ESG Thema

#8 | Febuary 2022

Financing the energy transition in Asia

Amundi
ASSET MANAGEMENT

Key takeways

- **Climate change commitments have stepped up recently but have yet to fully answer the call.** National commitments should not constitute a limitation or constraint for a business entity to set ambitious net zero targets that are aligned with the Paris Agreement.
- As Asia is reliant on coal with a relatively young age of coal power fleets at **13 years old vs. 3 to 40 years elsewhere,** more innovative mechanisms are expected to be part of the regional coal phase-out and energy transformation journey.
- Clean energy investment in emerging and developing economies in general need to expand by more than **7 times to above US$1 trillion** under a net zero scenario by 2050.
- Besides transition risk, Asia stands out to be one of the regions most exposed to physical climate risk. The loss in economic value for Asia would be around 15-20% of GDP by mid-century.
- Climate transition in Asia has its distinct challenges. **Balancing economic development, climate actions and social inclusion** will be critical to ensure a just transition pathway that leaves no one behind.

Introduction

Energy transition is critical in the fight against climate change and global warming, and Asia has a big role to play. **Where more than half of the world's population reside, Asia consumes over 40%[1] of global energy while releasing over half of global carbon emissions as of 2020.** Being one of the fastest growing regions in the world, Asia would need to cautiously maneuver the delicate balance of economic development, climate ambitions and energy security in the coming years.

Energy transition is already happening at an unprecedented pace in the region, but the magnitude of the transformation will undoubtedly further intensify as more countries prepare for the next wave of the development. In order for Asia to ride through this phase, some important issues must be considered and addressed. How to ensure capital is supporting the development of energy transition? *How to meet growing energy demand, and at the same time ensure security and stability of supply? What impact will the energy transition have on rising inequality and communities that rely on coal?*

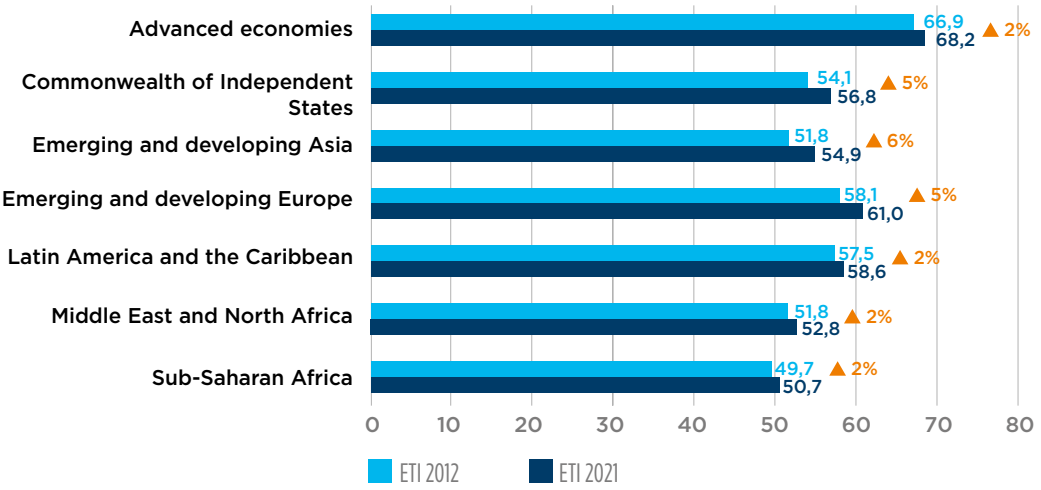
The discussion of energy transition sometimes focuses on the expansion of clean energy capacity in replacing the traditional fossil fuels. This is a critical initial step, and a major one. However, **as the region moves closer to net zero objectives, the energy transition needs to be multifaceted - bridging the gaps of public-private financing, electricity access and stability, training and reskilling of workers, and other socio-economic issues** – all as part of the equation to ensure a fair and just transition will be achieved.

