution licensee), with no minimum limit being set out for captive consumers. The Green Open Access Rules were amended in January 2023 and then again in May 2023 with updates to the definition of entity, eligibility criteria for open access, and exemption of offshore wind projects commissioned by 2032 from the levy of additional surcharge. To operationalise the framework under the Green Open Access Rules, the Green Open Access Registry was set up as a platform to provide automated transaction workflows to ease the turnaround time of transaction for all open access consumers.

Separately, the government of India has the ability to issue directions to generators on operation of their power stations in extraordinary circumstances, a tool that more often than not has been used by state governments to restrict supply of power outside the state (in the event of a shortage).

The PNGRB prescribes an access code for common or contract carrier natural gas pipelines, regulations for capacity release for natural gas pipelines and requires natural gas transporters to declare capacity available for common carriage on a monthly basis. The government of India has also implemented the Green Energy Corridor Scheme for Intra-State Transmission System (GEC Scheme). The GEC Scheme envisages grid integration and power evacuation of renewable energy from various states in India by laying of transmission lines and creation of new substations. The GEC Scheme has been implemented in two phases – Phase I and Phase II. Under Phase I of the GEC Scheme, which is already under implementation, laying of 9,700 circuit kilometres of transmission lines and addition of 22,600 megavolt amperes (MVA) transformation capacity of substations is stipulated for evacuation of up to 24GW of renewable energy. Under Phase II of the GEC Scheme, which is going to be implemented over a duration of five years, from 2022 to 2027, construction of transmission lines of up to 10,750 circuit kilometres and addition of 27,500MVA is stipulated for evacuation of up to 20GW of renewable energy from various states in India.

In 2021, the Ministry of Power promulgated the Electricity (Transmission System Planning, Development and Recovery of Inter-State Transmission Charges) Rules 2021 (LTA Rules), which underpin a system of transmission access that is termed as a general network access (GNA) in the ISTS. The LTA Rules specify how the existing long-term access would be transitioned into GNA while also outlining the recovery of GNA charges from the transmission network users and assigning the responsibility of billing, connection and disbursement of interstate transmission charges to the CTU. The excess drawal or injection in excess of the approved GNA capacity is charged at rates of at least 25 per cent higher to ensure that entities do not under-declare their GNA capacity.

As stipulated under the LTA Rules, the CERC issued the CERC (Connectivity and General Network Access to the Inter-State Transmission System) Regulations 2022 (the GNA Regulations), which partially came into force on 15 October 2022[8] , and the remaining provisions of the GNA Regulations as well as the first amendment, which was issued in April 2023, came into force on 1 October 2023.[9] The GNA Regulations replaced the erstwhile regulations related to connectivity to the ISTS (i.e., the CERC (Grant of Connectivity, Long-term Access and Medium-term Open Access in Inter-State Transmission and related matters) Regulations 2009).

The GNA Regulations provide non-discriminatory open access to the ISTS. The GNA Regulations provide flexibility to the generators, trading licensees, DISCOMs and transmission companies, among other things, by providing them with open access rights without having to specify the injection point and drawal point (though at the time of applying for connectivity to the ISTS, the applicant is required to indicate the preferred point of connection with the ISTS along with the maximum quantum of power proposed to be interchanged with the ISTS).

iii Rates

Under the Electricity Act, transmission schemes are implemented either through the tariff-based competitive bidding process or under a cost-plus mechanism where a regulated tariff is determined by the relevant electricity commission. The CERC adopts a 'point-of-connection' method for calculating interstate transmission charges and losses, which aims to develop a uniform transmission charge-sharing mechanism among grid constituents. However, to help meet the proposed target of 500GW of renewable energy capacity by 2030, the government of India has, among other measures, exempted the payment of interstate transmission charges for wind and solar power projects under the Tariff Policy.

The Ministry of Power vide its order dated 23 November 2021 has ordered that transmission charges for solar and wind projects commissioned before 30 June 2025 would be waived for a period of 25 years after commissioning of the project. Further, in 2022, the Ministry of Power has also included hydropower projects for waiver of transmission charges for projects for which construction work is awarded and PPA is signed on or before 30 June 2025. In 2023, the Ministry of Power extended its support by granting a complete waiver of transmission charges for offshore wind power projects commissioned on or before 31 December 2032 and green hydrogen/green ammonia production units, pumped storage systems, battery storage systems, and any hybrid combinations thereof for projects commissioned on or before 31 December 2030. These waivers apply for a period of 25 years from the date of project commissioning. The tariff for electricity distribution, comprising wheeling charges and cost of supply, is levelled and determined on a cost-plus basis by the relevant SERC.

The PNGRB has enacted regulations for determination of transportation tariff for petroleum and petroleum products, natural gas pipelines and CGD network. The tariff for such pipelines is determined taking into consideration a reasonable rate of return on the normative level of capital employed plus a normative level of operating expenses in the relevant pipeline.

iv Security and technology restrictions

With a sophisticated energy infrastructure and now smart grids being proposed, cybersecurity concerns are paramount. The Information Technology Act 2000 addresses hacking and security breaches of information technology infrastructure. Under the Act, the National Critical Information Infrastructure Protection Centre and the Indian Computer Emergency Response Team has been established to provide incident response and operational support to critical infrastructure operators. The government of India issued a National Cyber Security Policy in 2013, which aims at creating a secure cyber ecosystem, encourages use of open standards to facilitate interoperability and data exchange, and provides for creating mechanisms for security threat early warnings and vulnerability management.

Technology transfers into India are permitted in all sectors, including energy. All payments made for technology transfers into India are subject to Indian exchange control regulations. Export of technology transfers for specific sectors requires a licence under India's Foreign Trade Policy.

The Central Electricity Authority (CEA) notified the CEA (Cyber Security in Power Sector) Guidelines 2021 wherein the CEA specified a set of guidelines with the express purpose

of enhancing the cybersecurity of the power sector in India. The guidelines provide an all-encompassing framework for addressing the cyber threats that the power sector faces. These guidelines are in fact mandatory requirements that power sector entities such as transmission utilities, load despatch centres, generation utilities, distribution utilities among other things are required to adhere to in order to comply with legal obligations related to cybersecurity.

The guidelines aim to establish a strong cybersecurity governance structure, identify and manage cyber risks, ensure personnel awareness and training establish incident response and reporting procedures implement continuous monitoring and ensure adherence to minimum technical and procedural requirements. The guidelines require the establishment of a cybersecurity policy and the appointment of a chief information security officer by each entity to oversee the implementation of the policy.

Energy markets

i Development of energy markets

The National Electricity Policy 2005 envisions 85 per cent of power from new capacities being contracted through long-term PPAs and the remaining 15 per cent power capacity through market mechanisms. The Ministry of Power has proposed the draft National Energy Policy 2021 as a replacement to the existing National Energy Policy 2005. In relation to the power markets, the 2021 draft proposes that the government of India would increase the transactions on spot markets by increasing its share to around 25 per cent during 2023–2024.

