INDIA ENERGY FACTSHEET

The Trade and Economic Partnership Agreement (TEPA) in Action: Opportunities for Norway-India Energy Collaboration

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The Trade and Economic Partnership Agreement (TEPA) between India and the European Free Trade Association (EFTA) - comprising Norway, Iceland, Switzerland, and Liechtenstein - entered into force on October 1, 2025, creating opportunities for Norwegian exporter in India's large and growing consumer base of over 1,4 billion.

Norway's exports to India remain underpenetrated at ~USD 371 million (accounting for 0.22% of Norway's global exports), concentrated primarily in machinery, maritime equipment, chemicals, and energy technologies. The TEPA is poised to transform this landscape by enhancing market access, reducing technical and non-tariff barriers, and improving regulatory transparency. This agreement creates favourable conditions for Norwegian companies in high-technology and sustainability-driven sectors to substantially scale their Indian market presence.

Under this agreement, over 200 energy-related tariff lines have been identified to receive preferential tariff reductions and eliminations for Norway. These products constitute Norway's primary areas of commercial strength and offer the most immediate and substantial opportunities for market entry and expansion in India.

- The EFTA bloc eliminates duties on 92.2% of India's exports while India phases out tariffs on 82.7% of the EFTA products over the transition period.
- Norway gains immediate duty-free access for 42% of current exports (rising to 92% within a decade), with seafood, oil/gas equipment, and renewable energy as key beneficiaries.
- The TEPA encompasses 14 comprehensive chapters beyond tariffs, including investment promotion under an automatic route, intellectual property, government procurement, and sustainable development provisions.

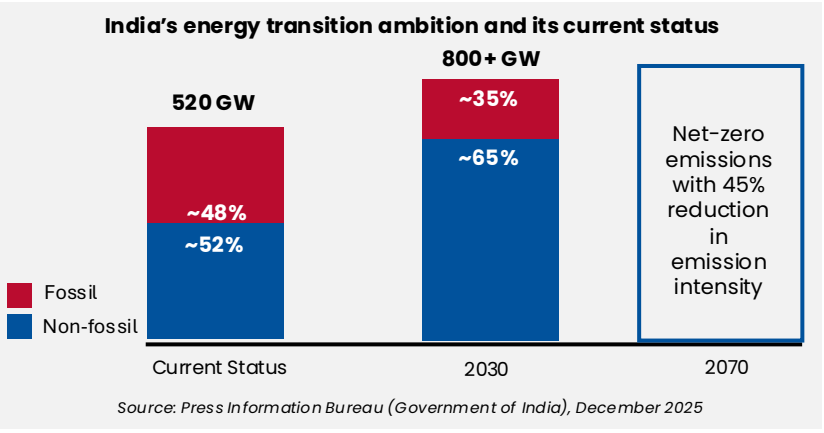
India's Energy Ambition and Needs

India is the third-largest producer and consumer of electricity worldwide, with an installed power capacity of 509 GW in 2025.[1] Although power generation has grown more than 100-fold since independence, growth in demand has been even higher due to accelerating economic activity. India's energy demand is expected to grow 6% annually over the next five years.[2]

In response to growing energy demand, India has set targets to achieve 500 GW of non-fossil energy capacity by 2030 and net zero emissions by 2070.

India's energy transition ambition is driven by the need to secure energy independence from fossil fuel imports and focus on industrial decarbonisation across hard-to-abate sectors, including steel, cement, chemicals and fertilizers, reflecting both economic and climate related priorities.

Furthermore, India has established one of the world's most competitive FDI regimes, offering 100% foreign investment under an automatic route with no government approvals required, and equal treatment with domestic players.



Source: Press Information Bureau (Government of India), December 2025

India added a total of 52,537 MW of generation capacity in 2025—the highest-ever capacity addition in a single year. As of January 2026, solar accounts for 27%, making it the largest single source in the capacity mix, followed by wind at ~11%.

- India's industrial expansion and strong GDP growth will result in **India's power requirement reaching 817 GW by 2030.**[3]
- Non-fossil sources contribute to **~52% of the total installed capacity**, as of November 2025.[4]
- India reported a **420% YoY growth in renewable energy capacity addition in June 2025, with solar reaching 132 GW, wind 54 GW, hydro reaching 55 GW, and bioenergy reaching 12 GW.**[5]
- Energy accounted for **~3% of the total FDI flows until March 2025.**[6] As of March 31, 2025, India received ~USD 13 billion in FDI in the renewable energy sector, reflecting strong investor confidence and growth prospects.[7]

1, 2, 4. Ministry of New and Renewable Energy India, Central Electricity Authority, Government of India
3. Central Electricity Authority, Government of India
5. Press Information Bureau of India (PIB), Ministry of New and Renewable Energy India
6, 7. Department for Promotion of Industry and Internal Trade of India, Government of India

Norwegian institutional capital is actively financing India's renewable energy expansion, exemplified by Norfund's Climate Investment Fund. For example, they have together with KLP (Norway's largest pension company) committed NOK 317 million in equity and NOK 530 million in loan guarantees for a 168 MW wind project in Gujarat. This follows their 2022 investment in a 420 MW solar plant, demonstrating sustained Norwegian FDI in India's clean energy infrastructure through long-term partnerships with developers like Enel Green Power.[8]

Further to FDI facilitation, the Government of India incentivizes the energy transition through a multi-pronged fiscal strategy, such as Viability Gap Funding (VGF). VGF provides essential capital grants for strategically vital but high-cost projects. The Government of India has particularly increased VGF in energy storage, offshore wind generation, solar renewable energy, and hybrid renewable integration.

Norway, a Strategic Partner for India

Norway serves as a strategic partner for India's energy transition, offering a mature ecosystem of technologies aligned with India's Net Zero ambitions through ongoing bilateral cooperation. Norway's expertise spans carbon capture and storage for industrial decarbonization, floating offshore wind and tidal energy suited to India's extensive coastline, and battery storage and grid modernization capabilities essential for integrating India's rapidly expanding renewable energy capacity.

Carbon Capture and Storage (CCS)	
India's Need	• Target capacity: 750 million tonnes of CO_2 capture per year by 2050 with an investment requirement of ~USD 150 billion.[8] • In January 2026, Oil and Natural Gas Corporation launched its first CCS pilot at the Gandhar oilfield in Gujarat, marking a milestone in the company's decarbonisation strategy. • Technology needs: Need for technology to mitigate industrial emissions, conversion of CO_2, and specialised skills to operate and maintain carbon capture technologies.
Norwegian Strength Alignment	• Norway has been at the forefront of developing and implementing technologies for carbon capture. The country's expertise in capturing CO_2 from industrial processes and power plants is demonstrated through projects like Sleipner and Snøhvit. • Companies like Aker Solutions and Equinor have been involved in developing solvent-based capture and direct air capture technologies. • Norway has pioneered the Northern Lights partnership, which work towards large-scale CO2 storage in the North Sea and commercialization of CCS technologies in Europe, with potential for worldwide application. • Norwegian companies offer expertise across the full carbon capture and storage value chain, including identification of suitable storage sites, CO_2 capture technology, transportation infrastructure, and storage management.