1. International Energy Agency: World Energy Outlook 2021

Progress of energy transition in Asia

Asia has made good progress towards its energy transition over the past decade. Emerging and developing Asia's Energy Transition Index (ETI) for 2021 – a benchmark measure on the progress of the energy transition of a country based on the current energy system and transition readiness – has improved at the fastest rate of 6% over the past decade, surpassing all other regions in the world[2]. This is mainly due to improvement in energy access and security seen in large emerging markets like China and India.

Regional Energy Transition Index (ETI) score 2021 and change from ETI 2012



Source: World Economic Forum, Amundi

Picking up the pace of the energy transition, an increasing number of countries in Asia are announcing more aggressive climate pledges. In 2020, South Korea and Japan announced net zero pledges by 2050, which have been legally enshrined into their respective laws. Shortly after, China announced to peak its carbon emissions by 2030 and become carbon neutral by 2060. In 2021, China also announced to stop building new coal-fired power projects abroad, joining the earlier commitments made by South Korea and Japan on a similar front. Indonesia targets to reach net zero carbon emissions by 2060, and one of the most recent is India with the target to reach net zero carbon emissions by 2070.

As reaching net zero emissions by 2050 is necessary to meet the Paris Agreement, the current pledges made by countries so far still leave room for further enhancement. **Compared to net zero pledges, many have yet fully committed to phase-out coal, given the role that coal has played in the economic development and energy mix in the region.**

2. https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf

Selected Countries	Coal Exit Commitment[3]	Net Zero Target
Japan	Phase out inefficient coal power plants by 2030. Coal power generation was revised to be 19% by 2030, down from earlier target of 26%. End international coal financing by the end of 2021.	By 2050
South Korea	Coal phase out by 2050. End all new financing for overseas coal projects, stop issuing permits for new domestic coal-fired power plants, and introduce a carbon tax (under "Green New Deal"). **Signatory of Global Coal to Clean Power Transition Statement.**	By 2050
China	To reach peak coal consumption, capacity and emissions from the power sector by 2025. No longer funding the construction of new coal-fired power projects overseas.	By 2060 (peak emissions by 2030)
India	Nothing specific on coal exit.	By 2070
Indonesia	Stop building new coal-fired plants after 2023, with additional capacity only from renewable sources. Phase out coal-fired power plants by 2040 if it gets sufficient financial help from the international community. **Signatory of Global Coal to Clean Power Transition Statement.**	By 2060
Vietnam	No new coal-fired power plants except those already under construction/planned for completion by 2025 or sooner. Phase out coal by 2040. **Signatory of Global Coal to Clean Power Transition Statement.**	By 2050
Philippines	No longer accepting proposals for new coal power plants except for those approved/under construction. **Signatory of Global Coal to Clean Power Transition Statement (except for coal phase out)**	No target set
Malaysia	To retire ~7GW of coal-fired capacity by 2039, and coal's proportion to lower to 20% in 2036.	By 2050
Singapore	Phase out unabated coal power by 2050, and shift away from unabated coal power generation in the 2040s. **Signatory of Global Coal to Clean Power Transition Statement.**	As soon as viable in second half of century
Thaïland	Nothing specific on coal exit.	Before 2050

Source: Public announcements

Notably, from certain corporate dialogues in Asia, some companies seem to have reached a plateau when they meet the respective national net zero commitment. We need to bear in mind that all market players must do their part to avoid the most dreadful consequence of climate change. Therefore, this means **that national commitments should not be a limitation or constraint for companies in setting ambitious net zero targets to align with the Paris Agreement.**

3. Public announcements and COP26 announcements including global coal to clean power transition statement

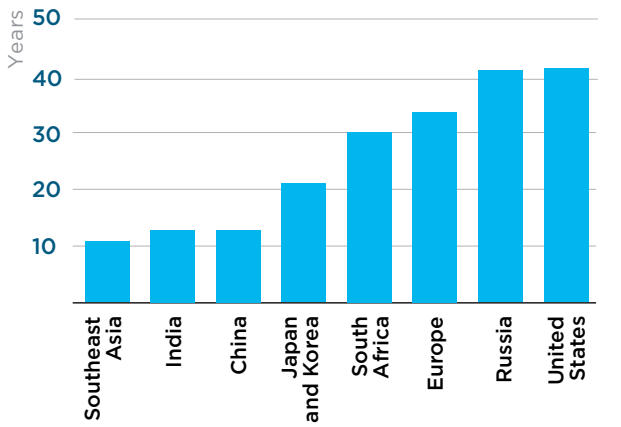
Shift away from coal

Compared to other parts of the world, **Asia faces a sticky problem – to rapidly cut ties with coal,** which makes up about half of the region's energy mix on average.