India's nationally determined contributions include a commitment to achieve around 40 per cent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030. Such large-scale integration of renewables is expected to increase balancing and ramping requirements, which will prove to be difficult due to the falling share of hydro generation and shortage of domestic natural gas. To meet the variable generation from renewable energy sources, the long-term requirement of balancing capacity should be assessed periodically by CEA in consultation with the various stakeholders involved. Based on this requirement, pumped storage hydropower plants, open cycle gas power plants/gas engines, new and viable forms of energy storage technologies are proposed to be encouraged. The CEA is required to prepare a National Electricity Policy once in five years. This plan assesses short-term and long-term demand for power, pursuing different technologies available for generation, transmission, distribution, among other things. The National Electricity Plan (Generation Volume-I) was introduced in May 2023 for the period between 2022 and 2032. The plan includes the review of the previous five years (2017–2022), a detailed plan for the next five years (2022–2027) and the prospective plan for the next five years (2027–2032).

The power market is dominated by long-term contracted power. For thermal power projects (coal and gas) and hydro projects, long-term power is procured through a negotiated route or pursuant to a competitive bidding route. The Ministry of Power has directed state governments and DISCOMs to procure power under the competitive bidding route (except

that mandatory competitive bidding for hydropower projects has now been postponed till the end of 2022). Bidding for long-term procurement from thermal power stations can be done on the basis of the Revised SBDs that provide for two modes of bidding and supply of electricity. Under the DBFOO[10] model, a DISCOM invites bids to procure a specified quantum of power, while also prescribing the type of fuel and technology that is to be used for the supply. Under the DBFOT[11] model, a DISCOM invites bids for setting up a project on the basis of the lowest tariff, while also specifying the fuel and location of the project (which is required to be arranged by the DISCOM).

To specifically address stakeholder concerns on determination and impact of rising fuel import costs, the Revised SBDs provide for the cost of imported fuel to be benchmarked at actuals and linked to prevailing prices on international indices. In 2019, the government of India issued new guidelines and bidding documents in order to facilitate the use of coal as per the SHAKTI policy and to introduce the e-bidding process of procurement. In 2022, the government of India introduced an amendment to the guidelines issued for long-term procurement of power from thermal power stations through the DBFOO route and sourcing fuel as per Model Bidding Documents (which include the power supply agreement, request for qualification, and request for proposal, issued by the government of India in 2013), including allocation of coal under B(I), B(III) and B(IV) of the SHAKTI policy. The guidelines are applicable towards projects constructed and operated in accordance with the model power supply agreement for a tenure of seven to 25 years from the date of commencement of power supply. It also includes a provision of extension of time of five years at the option of either party.

While several states have commenced (and some have even concluded) the bidding process under the DBFOO model, the DBFOT model has met with severe criticism from market players, who have voiced concerns on the inequitable apportionment of risks. This has resulted in the Ministry of Power constituting a committee to review the DBFOT standard bidding documents, pursuant to which the further revised bidding documents for the DBFOT model are expected to be released by the ministry later this year.

While long-term procurement remains a top priority, the government of India is also determined to set up the short-term and medium-term markets for procurement of electricity. In 2019, the Ministry of Power issued guidelines under a pilot scheme II to facilitate the purchase of power (aggregated power of 2,500MW for three years) from coal-based power plants that are commissioned but do not have a PPA in place. In 2022, the Ministry of Power issued guidelines for procurement of power on finance, own and operate (FOO) basis to facilitate procurement of power on a long-term basis (between 12 and 15 years) and medium-term basis (exceeding one year up to seven years) through a transparent, tariff based competitive bidding, to meet power requirement of the group of states with coal linkage according to paragraph B(v) of the SHAKTI policy.

Another model that has been introduced by the Ministry of Power in recent times is the acquire, operate, maintain and transfer (AOMT) PPP model for monetisation of transmission assets. The aim is to unlock the potential value of these assets and fast-track new infrastructure development. Under the AOMT model, the special purpose vehicle owning the identified transmission assets is bought by the investor entity by making an upfront payment, to operate and maintain these assets for a certain concession period along with associated rights and duties. Additionally, the bidding process is online with an option of e-reverse auction.

In January 2023, the MNRE issued revised competitive bidding mechanism for power procurement from wind power projects to be supplied at a pooled tariff mechanism, complying with the Electricity (Amendment) Rules 2022. As per the revised guidelines, from calendar year 2023 to 2030, the Solar Energy Corporation of India (SECI) (a government of India company that acts a power procurement intermediary between DISCOMs and developers and issues tenders for solar, wind and hybrid projects) will issue bids of cumulative capacity of 8GW.

In 2015, the Ministry of Power issued a notification introducing a targeted gas supply scheme focused on gas-based thermal power plants with stranded capacity. The scheme envisaged facilitating the import of requisite quantities of gas with considerable incentives in the form of tax exemptions on the import and regasification of liquefied natural gas as well as discounted gas transportation rates for financial year 2015–2016 and financial year 2016–2017. A target of 30 per cent plant load factor was set for the operational and stranded power plants, which was to be achieved towards the end of 2015–2016. Although the plant load factor remains around 30 per cent during the financial year 2016–2017, the scheme has not been extended beyond the financial year 2016–2017.

On the distribution front, the major problems plaguing the power sector in India are the abysmal credit ratings of the state DISCOMs and their persistent failure to honour payments to generators under PPAs or extensive delays in doing so. DISCOMs have borrowed heavily to finance losses in their businesses and are facing major hurdles in repaying their debt. The government of India has launched initiatives to privatise DISCOMs in several states across the country. The government of India has also issued schemes and guidelines over the years to ensure the economic viability of DISCOMs, by way of providing financial assistance and mechanisms to reduce losses and inefficiencies at a structural level. It launched the Reforms-based and Results-linked Distribution Sector Scheme in 2021 with the objective of providing sufficient financial contributions to improve the efficiency and infrastructure of DISCOM by injecting close to 3.04 trillion Indian rupees for this purpose from financial year 2021–2022 to 2025–2026 to achieve this. The scheme aims to reduce the aggregate technical and commercial losses to pan-India levels of 12–15 per cent and average cost of supply-average revenue realised gap to zero by 2024–25. As at December 2023, 58.97 billion Indian rupees have been released as per the scheme guidelines. The Ministry of Power in 2020, under the Atmanirbhar Bharat Abhiyan (Self-Reliant India Mission), announced a liquidity infusion scheme of 900 billion Indian rupees in two equal tranches as loans through Power Finance Corporation Limited and REC Limited to all states and union territories to aid the stressed DISCOMs. Such funding was necessary after the liquidity crisis in the value chain of the power sector owing to the covid-19 pandemic. As at December 2023, a total loan of 112.45 billion Indian rupees has been disbursed for 16 states.

