

## ASIA

### Cleantech Trends in Asia



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With urbanisation and industrialisation ramping up and its middle-class population growing rapidly, Asia's economic growth continues apace. Some countries – namely, India, China and Vietnam – are posting 5-7% or more GDP growth year over year. This economic growth translates into an increased demand for power which, coupled with a desire to decarbonize, makes the renewable energy (and cleantech) story in Asia compelling.

While countries in the Asia-Pacific still produce approximately 75% of the world's consumable coal, the tide of fossil fuel production and consumption in the region has turned. Due to geopolitical and other pressures, many Asian countries have now publicly announced a move away from fossil fuels and just this month President Xi Jinping of China pledged to cut funding for coal projects outside of China.

To both meet Asia's growing energy demand, and to provide an alternative energy source to fossil fuels,



investment in renewable energy assets in the region has ballooned. While traditional forms of renewable energy – for example, hydro, geothermal and wind – have been obvious beneficiaries of this investment, “cleantech” energy has been a focus for many developers and investors in the region too. Against this backdrop, we survey the increased investment in the “cleantech” industry in Asia and the sub-sectors which are attracting most interest.

#### INVESTMENTS IN CLEANTECH ENERGY

Cleantech energy (often interchangeable with “greentech”) is, in essence, any process or product that reduces negative environmental impacts through energy efficiency improvements or through the use of sustainable resources, or offers some level of environmental protection. According to published research, the top cleantech sectors in the region are currently (i) solar technology, (ii) waste management and recycling, (iii) carbon capture technology and (iv) batteries and energy storage.

Funding for these technologies comes from a variety of sources. Traditional sources of capital are reported to have made investments in the space: for example, ING Bank made a green loan to fund Cleantech Solar's expansion in Asia, and the multilateral agency, Asia Development Bank, announced two investments into an Indian electric vehicle manufacturer and an Indian energy efficiency service provider via its venture capital arm, ADB Ventures.

Private equity is also playing its part. Some of the demand is coming from the limited partners or institutional investors who want to allocate capital to fund managers who focus on, or who include, renewables as a key part of their investment strategy. The COVID-19 pandemic has helped to accelerate this trend. With “dry powder” to deploy, private equity players have been happy to fund technologies and developments that would otherwise have received government subsidies or incentives, had they been available.

All capital providers have also been encouraged by regional government announcements with respect to renewable energy targets and incentives. A 2021 study conducted by the Asia Development Bank found that feed-in tariffs (“FiT”) – a policy designed to support the development of renewable (and cleantech) energy sources by providing a guaranteed, above-market price for producers – have had the greatest overall effect in Asia in driving capital into this sector. Some governments continue to rely on FiT schemes, with Vietnam having extended its FiTs for wind power projects until December 2023 – a fact that continues to drive investments. However, given falling prices (say, in solar power) and more countries shifting to auction systems in sectors such as solar and wind, the trends seem to demonstrate a move-away from FiT and an indication that, in Asia and globally, unsubsidized grid parity may be nearer than once expected.

#### CLEANTECH SECTORS TO WATCH

##### Solar

Solar is one of the most attractive sectors for cleantech. In addition to greenfield solar projects, investors have been active in the M&A space, with acquisitions of both solar panel manufacturers and photovoltaic (PV) projects reported. One example includes the acquisition of a stake in Singapore's Sunseap Group solar rooftop projects in Vietnam by a subsidiary of Malaysia's national electricity producer Tenaga Nasional Berhad.

Technology advancements have pushed costs down (and increased efficiency) for PV cells, leading solar power to become both cheaper and more reliable and, as a result, a more realistic option for industrial, commercial, and residential users across the region. With land procurement often a difficult issue for energy projects in Asia, floating solar PVs are gaining traction too – Indonesia has just procured the 145 MW Cirata floating solar project and Singapore has built a 60 MW floating solar farm at the Tengeh Reservoir.