Much of Asia's growth in the past decades has been carbon-intensive, but evidence has shown that besides the environmental motive, most coal projects in fact are uneconomical when compared to renewables as cost competitiveness of renewables is rising. Based on the analysis done by Carbon Tracker, **new renewable projects are 77% more economically sound than operating coal, and this figure will further increase to 98% by 2026 and 99% by 2030[4].** Nonetheless, in certain markets, coal is still subsidized by governments which could avert the necessary support for renewable energy expansion. Coal exit should encompass phase-out from coal projects together with the removal of any direct and indirect policy support on coal.

For coal phase-out, cease construction of new coal projects is one part, and retire existing coal fleets is another issue alone. This retirement challenge is particularly profound in Asia: existing coal-fired power plants in Asia are relatively young at 13 years of age on average, way below the average age of 30-40 years in developed markets and their usual life span[5]. To phase out young coal fleets, **there are two options: retire early or repurpose to an alternative clean energy solution.** To ensure that no coal assets are stranded and prolonged longer than they should, we emphasize that in coal phase-out planning, priority should always be given to retirement, and where feasible, repurpose; only when there is no other better alternatives can retrofit with technology to improve efficiency or carbon capture features be a solution. Coal retirement will be a real challenge to Asia's energy transition with its young age of existing coal fleets, and more are coming live from the pipeline in the foreseeable future.

Average age of existing coal power plants in 2020 in selected regions



Source: International Energy Agency

For this reason, **much effort has been devoted to come up with innovative solutions in accelerating coal phase-out while minimizing the risk of stranded coal assets in Asia.** The Energy Transition Mechanism (ETM) announced by the Asian Development Bank (ADB)[6] at COP26 aims to resolve this thorny issue. The ETM, a funding vehicle financed through a blend of equity, debt and concessional finance, will potentially retire nearly 50% of coal-power plants in Indonesia, the Philippines and Vietnam within the next 15 years. More innovative mechanisms are expected to be part of the regional coal phase-out and energy transformation response.

4. Carbon Tracker: Do Not Revive Coal
5. International Energy Agency: World Energy Outlook 2021
6. Asian Development Bank: announcement on Energy Transition Mechanism

Reliance on coal

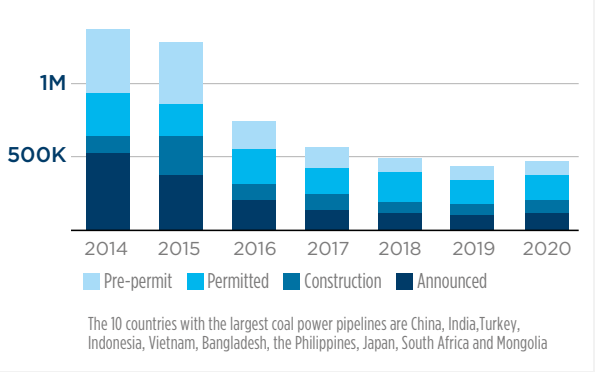
Sustainability comes with its own challenges. Energy demand per capita for emerging and developing Asia has grown 18% in the last decade, and the figure is anticipated to double by 2050[7]. Unfortunately, coal has been and likely will continue, in the near future, to be a key source of energy in many parts of Asia.