The government of India launched the Ujwal Discom Assurance Yojana (the UDAY scheme) in November 2015, with the objective of improving the operational and financial efficiency of state-owned DISCOMs. One of the major features of the UDAY scheme involves requiring participating states to take over 75 per cent of the debt of DISCOMs by way of a grant over a period of two years and issue non-statutory liquidity ratio bonds, including state development loan bonds for subscription by pension funds, insurance companies and other institutional investors. The state governments have come forward in their support of the scheme and, at the time of writing, 32 states and union territories have signed up for the UDAY scheme, with almost all major DISCOMs covered by

UDAY. The state DISCOMs participating in the scheme have reported significant interest cost savings and a sharp reduction in revenue losses. While the UDAY scheme initially reduced the woes of DISCOMs in poor financial health, it has done little to bring about a significant or lasting impact on the power sector. The Parliamentary Standing Committee on Energy has estimated that investments of about 1,750 billion Indian rupees (in private power generation) are currently at the risk of being declared non-performing assets by the Reserve Bank of India. One predominant reason for the decline in the financial performance of these assets has been the significant delay in payments by the DISCOMs. To ensure payment discipline in the power sector value chain, the Ministry of Power has notified the Electricity (Late Payment Surcharge and Related Matters) Rules 2022 with an amendment in 2024. These rules provide a mechanism for settlement of outstanding dues of generating companies, inter-state transmission licensees and electricity trading licensees in a timebound phased manner. On a related note, with the inception of the Insolvency and Bankruptcy Code 2016, several captive power assets (attached to steel manufacturing units for which insolvency proceedings have been initiated) and power generation companies have been brought to the National Company Law Tribunal (NCLT) for commencement of insolvency proceedings. In one instance, a generation company took a state-run DISCOM to the NCLT for failure to pay dues over a period of three years. Insolvency resolution experts in India are also apprehensive about finding suitable buyers for these stressed assets given significant project completion costs and low bankability in terms of timely payments from DISCOMs.

For renewable energy projects, contracts are entered into with state utilities under specific state policies at preferential tariff or through competitive bidding depending on the state or central policy. Other modes of power sale include captive consumption and sale to consumers through open access The CERC (Power Market) Regulations 2021 governs all the transactions that take place on power exchanges. Under these regulations, a trader member (a person who has been admitted as a member of the Power Exchange and has a licence for trading in electricity under the Trading License Regulations 2020) can trade and clear on its account and on behalf of its clients.

In December 2018, the Ministry of Power, in consultation with the Ministry of External Affairs, issued new guidelines for cross-border trade of electricity with neighbouring countries like Bhutan, Nepal and Bangladesh to facilitate the cross-border trade with greater transparency, consistency and predictability. The tariff for the cross-border transaction is proposed to be determined through government-to-government negotiations, and then adopted by the relevant electricity regulatory commission for electricity exported and imported but may also be determined by competitive bidding for electricity imported by Indian entities. The guidelines also aim at evolving a dynamic and robust infrastructure along with reliable grid operation for cross-border transactions of electricity. In March 2019, the CERC notified the CERC (Cross-Border Trade of Electricity) Regulations 2019, which were further amended in December 2023. The Regulations provide for sale and purchase of power between India and the neighbouring countries through mutual agreements between the local entities and the entities of the neighbouring countries, through bilateral agreement between two countries, bidding route or through mutual agreements between entities. The new Regulations have allowed cross-border entities to trade on Indian Day Ahead Market on power exchanges for the first time. In 2021, the CEA issued the procedure in this context, among other things, to smoothen the coordination with the nodal agencies

of neighbouring countries for developing transmission systems for cross border import or export of electricity, provide approvals to eligible entities and lay down safety parameters.

The renewable energy certificate (REC) is a market-based policy instrument introduced to increase and promote renewable energy capacity. Renewable energy producers who opt for the REC route are issued tradeable generation-based certificates that represent the renewable energy component of electricity generated, in addition to the average pooled cost of electricity from non-renewable sources of electricity of the past year. Generators who opt for the REC route cannot opt for the preferential feed-in tariff offered by the state DISCOMs. These RECs can be bought by certain obligated entities (such as electricity DISCOMs and captive power consumers) to fulfil their RPOs. In December 2022, the CERC (Terms and Conditions for Renewable Energy Certificates for Renewable Energy Generation) Regulations 2022 were issued, which lay down detailed procedures and eligibility criteria. Renewable energy generating stations, open access consumers, captive generating stations based on renewable energy sources and DISCOMs are eligible for issuance of RECs.

In relation to the allocation of coal blocks, the government of India had notified the Coal Block Auction Rules 2017 (2017 Allocation Rules) under the Mines and Minerals (Development and Regulation) Act 1957 on 13 July 2017, which set out the key aspects such as the cap on the number and quantity of coal that may be allotted to a private entity, the reverse auction-based tender process and relaxations for coal procured for ultra-mega power projects (set up under the scheme of Ministry of Power in this regard). All allocations made under the erstwhile Auction by Competitive Bidding of Coal Mine Rules 2012 have now been migrated to the 2017 Allocation Rules. In June 2020, the government of India opened up the coal sector for commercial mining by private players. The proposed auctions have terms and conditions that are liberal, allowing new companies to participate in the bidding process, reduced upfront amount, adjustment of upfront amount against royalty, transparent bidding process, liberalised efficiency parameters to encourage flexibility and optimum operationalising of coal mines. The Ministry of Power in January 2023 issued directives to import coal for blending and also optimise coal production in captive coal mines for generating companies, including independent power producers.

ii Energy market rules and regulation

India has organised markets for sale of electricity and gas. India's short-term power market has three competitors – Indian Energy Exchange Limited, Power Exchange India Limited and Hindustan Power Exchange Limited, which offer a variety of products and operate in the same area. All three exchanges are approved and regulated by CERC. The power exchanges primarily deal with products in broadly two segments – Day-Ahead Markets (DAM) for delivery the next day and Term-Ahead Markets (TAM), which includes Day-Ahead Contingency, Intra-Day, Daily and Weekly markets, for contracts ranging from the very same day to up to 11 days in advance. The introduction of Green TAM in 2020 and Green DAM in 2021 enabled the sale of green power in the open market without the need for renewable energy developers to enter into long-term PPAs for the same and allowed existing renewable power plants to unlock revenues from merchant sale. The volume of transactions through the power exchanges reached 102.95 billion units in 2022–23 in all market segments – DAM, Green DAM, TAM and Green TAM. In the matter of Power Exchange India Limited v. Power System Operation Corporation,[12] the

Commission allowed the introduction of delivery based monthly contracts which can be traded on one-month, two-month and three-month ahead basis, both in TAM and Green TAM. However, the CERC is of the view that any new segment in the market should be introduced gradually after being examined. In 2023, power exchanges in India received approval from CERC to introduce high price (HP) segments such as HP-DAM and HP-TAM. Power exchanges also provide RECs and the Indian Energy Exchange had proposed to promote transactions in energy saving certificates (these certificates are issued to those plants that have achieved energy savings over and above their target) in the near future.

The mechanism of power markets involves matching bids, clearing and settlement processes undertaken by a separate entity – the power exchange. All purchase bids and sale offers are aggregated in the unconstrained scenario. The required corridor capacity and provisional power flow is sent to the National Load Despatch Centre (NLDC) for scrutiny and corridor allocation is requisitioned based on availability. Then, NLDC reverts with actual transmission corridor availability.

Tariffs of long-term PPAs are approved by regulators based on a fixed return model. The government of India subsidises power to agricultural sector and charges more for industrial consumers. Heavy cross subsidisation is one key reason why large industrial consumers seek alternatives such as captive generation and exchange platforms for their power needs. The power market in India is largely dominated by long-term PPAs due to which DISCOM are unable to procure power at lower costs and they still incur fixed cost irrespective of end consumption of power. The power exchanges have proved to promote the growth of short-term power market, with a growth of 23 per cent annually.