Strategic Opportunity

- India's target to reduce emission intensity by 50% by 2050 and an expected emissions peak around 2040 are likely to steadily increase demand for CCS solutions over the medium to long term, as TEPA's phased tariff eliminations over 5, 7, and 10 years broadly align with this gradual market development.
- With expertise in CO_2 capture from industrial processes and power plants, Norway can help bridge India's technology needs. Norway's experience in CO_2 storage and transportation aligns with India's growing demand for scalable carbon capture and storage (CCS) solutions.
- Norway's full value chain expertise, from site identification to storage management, offers India the comprehensive support needed to meet its emission reduction targets and achieve long-term sustainability goals.

8. Press Bureau of India (PIB), Ministry of New and Renewable Energy, India

Geothermal Energy

India's Need	• Estimated potential: 10 GW across 10 geothermal provinces, 381 identified hot springs, and potential to repurpose thousands of abandoned oil/gas wells.[9] • Technology needs: Requirement for deep drilling expertise and tailored drilling tech for varying permeability and porosity, along with the need for expert advisory on resource categorisation and reservoir conceptualisation.
Norwegian Strength Alignment	• Norway is a leader in the application of geothermal heat pumps for heating and cooling buildings. • Norwegian companies and research institutions focus on geothermal resource mapping, subsurface modelling, and developing more accurate methods for identifying geothermal potential in different regions. • Norwegian companies are exploring the potential of enhanced geothermal systems (EGS), a technology that allows for geothermal energy extraction from deep hot rocks where natural geothermal reservoirs are not present.

Strategic Opportunity

- As India advances geothermal resource assessment, pilot projects, and abandoned oil-well retrofitting, there is growing scope for cooperation in areas such as site studies, drilling support, low-enthalpy system design, and Enhanced Geothermal Systems (EGS) development. Therefore, Norway's advanced expertise in geothermal technologies, particularly in exploration, development, and management of geothermal resources, aligns with India's growing need for sustainable energy solutions.
- Norway's knowledge in the integration of geothermal systems with grid infrastructure can help address India's power reliability challenges, offering a strong alignment to meet India's future energy demands.

Green Hydrogen

India's Need	• Production target: 5 MMT green hydrogen hydrogen production target by 2030.[10] • Current operational capacity: Current awarded production capacity stands at 860,000 tonnes per annum under National Green Hydrogen Mission (NGHM) with an electrolyser allocated capacity of 3,000 MW and focused on decarbonisation.[11] • Technology needs: India needs a 60-100 GW electrolyser capacity to meet the 5 MMT target; technology licensing to build domestic capabilities; emerging production technologies such as biomass gasification and reformation, safety systems, and standard development; integration challenges with renewable energy, grid infrastructure constraints, and inadequate transportation and storage infrastructure. • Green hydrogen is increasingly considered as one of the key solutions for decarbonizing India's 'hard-to-abate' sectors, specifically steel, fertilizers, cement, and oil refineries.
Norwegian Strength Alignment	• 90+ years of hydrogen production experience since 1933. • Norwegian companies bring strong technical know-how and expertise in designing and improving the efficiency of electrolyser systems (including large alkaline units), R&D to boost efficiency and cut costs, developing safety standards, guidance on floating hydrogen production and fueling (bunkering), and providing expertise in hydrogen transport and storage solutions.

9. Ministry of New and Renewable Energy, India, Government of India
10, 11. Press Bureau of India (PIB), Ministry of New and Renewable Energy India

Strategic Opportunity

- Norway's expertise in designing and improving electrolyzer systems, including large alkaline units, can potentially help India in enhancing efficiency and reducing costs in hydrogen production.
- Norway's experience with floating hydrogen production systems and bunkering can aid India in addressing decarbonisation in the maritime industry and meet hydrogen storage needs.
- The strategic opportunity under the TEPA, with phased duty reductions and support for cost competitiveness, further enhances Norway's potential to contribute to India's green hydrogen goals.

Offshore and Onshore Energy Services

India's Need	• Deepwater exploration needs: Specialised deepwater drilling vessels, advanced offshore production platforms, guidance on developing subsea pipeline networks, and expansion of processing facility capacity. • Technical services and project management needs: Requirement of technology collaboration, along with subsea engineering services, Floating Production Storage and Operations (FPSO) management services. • Need for multipurpose floating production systems. • Upgrades of transmission networks, modernisation of transmission smart grid networks, deficiency in Battery Energy Storage Systems (BESS), and pumped hydro storage. • Need to develop and digitize decommissioning and asset management supply chain, monitoring and control systems, and digital twin systems.
Norwegian Strength Alignment	• Norwegian companies bring strong technical expertise in advanced 3D seismic data analysis to better locate resources, improving performance of existing oil and gas fields, deepwater exploration know-how, enhanced oil recovery methods focusing on mature fields, safe removal and recycling of old offshore platforms, robotics and automation for safer operations, and experience in LNG and LPG handling, storage, and transport systems. • Norway can be a potential source of LPG and LNG especially during periods of supply disruption.

Strategic Opportunity

- Early-stage field optimisation and offshore upgrade programs in India create opportunities for Norwegian technical services in seismic analysis, enhanced resource recovery planning, deepwater project engineering, platform decommissioning, and digital oilfield solutions.
- Growing LNG and LPG infrastructure expansion in India supports collaboration in storage, transport system design, and safety engineering, where Norwegian expertise in project design, standards, and operations can complement domestic capabilities.

Offshore Wind Energy

India's Need	• Capacity need: Estimated potential of 70 GW across the coasts of Gujarat and Tamil Nadu, however, it is at an early stage of development with no operational capacity. First 4 GW tender rolled out in 2024.[12] • Technology needs: As India's offshore wind supply chain develops, there is a growing demand for turbine designs suited to local wind and marine conditions, and a need for specialised vessels, installation equipment, and grid integration support.

12. Press Bureau of India (PIB), Ministry of New and Renewable Energy India

Norwegian Strength Alignment	• 20+ years of proven offshore wind experience and one of the leaders in floating offshore wind projects. • Norwegian companies can contribute strong technical expertise for floating offshore wind projects, including engineering design for deep-water sites, mooring and anchoring system planning, consultation on subsea cable laying and grid connection, operation and maintenance planning, and support for workforce training and capacity building.