## Carbon Capture Technology

Carbon capture technology allows high carbon emitting industries to siphon off carbon dioxide before it is emitted into the atmosphere. The greenhouse gas is then either buried underground or used as a resource to create other products such as concrete, fertilizers and other fuels. Carbon capture technology is (currently) one of the few scalable and cost-competitive solutions available. Interest in carbon capture technology has been growing. Projects of this type, which are being explored across Indonesia, Malaysia, Singapore and Timor-Leste, require in excess of US\$1 billion of investment a year until 2030.

Carbon capture technology may also be utilised for existing projects in the energy sector. Players in the LNG industry, for example, are reportedly looking at installing carbon capture storage facilities as a means for reducing emissions attributable to gas processing – so called “green” LNG. Australia has led the way with various projects either in advanced stages or in operational stages, including its Chevron’s 4-mmtpa Gorgon carbon capture storage facility that is intended to reduce the emission intensity of the Gorgon project by around 30%. In Asia, carbon capture solutions are reportedly under consideration for a number of projects including BP’s Tangguh project in Indonesia. With increased pressure on the reduction of emissions, carbon capture technology is likely to be heavily utilised going forward.

## Waste Management and Recycling

Waste-to-Energy (“WTE”) technologies convert non-recyclable waste into usable forms of energy.

Waste management is at the forefront of many large cities in the region as they are running out of landfill sites (typically the traditional method of disposing waste). With increasingly limited land availability as a result of urbanisation and industrialisation, WTE technologies have the dual advantage of reducing landfill requirements in urban environments, while replacing fossil fuel-based power

sources (all while generating revenue for municipalities and governments).

Some commentators project that the Asia-Pacific WTE market is projected to grow at a rate of 5% or more for the next 5 years. The mix of capital providers in this technology space is varied and includes commercial banks, multilateral development banks and credit agencies, financial sponsors, and private equity firms. China and Japan have led the way in terms of WTE generation (domestically in the case of China, and in exporting its expertise in the case of Japan). However, the pipeline in Southeast Asia in countries such as Singapore, Thailand, Indonesia and Vietnam is extremely active and supported by strong government mandates.

## Battery (and Energy Storage) Technology

Energy storage technologies are set to catalyse transitions to clean energy around the world. A joint study published in late 2020 by the International Energy Agency and European Patent Office titled

“Asia’s development in the coming years will drive the demand for cleantech technology, and this demand will be compounded by the region’s dominance in manufacturing, particularly in countries such as China, Korea and India where cleantech products manufacturing is its own industry.”

“Innovation in batteries and electricity storage – a global analysis based on patent data” reported that batteries account for nearly 90% of all patenting activity in the area of electricity storage and that the rise in innovation is chiefly driven by advances in rechargeable lithium-ion batteries used in consumer electronic devices and electric cars. Japan and Korea, in particular, have established a strong lead in battery technology globally, and that technical progress and mass production have led to a significant drop in battery prices in recent years. The Asian Infrastructure Investment Bank (AIIB) has been making a number of investments in this sector too. Most recently, AIIB made loans to the Tata Cleantech Sustainable Infrastructure On-lend Facility in India which targets energy storage and to the SUSI Asia Energy Transition Fund which aims to provide equity finance to green energy solutions in Southeast Asia, including energy storage.

## THE ROAD AHEAD

As Asia continues to grow, environmentally sustainable energy sources will be crucial to underpin the region’s development in the coming years, which will drive the demand for cleantech technology. This demand will be compounded by the region’s dominance in manufacturing, particularly in countries such as China, Korea and India where cleantech products manufacturing is its own industry.

Encouragingly, nearly all countries in the region have taken steps to adopt national and regional renewable energy targets and some have introduced governmental incentives aimed at promoting investment in cleantech (with hopefully more to come), signaling the region’s firm commitment to the energy transition.

While some inherent risks remain with respect to uncertain or unfamiliar regulatory and legal landscape in some countries, we expect investors to continue to tap into the immense opportunity in Asia.

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