Separately, Indian Gas Exchange Limited (IGX) is India's first automated national level gas exchange to promote and sustain an efficient and robust gas market and to foster gas trading in the country. The exchange features multiple buyers and sellers to trade in spot and forward contracts at designated delivery points. IGX operates under the regulatory framework of PNGRB.

iii Contracts for sale of energy

Market participants in India can enter into individual contracts for the sale of power. A generating company may sell power under a bilateral contract to DISCOMs, trading licensees, on the power exchanges, or to third-party consumers through open access.

A generating company may sell power to DISCOMs where the feed-in tariff for such sale of power is determined by the CERC (for intra-state transactions) and SERC (for intra-state transactions), as the case may be, under Section 62 of the Electricity Act, in conformity with the tariff regulations issued by the relevant electricity regulatory commission. Tariff orders issued by the CERC or SERC typically have a control period, and the tariff in such tariff order is available to any generating company that commissions its power project within such control period or in certain instances, where it has executed a PPA within the control period. The particular tariff applicable for such control period will apply to the generating company for the entire term of the PPA.

Another route to determine tariff in the case of sale of power by a generating company to a DISCOM (which is the dominant method currently) is through a transparent, competitive bidding in conformity with competitive bidding guidelines issued by the government of India. The Electricity Act limits the purview of the prudence check of the electricity regulatory

commission and mandates that the relevant electricity regulatory commission is only required to adopt the tariff discovered in the competitive bidding process after ascertaining that the bidding process has been conducted in a transparent manner and in accordance with the competitive bidding guidelines issued by the government of India.

Although the tariff for the sale of power by a generating company to a trader is not regulated, in case the trader intends to resell the power to a DISCOM, the relevant SERC steps in to determine the tariff. In other instances, rules made under the Electricity Act govern bilateral contracts entered into between the seller of power, which is the generating company, and the buyer, who are captive users (captive users are the end users of electricity generated in a captive generating plant, who primarily use such electricity for their own use) by stipulating requirements for captive generating plants. The tariff for the sale of power is negotiated and mutually agreed upon between the generating company and a third-party consumer. Here, the power is sold directly to the third party where either the power is being supplied through dedicated transmission lines or the generating company has acquired open access to a distribution or a transmission system.

iv Market developments

The Market Based Economic Dispatch (MBED) mechanism was to be introduced in India as a part of the Electricity Act, which aimed to introduce competition and market-based mechanisms in the electricity sector, improve the efficiency of power generation and utilisation by optimising the dispatch of power from different generating stations. It is a market-based mechanism that facilitates the purchase and sale of electricity among the generating companies, DISCOMs and other market participants. The government of India wanted to implement Phase I of MBED with interstate generating stations from April 2022; however, the implementation was delayed since CERC did not formulate any regulations in time.

Under MBED, the power generating companies submit their available capacities and their corresponding tariff rates to the market operator. The market operator (power exchange) then conducts a market clearing process to determine the most efficient dispatch of power based on the demand and supply conditions in the market. The generating companies with the lowest tariffs are dispatched first, followed by those with higher tariffs until the demand is met. This ensures that the power is generated from the most cost-effective sources and at the lowest possible cost to the consumers.

MBED was mooted to change the existing approach of self-scheduling by the DISCOM, which is resulting in sub-optimal utilisation of generating stations (i.e., the expensive generating stations are scheduled before exhausting the capacity of cheaper generating stations).

If the MBED mechanism is implemented, then all generating companies, including those that have entered into long-term PPAs will put sell bids in the DAM where generating companies having long-term PPAs will be expected to bid at their variable cost.

Renewable energy and conservation

i Development of renewable energy

The regulatory environment increasingly seeks to incentivise renewable energy, with favourable tariff regimes established by SERCs. The Electricity Act, the National Electricity Policy 2005 and the Tariff Policy encourage private sector participation in renewable energy through measures such as providing for feed-in tariffs, fixing minimum RPOs for DISCOMs and captive power users and providing incentives such as accelerated depreciation schemes, excise duty exemptions on renewable energy equipment. In addition, a renewable energy project developer is also entitled to receive RECs if it does not opt for preferential feed-in tariffs. Several states have put in place specific policies to promote renewable energy development; however, incentives and policies are not always consistent between states and developers often shop around based on the policy that best suits their financial model and operational expertise. Consequently, the development of renewable energy in India is geographically skewed. As at December 2023, renewable energy sources, including large hydropower, have a combined installed capacity of 180.79GW.

Onshore and offshore wind power

The past few years have witnessed a transition in the onshore wind power sector in India. The policy framework for subsidy driven wind power procurement regimes (feed-in-tariff, generation-based incentive and accelerated depreciation) have given way to a more robust market price discovery regime of competitive bidding (reverse auction). This transition from early 2017 saw greater transparency in the determination of wind tariffs; however, the uncertainties regarding the new framework have also sharply reduced capacity addition of onshore wind power. The capacity added has seen a fall from the high of 5,502.37MW in 2016–2017 to 2,336.1MW in 2023. As of December 2023, total installed capacity of wind power stands at 44.73GW. To achieve the 140GW of wind power targeted by 2030, the MNRE plans to bid out 8GW wind power capacity each year up to the end of 2030. Furthermore, in April 2023,the MNRE has issued an agency-wise bidding calendar for 50GW renewable energy projects for the financial year 2023–24. The calendar entails a schedule of 30GW of renewable capacity for the first two quarters and 20GW in the last two quarters.

The government of India issued new guidelines in 2016 for onshore wind power projects after a gap of around 20 years. The guidelines contain, among other things, clear timelines for completion of project to prevent land squatting; provisions to ensure installation of international-quality wind turbines compliant with grid regulations; and provisions regarding environmental suitability of wind projects. These guidelines, issued by the government of India, are in addition to the wind policies issued by the various state governments. The government of India also issued the National Offshore Wind Energy Policy in October 2015 with the aim of promoting the country's offshore wind energy potential. The policy provides framework for offshore wind power development up to a seaward distance of 200 nautical miles from the baseline (i.e., up to the country's Exclusive Economic Zone (EEZ)). The principal agency charged with the development of the sector is the National Institute of Wind Energy (NIWE). Under this policy, blocks are to be allocated through a competitive bidding route and developers are required to enter into seabed lease agreements with NIWE. In additional to allocation of blocks, NIWE is also required to carry out the initial wind

resource assessment and assist the project developers in obtaining clearances. To facilitate this, the NIWE has issued guidelines for offshore wind power assessment studies and surveys, allowing private investors to carry offshore wind resource assessments. As part of an effort to boost the country's wind industry, the MNRE in 2018 declared long-term targets for offshore wind power capacity additions in India. India has a coastline of approximately 7,600 km and the government of India's target is to achieve 30GW of offshore capacity by 2030.

Unlike the procurement of solar power, wind power procurement was not done on competitive basis until 2016. The lowest wind tariffs as discovered by competitive bidding in 2023 was 2.91 Indian rupees per kWh, which is an increase of nearly 2.5 per cent in comparison to lowest wind tariff quote of 2.84 Indian rupees per kWh in 2022.