Strategic Opportunity

- Norway's proficiency in engineering design for floating offshore wind farms, particularly in deep-water sites, positions it as a key player in India's offshore wind energy sector, which is in its early stages.
- Norway's specialisation in mooring and anchoring system planning, subsea cable laying, and grid connection consultation directly supports India's infrastructure development needs.
- Norway's expertise in operation and maintenance planning, coupled with its workforce training and capacity-building support, presents a strategic opportunity to assist India in scaling its offshore wind capacity while enhancing local expertise.

Solar Power

India's Need	• Upstream manufacturing requirements: Module capacity at 144GW, however, polysilicon, ingots and wafers continue to be imported. Therefore, there is a need to develop domestic manufacturing ecosystem. India imported ~USD 3.9 billion of its USD 7 billion solar imports from China in FY2024. • Grid integration: Solar curtailment reached 10-40% in Rajasthan, Gujarat, Maharashtra, and Tamil Nadu during peak generation hours. Transmission infrastructure is still in need of upgrading to connect capacity additions. • Battery energy storage: ~490 MWh of operational Battery Energy Storage Systems(BESS) capacity highlights a need for domestic BESS manufacturing capabilities. Strong focus area for India due to requirement for balancing of renewable energy, peak shaving to improve grid stability. • Floating solar potential: 280 GW potential across 18,000 sq. km of reservoirs, with only a small fraction developed because of unclear site eligibility criteria and the need for equipment manufacturing.
Norwegian Strength Alignment	• Norway possesses strong capability in solar technology design and deployment, digital asset management, system integration and performance optimisation. • Norwegian companies offer technical expertise in high efficiency solar cell design, knowhow in monocrystalline wafer manufacturing and engineering experience in floating solar projects for reservoirs and rough offshore weather conditions. • They also bring capabilities in solar-plus-storage project planning, developing safety and certification standards for floating solar.

Strategic Opportunity

- India's rapid expansion of utility-scale solar and reservoir-based floating solar creates opportunities for Norwegian companies in floating solar design, project planning, grid integration, and performance optimisation of large solar assets, with engagement primarily centered on engineering expertise and services rather than large-scale hardware exports.

(.....Strategic Opportunity Continued)

- Additionally, Norway's capabilities in solar-plus-storage project planning, safety, and certification standards for floating solar are crucial as India continues to scale its solar infrastructure.
- The strategic opportunity lies in Norway's focus on providing engineering expertise, integration, and performance optimisation, which aligns with India's need for technological expertise and support for large solar projects rather than hardware exports.

Tidal Energy	
India's Need	• Resource potential of ~12,455 MW largely untapped (Gulf of Khambhat: 7,000 MW; Gulf of Kutch: 1,200 MW; Sundarbans: 100 MW and others).[13] However, is unexploited and pre-commercial. • Grid integration challenges for remote coastal installations, and inadequate marine infrastructure for turbine installation and maintenance. • Owing to previous project experience, current focus is on environmental impact assessment and identification of cost-effective sites for pilot projects. At the moment this is a niche renewable energy technology that may not contribute significantly towards capacity addition.
Norwegian Strength Alignment	• Norway established the world's first grid-connected tidal turbine technology (Hammerfest Strøm, 2004) with 17,000+ hours of operational experience and 98% availability. • Norwegian companies offer technical expertise for tidal energy projects, including designing efficient tidal turbines that work on both incoming and outgoing tides and solutions that operate even in slower currents. • They also offer underwater installation expertise, such as laying power cables on the seabed, fixing turbine foundations, and installing monitoring equipment. • Norwegian expertise also includes connecting offshore projects to the electricity grid, developing safety standards, and supporting early pilot projects to reduce risk.

Strategic Opportunity

- Norway's expertise in designing efficient tidal turbines that operate on both incoming and outgoing tides, including in slower currents, directly addresses India's need for reliable energy generation in diverse tidal conditions.
- Additionally, Norway's proficiency in underwater installation, including power cable laying and turbine foundation anchoring, complements India's goals for infrastructure development.
- Norway's experience in connecting offshore projects to the grid and its focus on safety standards and pilot projects aligns with India's strategy for phased development and risk mitigation in its emerging tidal energy sector.

13. Press Bureau of India (PIB), Ministry of New and Renewable Energy India

Impact of the TEPA: Opportunities

The India-EFTA TEPA supports the Norway-India energy partnership through a structured, institutionalised partnership by reducing tariffs, easing barriers, and enabling Norwegian companies to move beyond exports into local presence, joint ventures, and technology partnerships.

Export Opportunity Potential of Norwegian Origin Energy Product Lines after the implementation of the TEPA

1. Carbon Capture and Storage (CCS)

Key product categories with TEPA benefits:

- **CO_2 capture and gas treatment equipment:** CO_2 separation units, flue-gas cleaning systems, gas analysers, purity testers, and leak detection equipment benefit from a five-year duty elimination (E5).
- **Process plant and storage infrastructure:** Tanks, vessels, cooling towers, and related plant equipment follow longer phase-out schedules of 7–10 years (E7–E10).
- **Filtration and liquid purification systems:** Solvent filtration, contaminant removal, and liquid separation equipment see duty elimination over ten years (E10).
- **Gas compressors (including CO_2 compressors):** Duties are phased out over 5–10 years (E5 & E10) depending on the specific product classification.

Relevant HS Codes	Key Products	Alignment of Norway's Strengths with India's Needs	The TEPA Advantage Interpretation
841480	Gas Compressors	High	• Gas compressors, including CO_2 compressors, will see import duties phased out over a 5-to-10-year period under the E5 and E10 categorisation.
902710	Flue Gas Analysers, CO_2 Purity Testers, Leak Detection Systems	High	• Gas or smoke analysis apparatus exported from Norway to India under the TEPA benefits from a five-year duty elimination (E5).
842139	Co_2 separation machineries, Particulate & flue gas cleaning systems	Moderate	• Machinery and apparatus for filtering or purifying gases are subject to a five-year duty elimination (E5)
841989	Process tanks and vessels, heating and cooling apparatus, cooling towers, and plant equipment.	Moderate	• Most infrastructure, including storage tanks, cooling towers, glass lined equipment, and general plant machinery, follows a seven-year (E7) or ten-year (E10) phase-out period.
842129	Solvent filtration systems, contaminant removal units, water-solvent separation filters, hydraulic fluid filters	Moderate	• Machinery for filtering or purifying liquids is subject to a ten-year duty elimination (E10).

Products not covered under the TEPA: Heat-exchange units, supported precious-metal catalysts, and electroplating/electrolysis equipment are under 'Exclusion' in the TEPA, so Norwegian exports of these items will continue to face India's existing import duties.