Based on International Energy Agency (IEA) estimates, **nearly 80% of coal demand in 2020 comes from Asia, and the level will stay well above 80% across all climate scenarios by 2050**[8]. Reliance on coal is a prominent challenge particularly in China and India as coal remains the single largest energy source in their energy mix, making up more than half of the total[9]. For both countries, coal is more than a fuel of economic growth - it represents not just energy security but sovereignty, having some of the largest coal reserves in the world. Although China has made the announcement to stop financing new coal projects overseas, many coal-fired power plants are still in the pipeline at its home. Energy crunch in late 2021 has also put renewed emphasis on optimizing coal capacity to meet development needs with energy security and stability as policy priority. India, another Asian coal giant, has also been heavily dependent on coal to meet its energy needs, but no specific target around coal exit has been made so far.

While it is difficult for developing countries to cut out coal, Vietnam and Indonesia, two of the world's top 10 coal-power generating countries, took a major step in 2021 with the pledge to stop unabated coal power in the 2040s. They were among the 46 countries that signed the Global Coal to Clean Power Transition Statement at COP26 in November 2021.

It was a welcomed move as they are both major coal developing and consuming countries. Coal already accounts for a significant part of their energy mix and they have some of the largest coal power projects in the pipeline[10].

Total planned coal power capacity (MW) for the 10 countries with the largest coal power pipeline (2014-2020)



Source: Global Energy Monitor

The coal phase-out is supposed to help Vietnam and Indonesia to reach their net zero targets by 2050 and 2060, respectively. **However, the emerging Asian countries have indicated that the targets can only be reached with technology transfer, investment and financial assistance from the international community.**

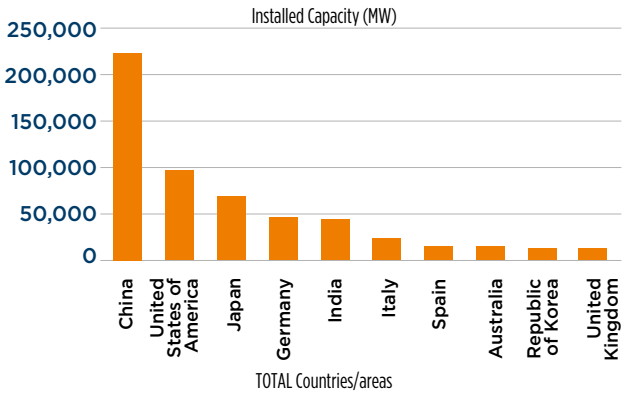
7. World Economic Forum: Fostering Effective Energy Transition 2021 report
8. International Energy Agency: World Energy Outlook 2021
9. BP: Statistical Review of World Energy 2021
10. Global Energy Monitor

Ramp up on renewable energy

Coal phase-out is a major step in energy transition, but for the world to achieve the Paris Agreement, this should be coordinated with sustained expansion of renewable energy. The falling cost and increasing availability of clean energy solutions offer tremendous opportunities in renewable energy expansion where solar and wind are leading the growth in Asia thus far.

To prioritize and steer investments towards renewable energy, there has been numerous policy measures and incentives rolled out across Asia. Many share similar visions, but the swift success in Vietnam surely stands out from the rest. Vietnam has seen great success in its solar and wind renewable energy push in recent years. For solar, Vietnam installed a total of 16.5 GW solar power in 2020, which is close to some other developed countries. In just a short span of time, Vietnam has developed one of the largest solar power capacity regionally, and ranks top 10 globally[11].

Installed capacity (MW) for solar energy by country in 2020



Source: International Renewable Energy Agency

Several drivers are attributable to the success of Vietnam's solar and wind development. **Strong government support and implementation of feed-in-tariffs (FiTs) were major catalysts, together with accompanying incentives in tax and exemptions. In addition, solar and wind are viable options for Vietnam from its natural resources and long coastline.**

Even though the desire for renewable energy continues to be strong, the grid overload and limitation can hamper additional renewable capacity such as the case of Vietnam. As a result, grid development such as building more grid infrastructure, upgrading transmission and distribution, and integrating renewable energy to the grid need to quickly catch up and be a key to overall renewable energy resilience. Besides grid development, energy efficiency and storage is also part of the energy transition solutions that help to address the intermittent issues of renewable energy.