In December 2023, the Ministry of External Affairs announced the 'Offshore Wind Energy Lease Rules 2023', which establish a regulatory framework to govern the leasing, operation, and maintenance of offshore wind projects and offshore wind transmission projects within the EEZ. The lease will be valid for an initial three-year period for conducting resource measurements and surveys, with a provision for an additional two year extension with valid reasons. Following the completion of this five-year term, the lease will conclude, necessitating lessees to submit their studies and survey data to the NIWE. For the construction and operation of offshore wind energy projects, the lease can be extended for 35 years, with the possibility of further extensions on a case-to-case basis, considering the project's operational viability and safety.

The government of India has notified the 'Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Wind Power Projects' in July 2023 (Wind Guidelines) with a view to promoting transparent bidding in the wind sector, where traditionally electricity has been sold to DISCOMs at the feed-in tariff determined by the relevant SERC. The Wind Guidelines are applicable to wind power projects having a bid capacity of 10MW and above connected to the intra-state transmission system and having bid capacity of 50MW and above connected to the inter-state transmission system. Some key objectives of the Wind Guidelines include facilitating renewable capacity addition and fulfilment of RPO requirement of distribution licensees; providing a transparent, fair, standardised procurement framework based on open competitive bidding with appropriate risk-sharing between various stakeholders; and providing a framework for the interstate or intrastate, long-term, sale-purchase of power as a further measure to de-risk the sector.

In order to optimise the utilisation of wind energy resources, MNRE has revised its 2016 policy for repowering wind power projects with the introduction of the 'National Repowering and Life Extension Policy for Wind Power Projects – 2023' in December 2023. This policy allows the replacement of older wind turbines, of rated capacity below 2MW, with more efficient ones, even before the end of their design life. The policy empowers the MNRE to establish the Wind Repowering Committee, which will act as a liaison between industry stakeholders and government organisations, recommend policy interventions and monitor the progress of repowering projects.

Other notable guidelines that have been issued for tariff based competitive bidding in recent years include 'Guidelines for Tariff Based Competitive Bidding Process for procurement of power from Grid Connected Wind-Solar Hybrid Projects', 'Guidelines for Tariff Based Competitive Process for scheme for procurement of power from 2,500MW ISTS Connected Blended Wind Power Projects', and 'Guidelines for Tariff Based Competitive Bidding

Process for Procurement of Power from Grid Connected RE Power Projects for utilisation under scheme for flexibility in Generation and Scheduling of Thermal/Hydro Power Stations through bundling with Renewable Energy and Storage power'.

In May 2018, the government of India introduced the National Wind-Solar Hybrid Policy with the main objective to provide a framework for promotion of large grid connected wind-solar PV hybrid system for optimal and efficient utilisation of wind and solar resources, transmission infrastructure and land. The operational wind-solar hybrid project capacity stands at 6,465MW, with over 31GW of projects in the pipeline. The world's largest renewable energy park of 30GW capacity wind-solar hybrid project is currently operational in Gujarat, India and is supplying 551MW solar capacity in the national grid. The entire operational capacity of the plant is set to be achieved by 2028–29. In February 2024, SECI had invited bids to develop 1.2GW of interstate transmission system-connected wind-solar hybrid power projects (Tranche VIII) in the country. As of December 2023, India has already commissioned approximately 1.44GW of wind-solar hybrid projects and wind-solar hybrid projects with capacities of 1,440MW are under implementation in Rajasthan and Tamil Nadu.

Solar energy

In furtherance of the ambitious target of 500GW of installed renewable energy capacity by 2030, the government of India has increased the installed solar energy capacity by 30 times, from 2.6GW since 2014 to 73.31GW as of December 2023. Solar plants can be set up under the MNRE's National Solar Mission (NSM, previously the Jawaharlal Nehru National Solar Mission), as well as under state policies. As of December 2023, the solar power capacity installed in the year is 7.5GW, marking a year-over-year decrease from 13.4GW in 2022–2023. Utility-scale solar project installations totalled 4.2GW with a 54 per cent year-over-year decline. As is the case with wind energy projects, the accelerated depreciation limit has been reduced to 40 per cent on solar assets. Other incentives such as achievement-based incentives, subsidy programmes and tax benefits continue to be allowed on solar assets.

To facilitate the development of large-scale grid-connected solar power projects, a Development of Solar Parks and Ultra Mega Solar Power Projects scheme has been notified by MNRE. Its goal is to achieve a capacity of 40GW by March 2026. As at 31 December 2023, 51 solar parks with a total capacity of 37.7GW have been approved across 12 states.[13] Of these solar parks, 20 have already commissioned solar projects with a combined capacity of over 10GW, while the remaining parks are at various stages of implementation. Between January and December 2023, solar projects with a total capacity of 284MW were commissioned in various solar parks.

The government of India has notified the 'Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Solar PV Power Projects' in July 2023 (Solar Guidelines) to promote standardised competitive procurement of electricity from solar PV projects and appropriate risk sharing between stakeholders. The key objective of the Solar Guidelines is to reduce the overall power purchase costs for distribution licensees, which constitute the largest cost element. By introducing competitive bidding in the procurement process, the government aims to facilitate the development of power markets and subsequently lower electricity prices, leading to substantial benefits

for consumers. The Solar Guidelines envisage that standardised bidding documents (i.e., a request for selection, a PPA and a power sale agreement) will be prepared pursuant to the guidelines. The Solar Guidelines are applicable to solar PV power projects, with or without storage, having bid capacity of 10MW and above connected to the intra-state transmission system, and having a bid capacity of 50MW and above connected to the intra-state transmission system. The PPA term will generally be for a period of 20 years from the scheduled commencement-of-supply date. The Solar Guidelines also contemplate compensation to developers in situations where the project is available to supply power, but the grid is unavailable.

In January 2019, the MNRE introduced the Approved Models and Manufacturers of Solar Photovoltaic Modules (Requirements for compulsory Registration Order) 2019, mandating the usage of Approved List of Models and Manufacturers (ALMM) listed products in the specified solar projects, such as government projects, government-assisted projects, projects under government schemes and programmes, projects set up for sale to governments under guidelines issued under Section 63 of the Electricity Act and projects set up under open access and net metering arrangements. The objective of ALMM is to ensure quality of solar cells and solar modules used in solar PV power plants by requiring them to be compliant with the specified standards and testing requirements of the Bureau of Indian Standards. Post May 2023, only models of solar modules with an efficiency equal to or greater than 19 per cent have been considered for enlistment under ALMM.

To combat global warming and climate change, the International Solar Alliance (ISA), which is a partnership of more than 120 solar resource-rich countries (now open to all United Nations countries), was officially launched in 2015 with its headquarters in India. The objective of the ISA is to create a coalition for addressing the special energy needs and capacity building among the member countries in a collaborative manner. More than 70 countries, including India, have signed the Framework Agreement to see the ISA becoming an intergovernmental body under the UN charter. India has been chosen as the host country of the ISA and a framework agreement between the Ministry of External Affairs, government of India and the ISA has been signed in March 2017. This framework agreement gives the ISA a juridical personality and gives it power to contract, acquire and dispose of movable and immovable properties, to institute and defend legal proceedings in India.