Key policy makers/sector leads in India:

1. NITI Aayog, New Delhi (policy think tank of the Government of India)
2. Ministry of Power, New Delhi (Responsible for the CCUS Mission implementation within the power sector)
3. Invest India (EFTA Desk), New Delhi (Single-point interface for prospective and existing EFTA investors in India

2. Energy Storage and Batteries:

Key product categories with TEPA benefits:

- **Power conversion and storage electronics:** Benefit from phased duty elimination over five to ten years (E5–E10).
- **Battery modules and storage units:** Lithium-ion Batteries follow ten-year duty elimination (E10) timelines.
- **Control and energy management equipment:** EMS panels, low-voltage switchgear, and distribution boards used in storage projects benefit from seven-year phased duty elimination (E7).

Note: While items such as plates and separators for electric accumulators, certain fixed electrical capacitors, and electricity supply or production meters receive duty benefits under the TEPA, Norway's industry is more focused on specialised energy storage technologies and engineering solutions than on these specific component categories.

Relevant HS Codes	Key Products	Alignment of Norway's Strengths with India's Needs	The TEPA Advantage Interpretation
850440	Bidirectional Inverters / Power Conversion Systems, Industrial and Automatic Battery Chargers, Uninterruptible Power Supplies, Rectifiers	High	• Core storage components, including electric inverters, rectifiers, voltage regulators, and other static converters covering many BESS sub-modules enjoy a five-year tariff elimination (E5). • Battery chargers follow a longer ten-year phase-out (E10).
850760	Lithium-ion battery modules and racks for large scale systems and UPS, Large-capacity battery packs	High	• Lithium-ion batteries are subject to a ten-year duty elimination (E10).
853710	Energy Management Systems (EMS) Panels, Low-Voltage Switchgear and Distribution Boards, Battery Charge Controller Panels	Low	• Electric Control or Distribution Boards (for a voltage not exceeding 1,000 V) are subject to a seven-year gradual duty elimination (E7) under the TEPA.

Products not covered under the TEPA: Artificial graphite products are listed under the TEPA's exclusion category and therefore continue to be subject to standard import duties in India.

Key policy makers/sector leads in India:

1. Ministry of Power, New Delhi
2. Ministry of New and Renewable Energy (MNRE), New Delhi
3. Central Electricity Authority (CEA), New Delhi (Sets the benchmark for safety, operational efficiency, and construction standards for power plants and transmission lines)
4. Invest India (EFTA Desk), New Delhi (Single-point interface for prospective and existing EFTA investors in India)

3. Geothermal Energy:

Key product categories with TEPA benefits:

- **Pumps and core geothermal equipment:** Core pump categories see seven-year duty elimination (E7), with some on ten-year schedules (E10).
- **Drilling equipment and rig components:** Major drilling machinery and parts follow ten-year phase-outs (E10), while certain Interchangeable rock drilling tools see five-year elimination (E5).
- **Exploration and survey instruments:** Resource assessment instruments benefit from five-year elimination (E5), with some on ten-year schedules (E10).
- **Industrial spares and compressor parts:** Plant spares and compressor-related parts mainly follow ten-year duty elimination (E10), with select items on seven-year schedules (E7).

Relevant HS Codes	Key Products	Alignment of Norway's Strengths with India's Needs	The TEPA Advantage Interpretation
843143	Parts for drilling rigs, wellhead & control parts, maintenance spares	High	• All the parts for boring or sinking machinery are subject to a ten-year duty elimination (E10) under the TEPA.
841370	Submersible pumps, single and multistage chemical process pumps, horizontal split casing pumps, boiler feed pumps	High	• Core geothermal technologies like Single and Multistage Chemical pumps and Vertical Turbine pumps: a seven-year duty elimination (E7). • General water-handling pumps see a slower ten-year phase-out (E10).
901580	Geophysical Instruments (seismographs, magnetometers, gravity meters)	High	• Geothermal exploration tools like geophysical and general surveying instruments enjoy a five-year duty elimination (E5). • Hydrographic instruments receive a longer 10-year duty elimination phase (E10).

Relevant HS Codes	Key Products	Alignment of Norway's Strengths with India's Needs	The TEPA Advantage Interpretation
841490	Parts of gas compressors, vacuum pump spares, industrial fan, and blower parts	Moderate	• Critical industrial spares, including gas compressor parts, free piston generator parts, follow a ten-year duty elimination (E10). • A seven-year phase-out (E7) of duties is applicable for parts of Industrial Fan/ Blowers.
843041	Self-propelled geothermal drilling rigs, tube well and core drilling machinery, rock drilling machinery	Moderate	• All major sub-categories of self-propelled boring machinery including tube well drills, petroleum-grade rigs, and rock drilling units are subject to a ten-year duty elimination (E10).
820719	Rotary rock drill bits , coring and sampling tools, hole openers and stabilizers	Moderate	• Interchangeable rock-drilling or earth-boring tools benefit from a 5-year phased duty elimination (E5) under the TEPA

Products not covered under the TEPA: Critical components such as heat exchange units, thermal shock-resistant cements, and steam / other vapor turbines are listed under the TEPA's exclusion category and do not offer any duty benefits for Norwegian exporters.

Key policy makers/sector leads in India:

1. Ministry of New and Renewable Energy (MNRE), New Delhi
2. Geological Survey of India, Kolkata (Nodal agency for exploration, mapping, and resource assessment)
3. Invest India (EFTA Desk), New Delhi (Single-point interface for prospective and existing EFTA investors in India)

4. Green Hydrogen:

Key product categories with TEPA benefits:

- **Hydrogen production equipment:** Key components used in hydrogen generation benefit from immediate or phased duty elimination (EIF to E10) depending on classification.
- **Hydrogen purification and balance-of-plant equipment:** Gas cleaning, filtration, and auxiliary systems see phased duty reductions over 5–10 years (E5–E10).
- **Hydrogen storage systems**: Storage cylinders, tanks, and related equipment benefit from five-year duty elimination (E5).
- **Hydrogen compression and handling equipment:** Compressors and refueling system components benefit from phased duty elimination over 5–10 years (E5–E10)

Relevant HS Codes	Key Products	Alignment of Norway's Strengths with India's Needs	The TEPA Advantage Interpretation
841360	Gear type pumps, screw type pumps and other rotary pumps	High	• Gear and Screw type pumps: a ten-year duty elimination (E10). • Specialised unclassified rotary pumps: seven-year phase-out of tariffs(E7).
854519	Carbon and graphite components that facilitate electrochemical reactions within electrolyser stacks	High	• Immediate tariff reduction of specialised carbon electrodes and graphite articles.
842139	Hydrogen purification units, gas-water separators, de-oxo systems, air separators & purifiers	High	• All major tariff lines for gas filtration and purification equipment including air separators, air purifiers, and other gas purification machinery are subject to a five-year duty elimination (E5).
841480	High-pressure hydrogen compressors, hydrogen refuelling station compressors	High	• Gas compressors benefit from phased duty elimination over five to ten years (E5–E10) under the TEPA, depending on the specific product sub-classification.
841350	Reciprocating liquid hydrogen pumps, reciprocating deep well turbine & water handling pumps	Moderate	• All major reciprocating pump categories are subject to a ten-year duty elimination (E10).
731100	High-pressure hydrogen cylinders, hydrogen storage tubes, cryogenic storage tanks	Moderate	• All categories of gas storage containers, including LPG cylinders, low-pressure cylinders, high-pressure cylinders, and other specialised gas storage tanks benefit from a five-year duty elimination (E5).
842129	Balance of plant components, electrolyte filters	Moderate	• Machinery for filtering or purifying liquids is subject to a ten-year duty elimination (E10).

Products not covered under the TEPA: Electrolyzer stacks and heat exchange units are under 'Exclusion' in TEPA, so Norwegian exports of these items will continue to face India's existing import duties.

Key policy makers/sector leads in India:

1. Ministry of New and Renewable Energy (MNRE), New Delhi
2. The National Green Hydrogen Mission, New Delhi (Managed by the Ministry of New and Renewable Energy)
3. Invest India (EFTA Desk), New Delhi (Single-point interface for prospective and existing EFTA investors in India

5. Offshore and Onshore Wind Energy:

Key product categories with TEPA benefits:

- **Turbine and generator components (structural parts, motor parts):** These form the core power-generation system of offshore wind turbines, and benefit from phased duty elimination over five years (E5), with some spare parts on a ten-year schedule (E10).
- **Mooring chains, lines, and ropes:** These are critical for anchoring floating offshore wind turbines and platforms; mooring chains and steel wire ropes will see phased duty elimination over five years, while mooring lines and ropes already have zero duty since the agreement came into force in October 2025.
- **Electric cable "pull-in" winches:** Used during installation to connect subsea power cables from turbines to offshore substations and the grid, these winches benefit from phased duty elimination over five years.

Relevant HS Codes	Key Products	Alignment of Norway's Strengths with India's Needs	The TEPA Advantage Interpretation
842531	Electric cable "pull-in" winches	High	• Electric cable "pull-in" winches will benefit from phased duty elimination over five years after the agreement comes into force.
850300	Generator components, structural & housing parts, motor parts	Moderate	• Specialised parts of generators (AC / DC): a five-year duty elimination (E5). • Other general turbine infrastructure, including parts of DC motors and all other miscellaneous turbine spares: a ten-year duty elimination (E10).
731210	Steel wire ropes for anchoring floating wind platforms	Moderate	• Steel wire ropes will benefit from phased duty elimination, reaching zero import duty five years after the agreement came into force.
731589	Mooring chains for anchoring of floating wind platforms	Moderate	• Mooring chains will benefit from phased duty elimination, reaching zero import duty five years after the agreement came into force.
560750	Mooring lines & ropes	Moderate	• Mooring lines and ropes already benefit from immediate duty elimination since the agreement came into force in October 2025.

Products not covered under the TEPA: Wind-powered generating sets are excluded from duty benefits under the agreement, and Norwegian companies are primarily focused on specialised offshore wind services and components rather than manufacturing full turbine generating sets.

Key policy makers/sector leads in India:

1. Ministry of New and Renewable Energy (MNRE), New Delhi.
2. National Institute of Wind Energy, Chennai (Nodal agency for developing offshore wind energy in India).
3. Invest India (EFTA Desk), New Delhi (Single-point interface for prospective and existing EFTA investors in India).

6. Smart Grid and Power Transmission

Key product categories with TEPA benefits:

- **Grid automation and control systems:** Electronic regulators, EMS controllers, sensors, and control system spares used in smart grid management benefit from five-year phased duty elimination (E5).
- **High-voltage switchgear and substation equipment:** Panels, distribution boards, and high-voltage control assemblies used in transmission infrastructure benefit from seven-year duty elimination (E7).
- **Transmission lines and cable systems:** High-capacity conductors, aluminum wire rods, high-end power cables, and overhead line components benefit from five-year duty elimination or equivalent phased reductions (E5/R5).
- **Transformer and grid interconnection equipment:** Step-up and interconnection transformers used in transmission upgrades benefit from five-year phased duty elimination (E5)

Note: While measuring instruments, electricity meters, and related accessories are covered under the TEPA and receive duty benefits, Norway's industry is primarily focused on advanced grid technologies and system-level solutions rather than large-scale manufacturing of these specific meter and instrument categories.

Relevant HS Codes	Key Products	Alignment of Norway's Strengths with India's Needs	The TEPA Advantage Interpretation
903289	Electronic Automatic Regulators, Energy Management System (EMS) Controllers	High	• Electronic automatic regulators and other miscellaneous regulating instruments are subject to a five-year duty elimination (E5).

Relevant HS Codes	Key Products	Alignment of Norway's Strengths with India's Needs	The TEPA Advantage Interpretation
903290	Control System Spares, Voltage Regulator Components, Sensor and Module Upgrades	High	• Parts and accessories for regulating or controlling instruments are subject to a five-year gradual duty elimination (E5).
853720	High-Voltage Switchgear Assemblies, High-Voltage Control Panels, Primary Distribution Boards, Substation Control Consoles (High Voltage)	High	• Boards and Panels for a voltage exceeding 1,000 V (85372000) are subject to a seven-year gradual duty elimination (E7).
854460	HVXLPE Power Cables, Overhead Transmission Line Conductors, Rubber-Insulated High-Voltage Cables	High	• All major sub-categories are subject to a five-year duty elimination (E5).
760511	High-capacity Bare Aluminum Conductors, Aluminum Wire Rods, High-capacity Utility Distribution Lines	High	• Aluminum wire of non-alloyed aluminum is subject to an "R5 to 50%" schedule. This indicates a phased reduction (R5) of the current 7.5% Basic Customs Duty down to a final preferential rate that is 50% of the standard MFN (Most Favored Nation) rate over a five-year period.
850423	Step-Up Transformers, Grid Interconnection Transformers, Phase-Shifting Transformers (PST)	Low	

Products not covered under the TEPA: AC-based electricity supply or production meters, including calibrating meters and smart meters, are listed under the TEPA's exclusion category and therefore do not receive duty benefits for Norwegian exporters.

Key policy makers/sector leads in India:

1. Ministry of Power, New Delhi
2. Central Electricity Authority (CEA) , New Delhi (Sets the benchmark for safety, operational efficiency, and construction standards for power plants and transmission lines)
3. Power Grid Corporation of India, Gurugram (Owns and operates ~85% of India's Inter-Regional transmission network)
4. Invest India (EFTA Desk), New Delhi (Single-point interface for prospective and existing EFTA investors in India)

7. Solar Power:

Key product categories with TEPA benefits:

- **Solar module materials and encapsulation films:** immediate duty elimination (EIF) for Norwegian exporters
- **Related polymer-based solar materials:** Other polyethylene-based solar manufacturing inputs follow phased duty elimination over five to ten years (E5–E10).