In addition to setting up solar generation capacity through solar power plants and solar parks, various states are also looking to promote the setting up of both grid-connected and off-grid solar rooftop systems. The government of India has set the target of achieving 40GW of solar power capacity in the country by the year 2026 to be achieved from rooftop solar and in furtherance of this, the government approved the Grid Connected Rooftop Solar Programme. The government of India launched a US$750 million subsidy scheme for rooftop solar projects to provide close to 30 per cent of the capital subsidy required to support the total rooftop capacity of 4,200MW. The government of India has already allocated around US$90 million in subsidies to various states in the country. In a bid to further encourage the use of solar rooftop systems, the government of India in February 2024 launched the 'Pradhanmantri Suryodaya Yojana' to instal rooftop solar systems in 10 million homes and providing up to 300 units of free electricity every month with a financial outlay of 750 billion Indian rupees. The scheme provides a financial assistance of 60 per cent of system cost for 2kW systems and 40 per cent of additional system cost for systems between 2 and 3kW capacity. At the current benchmark prices, this

will mean 30,000 Indian rupees subsidy for 1kW system, 60,000 Indian rupees for 2kW systems and 78,000 Indian rupees for 3kW systems or higher. The government has also exempted customs and excise duty on materials used in solar rooftop systems. Additionally, state governments are promoting the installation of such systems by introducing enabling legislation, such as net metering regulations. SECI, which is a central government company under the administrative control of the MNRE, issued a hybrid tender, for the establishment of 1,200MW of wind-solar hybrid power projects that are connected to the ISTS, with energy storage and guaranteed peak power supply throughout India.

Additionally, India also has huge potential of floating solar projects, and it is estimated that they can generate 280GW through 18,000km2 of reservoirs across India.[14]

Biopower and waste-to-energy projects

The MNRE has launched the National Bioenergy Programme in November 2022 to boost power generation from biomass by facilitating capital investments and reducing use of fossil fuels. The programme will be implemented in two phases with a total budget outlay of 17.15 billion Indian rupees. The programme comprises 'Waste-to-Energy Programme' that involves generation of energy from urban, industrial, agricultural wastes and municipal solid waste, 'Biomass Programme', which involves support for manufacturing of briquettes and pellets and promotion of biomass (non-bagasse) based cogeneration in industries and 'Biogas Programme'.

In the context of municipal waste-to-energy projects specifically, there is significant scope in Indian cities for business; however, several challenges are being faced by ongoing projects. While there is opposition on account of environment and health hazards for the communities living in proximity to these projects, and low quality of waste because of lower calorific value, the government of India is trying to promote schemes to encourage cities and municipalities to take up waste-to-energy projects in PPP mode. Currently, waste-to-energy power projects have an installed capacity of 0.58GW, and in the year ended December 2023, 34MW capacity of biomass energy projects have been installed. Recently, India inaugurated the construction of its largest waste-to-energy plant in Gurugram, which will generate 25MW of energy.

Green hydrogen and green ammonia

On 17 February 2022, the Green Hydrogen Policy was notified by the Ministry of Power, to promote the production of green hydrogen and green ammonia through the use of renewable energy sources. Following on from the Green Hydrogen Policy, the MNRE introduced the National Green Hydrogen Mission in January 2023 with an initial outlay of 197.44 billion Indian rupees and setting an ambitious target of producing five MMTPA of green hydrogen by 2030. The policy provides several advantages to green hydrogen and green ammonia manufacturers. For projects commissioned before 31 December 2030, the government has provided a 25-year exemption from interstate transmission fees for green hydrogen and green ammonia producers. This will allow producers to reduce their transmission expenses, making the production of green hydrogen and green ammonia simpler and cheaper. Open access for procuring renewable energy will be granted to green hydrogen and green ammonia plants within 15 days of receiving a complete application, allowing the producers easy access to renewable energy.

Green hydrogen and green ammonia manufacturers are allowed to build bunkers near ports to store green hydrogen and green ammonia for easier export. Port authorities in each location are required to provide the necessary land for storage purposes at the standard rates. Furthermore, the government of India has come out with guidelines for undertaking pilot projects for using green hydrogen in the transport, steel and shipping sectors.

Also, the RPO compliance of the consuming entity will be counted for the renewable energy used in the production of green hydrogen and/or green ammonia. The DISCOMs serving the area where the project is located can count the additional renewable energy consumption from green hydrogen sources toward meeting its RPO. In 2023, the MNRE has set up a single portal to provide the clearance and permissions in a timely manner, preferably within 30 days of the date of application, in order to facilitate the clearance and permissions required for the manufacture, transportation, storage and distribution of green hydrogen and green ammonia.

ii Energy efficiency and conservation

To institutionalise energy conservation efforts, the Energy Conservation Act 2001 was enacted, and the Bureau of Energy Efficiency (BEE) was established under the Ministry of Power in 2002. Periodic energy audits have been made compulsory for power-intensive industries under the Energy Conservation Act. An amendment to the Energy Conservation Act in 2023 further introduces a carbon credit scheme, energy conservation code for buildings and increases the existing monetary penalties and includes specific references to vehicle manufacturers and vessels.

The National Electricity Policy affords high priority to energy conservation and demand-side management through the BEE. To further enhance efficiency in thermal power projects, the Revised SBDs specify the station heat rate at which the power stations must be operated, failing which the developer is heavily penalised by a decrease in the fixed charge. Additionally, the CERC tariff regulations provide for operational norms such as reduction in heat rate for existing bigger units, linking of allowable heat rate to design heat rate, tightening of working capital norms, and norms on reduction in secondary fuel oil consumption.

iii Technological developments

The National Electricity Policy envisages special efforts being made for research, development demonstration and commercialisation of non-conventional energy systems. Further, it envisages the gradual introduction of efficient technologies (such as super-critical technology and integrated gasification combustion cycle) for generation of electricity. It also requires cost-effective technologies to be developed for high-voltage power flows over long distances with minimum possible transmission losses.

In 2018, the CERC substantially revised the procedure for connectivity for renewable energy sources by issuing the Procedure for making application for Grant of Connectivity in ISTS, as approved by the CERC on 15 May 2018 (Procedure for Renewable Connectivity) and amending the connectivity regulations. The Procedure for Renewable Connectivity was introduced to address concerns of prebooking and squatting of connectivity bays by entities, which leads to underutilisation of connectivity bays and restricts connectivity to

genuine connectivity applicants. The Procedure for Renewable Connectivity is slated to be replaced by GNA, which is being introduced in a phased manner by the Ministry of Power, which has been discussed later in this article.

The government of India in 2015, launched the National Smart Grid Mission (NSGM) to modernise the country's power grid infrastructure and promote the adoption of smart grid technologies. The mission recognises the importance of engaging key stakeholders at the utility level to ensure that they have the necessary structure and plans in place to support the adoption of smart grid technologies. At the state level, the NSGM aims to establish state-level project management units and provide capacity building support to ensure effective implementation of smart grid. To achieve this, the NSGM will facilitate the formulation of state and utility-specific smart grid roadmaps, regulations and implementation plans. Currently, the two smart grid/smart metering projects that are sanctioned under NSGM for 1.16 billion Indian rupees with 348 million Indian rupees government budgetary support are nearing completion. As at November 2023, 1,69,330 smart meters were deployed under these projects and 31.32 million Indian rupees has been released to the implementing utilities towards progressive milestone achievements.