Note: While high-purity silicon (≥99.99%) also receives duty benefits under the TEPA, Norway does not currently have a significant export base in this product category.

Relevant HS Codes	Key Products	Alignment of Norway's Strengths with India's Needs	The TEPA Advantage Interpretation
392010	EVA (Ethylene Vinyl Acetate) Sheets, Backsheet Films	Moderate	• Core solar manufacturing inputs like flexible EVA encapsulants and protective films enjoy immediate duty elimination (EIF). • More general polyethylene products follow a five to ten-year phase-out (E5 & E10).

Products not covered under the TEPA: Key solar components such as photovoltaic cells and modules, doped electronic-grade chemical wafers, and tempered safety glass for panels are listed under the TEPA's exclusion category and therefore continue to face standard import duties in India.

Key policy makers/sector leads in India:

1. Ministry of New and Renewable Energy (MNRE), New Delhi
2. Solar Energy Corporation of India, New Delhi (It serves as an implementing agency for the development of Solar, Wind, and Hybrid Projects as part of fulfilling the country's Nationally Determined Contributions)
3. National Institute of Solar Energy, Gurugram (apex national R&D centre for solar technology in India)
4. Invest India (EFTA Desk), New Delhi (Single-point interface for prospective and existing EFTA investors in India)

8. Tidal Energy:

Key product categories with TEPA benefits:

- **Control and switchgear systems:** Electrical control systems used in tidal power installations benefit from a seven-year phased duty elimination (E7).
- **AC generator units:** Generators in the 75-375 KVA range follow a ten-year duty phase-out (E10). Generators above 750 KVA benefit from a five-year phased duty elimination (E5).

Note: While the TEPA also provides duty benefits for core components such as electric generating sets powered by water turbines, Norway is primarily focused on specialised marine energy engineering and technical services rather than large-scale manufacturing of complete generating sets.

Relevant HS Codes	Key Products	Alignment of Norway's Strengths with India's Needs	The TEPA Advantage Interpretation
853710	Control Systems / Switchgear for a Voltage Not Exceeding 1000 V	Moderate	• A seven-year phased duty elimination (E7).
850162	AC generators (75-375 KVA)	Moderate	• AC generator units benefit from a 10-year phased duty elimination (E10).
850164	AC generators (Exceeding 750 KVA)	Moderate	• AC generator units benefit from a five-year phased duty elimination (E5).

Products not covered under the TEPA: Hydraulic turbines and water wheels are listed under the TEPA's exclusion category and therefore continue to face standard import duties in India, though Norway does not have a large manufacturing or export base for these products.

Key policy makers/sector leads in India:

1. Ministry of New and Renewable Energy (MNRE), New Delhi
2. Indian National Centre for Ocean Information Services, Hyderabad (Maintains a primary repository for marine data, providing crucial oceanographic data for tidal energy development)
3. Invest India (EFTA Desk), New Delhi (Single-point interface for prospective and existing EFTA investors in India)

Trade in Services: Provisions under the TEPA

The TEPA improves predictability by providing treaty-based assurances for services and professional mobility, which is particularly relevant for energy projects that rely on the seamless integration of equipment supply and specialised expertise.

Streamlined Personnel Mobility: Removes labour-market testing requirements, enabling Norwegian energy specialists (offshore wind engineers, subsea systems experts, CCS technicians, grid-integration engineers) to enter India for up to 3 months per year through the "Installer or Servicer" category, improving project planning certainty for complex energy projects.

Bundled Delivery Model Enablement: Provides treaty-based clarity allowing Norwegian companies to supply energy equipment together with integrated services (installation, training, commissioning, digital monitoring, maintenance) under coherent commitments, particularly critical for offshore wind farms, CCS infrastructure, and advanced grid systems where equipment performance depends on expert service delivery.

Enhanced Commercial Presence and Qualification Recognition: Permits establishment of local engineering offices, service hubs, and project teams in India with national treatment protections, while mutual recognition of technical qualifications reduces regulatory friction for deploying Norwegian professionals in highly regulated energy activities, strengthening long-term service footprint and bilateral technical collaboration.

Overall Impact for Norwegian Energy Services

The TEPA enables Norwegian energy companies to move beyond transactional exports and participate more deeply in India's energy transition as technology and solutions partners. It facilitates the temporary entry of energy specialists, supports recognition of technical qualifications, and ensures national treatment for service suppliers. This enables Norwegian high-end energy services—including offshore engineering, subsea operations, drilling and well services, grid optimization, CCS system design, and renewable energy integration—to be delivered alongside equipment exports. The agreement creates a predictable and scalable framework for service delivery in India's energy sector strengthening Norway's long-term services footprint in India and reinforces bilateral collaboration across conventional, renewable, and emerging energy technologies.

To understand the impact of the TEPA and the opportunities it provides, data on Norway's export strengths, India's import demand, and India's tariff commitments were analysed to translate policy provisions into actionable market-entry insights.

- *All HS 6-digit level codes were compiled along with their corresponding tariff lines to identify and shortlist energy sector-related chapters and codes.*
- *For the TEPA benefit type offered by India, a 1–10 scoring scale was applied based on the degree of market access improvement, with immediate tariff elimination (EIF) scoring highest (10) and other provisions such as E5 and E7 receiving progressively lower scores.*
- *For Norway export strength and India import demand, scores were assigned using quartile-based thresholds derived from the data distribution. Upper and lower quartile thresholds were used to allocate scores from 1 (low or unfavourable) to 10 (highly favourable).*
- *The final composite opportunity score was calculated using weighted contributions of 50% for Norway's export strength, 25% for India's import demand, and 25% for the TEPA benefit type.*

Rules of Origin: Compliance Requirements for Norwegian Energy Product Exports

The TEPA's Rules of Origin provisions set product-specific compliance requirements that Norwegian companies must meet to qualify for preferential tariff treatment. The agreement's Product-Specific Rules require exporters to meet minimum value-addition thresholds and origin criteria, which influence sourcing and manufacturing decisions and create both opportunities and structural considerations across energy product categories exported to India.

Core Compliance Framework: Manufacturing Origin Thresholds

- Since energy equipment and systems are usually complex and built from parts sourced globally, the "wholly obtained" rule rarely applies.
- Instead, the agreement generally requires that around 40% of the product's value is added within Norway (or the TEPA partner countries), though this threshold can vary depending on the specific HS code.
- The agreement allows bilateral and diagonal cumulation, meaning inputs from other TEPA partner countries can count toward the origin requirement, giving companies flexibility in sourcing while still meeting origin criteria.
- Some products must also meet a Change in Tariff Classification (CTC) requirement, and certain metal-based items, such as storage tanks and high-pressure containers, require the steel to be melted and poured within the TEPA partner countries to qualify.