At the core of the NSGM's objectives is the implementation of advanced metering infrastructure (AMI) and distribution automation (DA) technologies. As part of this mission the implementation of AMI has been encouraged across the country. By promoting the use of AMI, the mission aims to reduce energy losses and improve the overall efficiency of the power grid. These technologies have helped to improve the reliability and resilience of India's energy system, particularly in remote or underserved areas.

The government of India has approved the Revamped Distribution Sector Scheme (RDSS) to help DISCOMs improve their operational efficiencies, and to help the DISCOMs in improving their financials by providing result-linked financial assistance that would help strengthen the supply infrastructure basis the pre-qualifying criteria and achieving minimum benchmarks. The RDSS enables financial support to the DISCOMs for the implementation of AMI and system metering for elevation of the distribution infrastructure as well as undertaking reforms that would help achieve the desired results for improvement in efficiency and sustainability.

Overall, the implementation and encouragement of smart grid technologies in India have had a significant impact on the country's energy system. By improving the efficiency and reliability of the power grid, these technologies have helped to meet the growing energy demand of the country's population, while also reducing energy losses and promoting the use of renewable energy sources. As India continues to develop and modernise its energy infrastructure, it is likely that smart grid technologies will play an increasingly important role in shaping the country's energy future.

India is also making strides in the development of energy storage systems. While the domestic market and the regulatory framework relating to energy storage systems is at a nascent stage, the significance of the technology has not been disregarded. Recognising the potential for growth and scale of energy storage technologies, the Ministry of Power has taken steps to promote the development of energy storage systems by encouraging their implementation through public private partnership models and by introducing an appropriate regulatory framework.

From a policy standpoint, in 2022, the Ministry of Power has notified the 'Guidelines for Procurement and Utilization of Battery Energy Storage Systems as part of Generation, Transmission and Distribution assets, along with Ancillary Services'. Further, in 2023, the Ministry of Power also launched the National Framework for Promoting Energy Storage Systems with the objective to support the development and deployment of energy storage systems through policy and regulatory measures, financial and fiscal incentives, and performance-based incentives and to develop technical standards for ESS to ensure safety, reliability, and interoperability with the grid. In April 2023, the Ministry of Power notified the 'Guidelines to promote development of Pump Storage Projects'. The Guidelines allow the state governments to allot project sites to developers through various ways, including competitive bidding, tariff-based competitive bidding process and on nomination basis to central public sector undertakings (PSUs) and state PSUs. The Guidelines also incentivise the project developer by empowering the state government to exempt land to be acquired by off-the-river Pump-storage projects from payment towards stamp duty and registration fees. On the regulatory front, it is significant to note that the framework for connectivity is undergoing a change with the introduction of the GNA Regulations, which, among other things, makes energy storage systems (including standalone energy storage systems) ISTS eligible. The Electricity (Amendment) Rules 2022 set out the legal status of energy storage projects as regards generation, transmission and distribution of electricity as well as recognising energy storage systems as part of a 'power system' within the meaning of the Electricity Act.

Year in review

In the past few years, the government of India has continued to introduce a spate of reforms across the energy spectrum, backed by swift executive action, which have enthused stakeholders in a hitherto stagnating market. The mainstay of the Indian electricity market over the past financial year has been the promotion and stabilisation of the renewable energy sector, with the introduction of competitive bidding in the wind and solar sectors that have witnessed a significant lowering of tariffs, and policy and regulatory thrust to energy storage systems and green hydrogen. As a testament to the effort being undertaken by India for moving towards clean green energy, a total of 180.79GW of renewable energy capacity has been installed in India as of 31 December 2023. This includes 73.3GW of solar power, 46.88GW of large hydropower, 44.73GW of wind power, 10.8GW of bio power and 4.98GW of small hydropower. Further, projects with a total capacity of 82GW are under various stages of implementation and 41GW capacity is under various stages of bidding. With an incentive of free electricity and to further increase the rooftop solar power capacity addition in India, the Prime Minister of India announced the 'Pradhanmantri Suryodaya Yojana' to instal rooftop solar systems in 10 million homes with a financial outlay of 750 billion Indian rupees. This scheme aims to reduce electricity bills for the marginalised communities, while making India self-reliant in the energy sector. The MNRE had also announced an exemption for the solar projects commissioned by 31 March 2024 from the requirement of using ALMM enlisted solar modules. On 29 March 2024, the MNRE has clarified that the ALMM order will come into force from 1 April 2024, and for the projects where solar modules were received on the site by 31 March 2024, but were not commissioned by such date for reasons outside the developer's control, the ALMM requirement will be examined separately.

In the interim budget, which was presented in February 2024, notable allocations have been made for the energy sector for the fiscal year 2024–25. The grid-based solar power scheme receives a significant boost, with a proposed budget of 100 billion Indian rupees, a substantial increase from the previous year's 47.57 billion Indian rupees. Wind power sees a rise to 9.3 Indian billion rupees compared to 9.16 billion Indian rupees in 2023–24. The initiative to bring 10 million houses under the rooftop solar scheme, providing 300 units of free electricity each month, is a step taken by the government to reach the 500GW non-fossil fuel-based energy by 2030. Viability gap funding is earmarked for offshore wind energy with an initial capacity of 1GW. Additionally, plans include setting up coal gasification and liquefaction facilities with a capacity of 100 tonnes by 2030. The National Green Hydrogen Mission witnesses a noteworthy allocation of 6 billion Indian rupees, a substantial increase from 1 billion Indian rupees in the previous fiscal year. Budget estimates for the Ministry of Environment, Forests, and Climate Change, as well as the MNRE, have been raised to 32.65 billion Indian rupees and 128.5 billion Indian rupees, respectively, reflecting a commitment to environmental and renewable energy initiatives.

In October 2023, the Cabinet Committee on Economic Affairs, approved the project on Green Energy Corridor (GEC) Phase II – ISTS for 13GW renewable energy project in Ladakh, India. This project is in addition to InSTS Green Energy Corridor Phase-II (InSTS GEC-II), which is already under implementation in the states of Gujarat, Himachal Pradesh, Karnataka, Kerala, Rajasthan, Tamil Nadu and Uttar Pradesh for grid integration and power evacuation of approximately 20GW of renewable power and is expected to be completed by 2026.[15]

With frequent policy and regulatory changes, a highly competitive industry, and some price sensitivity, the Indian renewable energy sector continues to be very dynamic. Foreign capital inflows, which have increased significantly as a result of the transparent competitive bidding framework and bankable PPAs, continue to support India's renewable growth. With multi-gigawatt capacity deployment plans, domestic players are increasingly looking overseas for capital through equity and debt transactions, as well as bond issuances. In June 2023, Brookfield Renewable made an investment of more than US$1 billion (82 billion Indian rupees) in the Avaada Group, which is currently operating a renewable energy portfolio of approximately 4GW. The Avaada Group has also forged a monumental partnership with the Rural Electrification Corporation that brings forth an investment of US$2.44 billion (200 billion Indian rupees) to fund Avaada's diverse energy transition projects over the next five years. Another significant deal was the acquisition in August 2023 by India Grid Trust (IndiGrid) of 100 per cent of the units in Virescent Renewable Energy Trust, which is India's only renewable energy infrastructure investment trust, at an enterprise value of up to 40 billion Indian rupees (US$480 million). The acquisition adds a total of 16 solar projects with a capacity of 538MWp to IndiGrid's portfolio.