Structural Considerations for Norwegian Exporters

Norway's innovation-driven economy is characterised by the development of proprietary technologies, with manufacturing frequently located offshore. As the TEPA's Rules of Origin link tariff preferences to manufacturing or value-added location rather than innovation origin, Norwegian technology exporters will need to assess product-level eligibility carefully before assuming automatic TEPA qualification for finished goods.

Potential Challenges

Market Familiarity: Norwegian companies are continuing to build familiarity within the vendor evaluation processes used by Indian developers, independent power producers, and engineering, procurement, and construction contractors. Some stakeholders noted that awareness of Norwegian suppliers is still developing among procurement teams. This reflects the established structure of India's renewable energy supply chains, where competing countries have developed long-standing relationships, and reference benchmarks around pricing, delivery schedules, and technical specifications. Greater engagement through partnerships, local presence, and demonstration of expertise can help Norwegian companies create more visibility within India's procurement networks over time.

Beyond Tariffs, Other Sourcing Considerations: While the TEPA tariff reductions can generate initial commercial interest, some stakeholders note that preferential trade terms are only one of several factors considered when evaluating international suppliers.

- Procurement decisions also depend on proven performance under Indian operating conditions, such as high temperatures and dust levels in Indian project sites, along with market familiarity and a track record within India's procurement ecosystem. Competing suppliers have established strong benchmarks in pricing, delivery timelines, and technical specifications through their long-standing presence in the market.
- At the same time, India's policy focuses on domestic manufacturing and supply-chain development, which encourages localisation, technology partnerships, and long-term collaboration. In this context, the TEPA tariff concessions are most effective when combined with a broader market engagement strategy that addresses commercial, technical, and regulatory aspects of market participation.

Early-stage and Pilot-led Market Maturity: Across CCS, India's development activity is currently centred on establishing technical and commercial viability, with policy frameworks oriented towards pilot projects and feasibility assessment. Other niche renewable energy initiatives are moving forward through pilot programs under national policy frameworks, while carbon capture and storage efforts are being explored through studies and demonstration projects led by public sector organizations. Some stakeholders expressed that opportunities are naturally centered on technical collaboration, knowledge-based services, and participation in pilot projects, with larger-scale equipment deployment expected to follow as these sectors progress toward commercial implementation.

Evolving Regulatory and Standards Environment: India's renewable energy sector is overseen by several agencies, including the Ministry of New and Renewable Energy, environmental authorities, state governments, and forest departments, each with defined roles in project approvals. For emerging segments, where a single-window clearance framework is still evolving, projects often involve coordination across multiple central and state-level agencies. This makes early engagement with regulatory processes and locally informed compliance planning an important part of project

preparation. For Norwegian companies exploring partnerships or investments in India, understanding these approval pathways and working with local partners can help ensure smoother project development across different regulatory jurisdictions.

Intellectual Property Protection Considerations: Some technology licensors highlighted the importance of carefully structuring agreements when entering new markets to safeguard proprietary technologies and know-how. This typically involves well-designed licensing arrangements, clear partnership frameworks, and appropriate legal protection, particularly in sectors or early-stage projects where intellectual property enforcement practices may vary across jurisdictions, to ensure technologies are managed securely and transparently throughout project collaboration.

Economic and Commercial Considerations: The project economics of emerging energy technologies in India are shaped by a range of interconnected commercial factors.

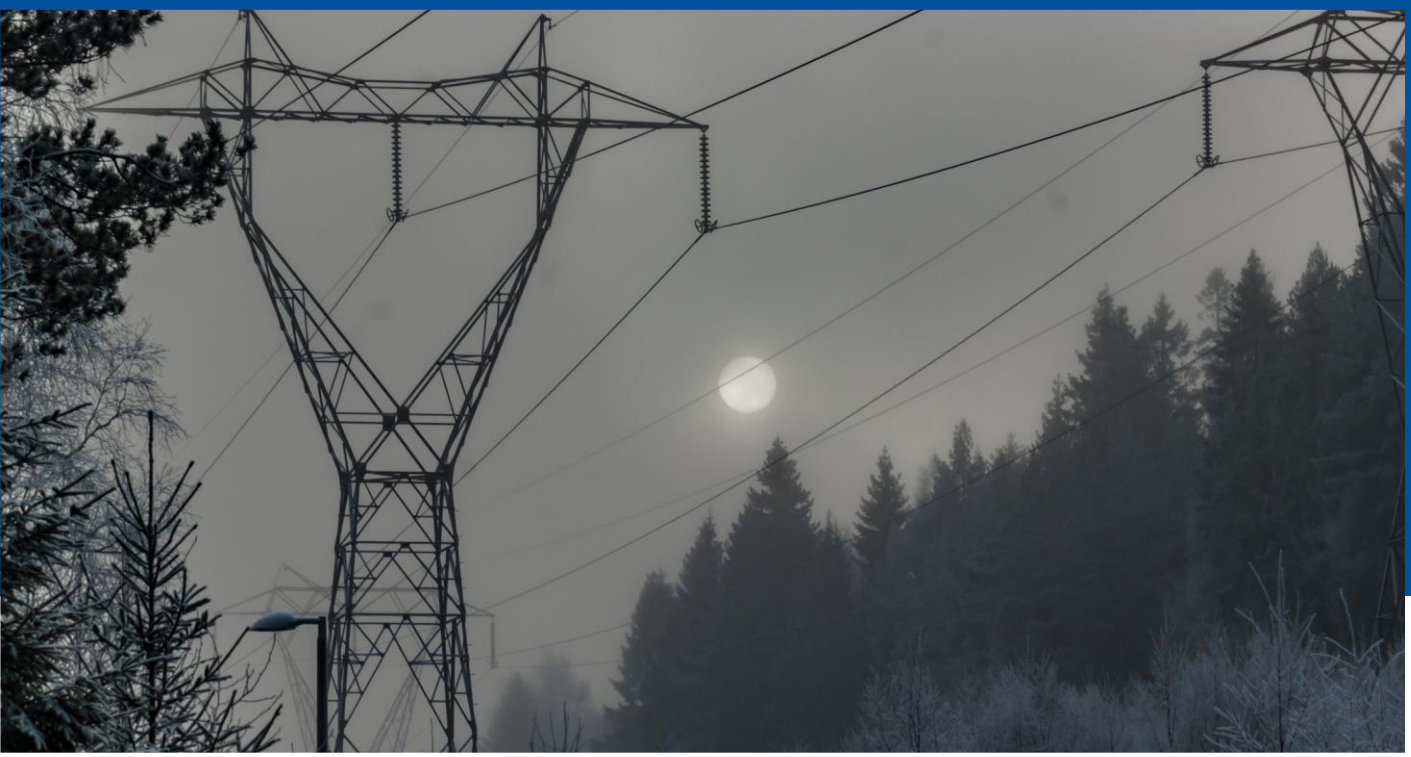
- For green methanol and electrolysis-based hydrogen, electricity pricing and the availability of biogenic CO_2 as a feedstock source are relevant inputs to project viability assessments.
- Capital-intensive technologies such as geothermal exploration involve substantial upfront investment requirements with longer development timelines before commercial returns are realised, a profile that warrants careful structuring in financing arrangements.

Some stakeholders observed that development timeline expectations can differ between India's current project stage, where near-to-medium-term commercial milestones are often emphasized, and the longer development cycles typically seen in mature geothermal markets such as Norway and the United States.

In some projects, digitalisation or advanced monitoring components may also be treated as optional additions to manage upfront costs.

For Norwegian companies and their Indian partners, aligning expectations on timelines, project scope, and technology integration, while balancing near-term results with longer-term capability building, can be an important part of effective partnership planning.

Disclaimer: *Many of the challenges outlined in this section are based on discussions with selected companies and market participants. The views expressed reflect individual or firm-level perspectives gathered during consultations and should not be interpreted as representing the entire industry or market.*



Potential Market Entry Routes

Pilot Project Participation

- Several emerging energy segments in India are progressing through pilot projects and early deployments under national and state programs.
- Pilot participation provides a practical pathway for technology validation, localisation learning, and partnership building with public sector undertakings and industrial developers.
- Norwegian companies bring strengths in offshore wind engineering, CCS reservoir assessment, green hydrogen hydrogen system design, ocean surveys, and technical advisory for tidal energy, offshore energy services, and grid integration, which align well with pilot-stage needs.

Potential target areas:

- Offshore wind site characterisation and floating platform engineering support;
- Green hydrogen pilots in refineries, fertilizer plants, and steel clusters;
- CCS feasibility studies and storage-site assessments;
- Tidal energy resource mapping, ocean current surveys, and seabed studies, and
- Energy storage and renewable grid-integration pilot projects.

Potential partnership formats:

- Technology collaboration agreements with public sector undertakings;
- Early-stage engineering advisory and system-design partnerships;
- Marine survey and resource assessment collaborations;
- PSU-led demonstration projects, and
- Component supply partnerships aligned with localisation goals.

Time consideration: Pilot projects typically involve modular deployment and phased commissioning timelines.

Norway Retains

- Technology license
- Proprietary process design
- Core engineering and system engineering services
- Value-added engineering know-how

India Sources Locally

- General plant equipment
- Construction and engineering execution
- Balance-of-plant equipment

Partnership Structure

- Indian engineering firms execute construction
- Private sector players and PSUs provide capital and project ownership
- Technology partners retain intellectual property and process design expertise

Technology Licensing & Technical Advisory

Potential target areas:

- Licensing of proprietary process technologies and specialised components in areas such as CCS systems, offshore wind engineering, hydrogen production and storage, ocean energy modelling, and advanced grid-integration solutions.
- Support for adapting technologies to Indian operating conditions through engineering studies, modelling, and performance validation.

Modalities:

- Licensing agreements with Indian developers, public sector undertakings, and engineering firms.
- System-design partnerships and technical consulting during pilot or early deployment phases.
- Training and capacity-building programs to support long-term technology adoption.

Industrial-Scale Project Partnership

India's energy transition is placing greater emphasis on sectors such as steel, fertilizers, cement, and refining, where lower-emission production pathways are becoming commercially relevant. Global developments such as the European Union's Carbon Border Adjustment Mechanism (CBAM) are encouraging Indian exporters to consider cleaner production methods to remain competitive, reinforcing interest in integrating renewable energy, cleaner fuels, and emissions-reduction technologies into large-scale industrial operations. Within this context, Norwegian companies can participate as project partners and co-developers, working alongside Indian industrial groups, utilities, and public sector undertakings.

Potential target areas:

- Hydrogen-to-ammonia and industrial fuel switching;
- Grid-integrated renewable and storage projects;
- Offshore wind and marine infrastructure services; and
- Carbon capture integration for refineries, cement, and steel plants.

Modalities:

- Joint project development with Indian industrial groups, utilities, and public sector undertakings.
- Engineering support for project design, optimisation, commissioning, and performance monitoring in large infrastructure projects.
- Participation through equity investment, project development agreements, or long-term operations partnerships.
- Contribution of specialised engineering, project design leadership, and proprietary system components as part of integrated project delivery.

R&D Collaboration

Norway maintains over 100 ongoing joint research projects with India, representing Norway's largest research program in Asia. Clean energy is one of three thematic priority areas, alongside environment and climate change.

The Research Council of Norway and India's Department of Science and Technology have established joint research programs under the INDNOR framework. A USD 1 million joint call supports innovation projects in renewable energy, bringing together companies and research institutions in collaborative arrangements.

Joint initiatives can focus on CCS reservoir modelling, offshore wind engineering, tidal energy ocean modelling, hydrogen storage materials, advanced energy storage, and renewable grid integration.

Collaboration with Indian research institutions and standards bodies supports technology adaptation to Indian operating conditions and capacity building for large-scale, long-term deployment.

Specialised Component Supply

India's Aatmanirbhar Bharat (Self-Reliant India) policy emphasizes domestic manufacturing and local sourcing in strategic sectors. Norwegian firms are well-positioned to participate as technical partners, providing engineering design, advisory services, and selective supply of specialised proprietary technologies, while large-volume hardware is typically sourced through local Indian supply chains.

Potential Target areas

- Offshore mooring and anchoring systems;
- Hydrogen compression and storage engineering;
- CCS monitoring, transport, and storage equipment;
- Advanced power electronics, and
- Tidal turbine components (for low current marine ecosystems) and marine monitoring systems.

Modalities:

- Direct export of proprietary or specialised components alongside engineering support and integration services.

Key Commercial Considerations

- Project economics in India's energy sector typically depend on long-term offtake visibility, reliable access to competitively priced renewable power, and clear project ownership structures. For sectors such as green hydrogen, offshore wind services, CCS, and tidal pilots, early agreements with industrial users, utilities, or public sector undertakings help anchor demand and support financing.
- Cost competitiveness is also shaped by plant utilisation, grid access, and logistics planning, including co-location with renewable power sources, shared infrastructure for storage or transport, and phased project development that aligns capital investment with market demand growth.
- Policy support, such as transmission waivers, viability gap funding (applicable for some critical components), pilot-program support, and certification frameworks, can improve project economics. Still, sustained deployment typically requires strong local partnerships, reliable project execution capability, and integration into India's existing supply chains and industrial ecosystems.

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Norwegian Embassy
New Delhi

Nordic Council of Ministers