In January 2024, the Ministry of Power has introduced the Electricity (Amendment) Rules 2024, allowing entities commissioning captive power projects or energy storage projects or a consumer, with a load of at least 25MW for inter-state transmission systems or 10MW for intra-state transmission systems to be exempted from obtaining a licence to establish, operate or maintain a dedicated transmission line to connect to the grid. However, this exemption is contingent upon the company, individual or consumer complying with the applicable law. The amended rules also set out the mechanism for the calculation of open

access charges, such as wheeling charges, charges for using the state-transmission utility network and additional surcharges.

To promote domestic production of lithium-ion cells for batteries used in electric vehicles, the government of India has removed custom duty on the import of capital goods and machinery necessary for lithium-ion cell manufacturing. India has recently achieved substantial progress in lithium mining. A significant breakthrough occurred in the Salal-Haimana area of Reasi district in Jammu and Kashmir, where 5.9 million tonnes of lithium reserves were uncovered, positioning India competitively on a global scale. In November 2023, the first tranche auction of critical and strategic minerals for 20 blocks of critical and strategic minerals was launched by the Ministry of Mines, which includes auction of mining lease and composite licence (i.e., prospecting licence-cum-mining lease) for minerals such as lithium, graphite, nickel, chromium and the platinum group of elements. These developments mark a crucial stride in diminishing India's reliance on lithium imports from countries such as Australia and Argentina. In parallel, the government of India's strategic initiative, Khanji Bidesh India Ltd (KABIL), has been established as a joint-venture company to secure critical mineral assets, including lithium and cobalt, on an international scale.

India's Electric Vehicle (EV) market is expected to grow at an impressive compound annual growth rate of 49 per cent from 2022 to 2030. India is taking rapid strides towards achieving its target of 30 per cent EV market share by 2030. In February 2024, the government of India approved amendments to the Electricity (Rights of Consumers) Rules 2020. Under the amended rules, consumers will be able to obtain separate electricity connections specifically for EVs. On the deal front in the EV sector, in January 2024, JSW Group announced an investment of 400 billion Indian rupees (US$4.81 billion) in EV manufacturing projects in India's coastal state of Odisha.

At the international policy arena for energy sector, with the finalisation of the procedures and guidelines for Cross Border Trade of Electricity in the recent years, the government of India is keen on increasing the cross-border trade of electricity. The tripartite power trade agreement between India, Nepal and Bangladesh (which is in the final stages of negotiation) is the first of its kind and will allow Nepal and Bangladesh to sell electricity on the Indian electricity grid. India is also strengthening energy diplomacy with Southeast Asia as the government is engaged in discussions with Southeast Asian nations, such as Singapore and Thailand, to facilitate the cross-border trade of renewable energy electricity. Plans include establishing grid connections both underwater and on land, contingent on cost factors. This initiative aims to significantly increase India's cross-border electricity sales, which presently involve Nepal, Bangladesh, Bhutan and Myanmar, with a combined power transfer capacity of around 4,423MW. India has also joined the International Energy Agency in 2023 as an associate member, which would help India to move to the centre stage of the global energy dialogue and to better represent the interests of the emerging markets.

Outlook and conclusions

The energy industry in India is undergoing a revolutionary transformation that is changing industry outlook. India's energy sector is poised for growth, as the country's steady

economic expansion keeps pushing up energy demand. However, the Indian energy sector still faces a few obstacles.

The wind industry is constantly struggling with tariff reductions, which could halt any ongoing projects. The high import duty on electrolytes presents a similar formidable production challenge for the green hydrogen market. Another factor stunting the expansion of the energy market is the precarious financial position of DISCOMs. DISCOMs buy power, but their sporadic payments disrupt energy producers' cash flow and hamper their ability to run their businesses.

In accordance with its commitments under the Paris Agreement, India is cutting back on coal-fired power plants and is progressively moving towards reducing the carbon intensity of the national economy. Within the past year, the government of India has implemented solutions in the form of large capital outlays for emerging energy technologies, revisions to the legislative and framework to bring them in line with the objectives of the executive and unlocking the potential of untapped resources by facilitating their availability to industry stakeholders.

Clean energy transition has enormous potential in India's energy mix. India has the fourth largest installed capacity of renewable energy in the world (fourth largest for wind and fifth largest for solar), and this ranking will only improve further with the ramping up of capacity additions, technology advancement and utilisation of energy storage services.

Endnotes

1 Neeraj Menon is a partner and the head of Trilegal's energy, infrastructure and natural resources team, and Akshay Shandilya is a senior associate at Trilegal. ^ Back to section

2 The Department of Atomic Energy is directly under the Prime Minister's charge. ^ Back to section

3 Ministry of Power, Government of India, Extension of directions to generating companies under Section 11 of the Electricity Act, 2003 – regarding, 23 October 2023, available at https://powermin.gov.in/sites/default/files/Extension_of_directions_to_generating_companies-_under_Section11_of_the_Electricity_Act_2003.pdf. ^ Back to section

4 Press Information Bureau, Ministry of Coal Year End Review 2023, 29 December 2023, available at pib.gov.in/PressReleaseIframePage.aspx?PRID-=1991598. ^ Back to section

5 Ministry of Petroleum and Natural Gas, Notification, 7 April 2023, notification-dt-7th-april-2023.pdf (mopng.gov.in). ^ Back to section

6 Press Information Bureau, Open Acreage Licensing Policy Bid Round-IX launched, 3 January 2024, available at pib.gov.in/PressReleaseIframePage.-aspx?PRID=1992839. ^ Back to section

7 Investments of up to 49 per cent are permitted in petroleum refining undertaken by public sector entities. Back to section

8 Vide notification dated 9 October 2022, the Ministry of Power has specified that certain provisions of the GNA rules will be notified separately. Back to section

10 The DBFOO model refers to a project set up on a design-build-finance-own-operate basis. Back to section

11 The DBFOT model refers to a project set up on a design-build-finance-own-transfer basis. Back to section

12 Petition No. 229/MP/2021, CERC, order dated 7 June 2022. Back to section

13 Press Information Bureau, Ministry of New and Renewable Energy, 7 February 2024, Available at https://pib.gov.in/PressRelease-Page.aspx?PRID=2003561. Back to section

14 Available at https://static.investindia.gov.in/s3fs-public/2023-01/Renewable per cent20E nergy_0.pdf. Back to section

15 *Press Information Bureau, Cabinet Committee on Economic Affairs, 18 October 2023, Available at https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1968732#:~:text=The%20project%20will%20entail%20setting,fossil%20fuels%20by%20year%202030*. Back to section

TRILEGAL

Neeraj Menon neeraj.menon@trilegal.com
Akshay Shandilya akshay.shandilya@trilegal.com

Trilegal