The importance of grid development in energy transition is now commonly recognized. There was the recent launch of the Green Grids Initiative at COP26 for nations to accelerate the development of the grid infrastructure and technology required to enhance global grid flexibility and access[12].

Generally across Asia, power generation, transmission and distribution utilities are often state-owned or affiliated with a monopoly or oligopoly position for national interest and security reason. With the ambition to expand renewable energy aggressively, many countries start to recognize the need for grid infrastructure development and enhancement, and to allow private sector financing and other market players to come in to the picture. As seen in the case of Vietnam, Electricity Law was amended to allow for private sector investment in power infrastructure.

Overall, a more adaptable environment with participation from market players is conducive to the energy transition. Even between countries, given the diverse profile, regional collaboration is necessary to support one another through this transition. ASEAN Power Grid – an initiative to connect the region, initially on cross-border bilateral terms, then gradually expanding to the sub-regional level and finally to a totally integrated Southeast Asia power grid system – constitutes an example of regional initiative needed to transition to clean energy.

11. International Renewable Energy Agency
12. COP26 announcement: Green Grids Initiative

Role of feed-in-tariff

To incentivize the transition from conventional fuels to renewable energy, governments around the world have introduced many incentives, policies and tools, but the most noticeable is the feed-in-tariff (FiT).

FiT is a policy mechanism to spur the development of renewable energy and increase its competitiveness when compared to conventional energy. This mechanism requires electricity utilities to purchase electricity from renewable energy at a tariff determined by the authority that is guaranteed for a fixed period of time. These tariffs can vary between countries. The variation of FiT depends on factors specific to the country, including cost, capacity, duration, and location. FiT has influenced the development of renewable energy and contributed to large solar energy growth in places like Europe, China, Japan and Vietnam.

Likewise, the introduction of FiT in 2017 generated significant interest and growth for solar projects in Vietnam. Under FiT, grid operators are required to purchase renewable energy from producers at a rate which is above-market price. Thus, renewable energy producers are incentivized by price certainty, access to grid, and reasonable return for contract term that can be up to 20 years.

Gaining popularity for corporate renewable power purchase agreements (PPAs)

Corporate renewable PPA is a form of agreement to purchase renewable power between a corporate, typically a large industrial or commercial corporate, and a renewable power producer. The terms usually include pre-determined price, delivery and payment over a fixed period of time.

So far, many companies in Asia have primarily looked at onsite installation and solar projects as renewable power sources, but after reaching emission reduction targets for their own operations, companies have started examining ways to reduce indirect emissions associated with the purchase of electricity, steam, heating or cooling under scope 2 emissions. One of the solutions to do so is corporate renewable PPAs.

Corporate renewable PPAs have contributed tremendously to renewable energy development in markets such as the U.S. and Europe. It is also on the rise in Asia, largely driven by decarbonization plans, as well as falling renewable premiums in making renewables more attractive. Based on Wood Mackenzie's estimate, **corporate renewable PPA volume in Asia increased to 3.8 gigawatts (GW) in 2020, doubling from 2019 in a single year[13].**

Australia, India and Taiwan currently account for the majority of corporate renewable procurement in the region. Other markets are also rolling out measures in this space such as Vietnam's renewable PPA pilot program. Investors can engage companies in Asia with significant scope 2 emissions to procure corporate renewable PPAs in reducing their scope 2 emissions.

13. Wood Mackenzie

Financing the energy transition

The energy transition requires a massive increase in clean energy investment. It is estimated by the International Energy Agency (IEA) that **clean energy investment in emerging and developing economies in general need to expand by more than 7 times to above US$1 trillion under a net zero scenario by 2050[14].** Overall, investment would include clean energy expansion, grid development, energy efficiency and storage as mentioned in the previous section of this report.

Public finance will continue to be instrumental in Asia, but private finance, from regional, international and development finance agencies, will also have significant roles to play in climate financing. This consists of a variety of instruments and options, ranging from equity, debt, and capital market tools like green bonds, to carbon tax and trading markets.

Although climate financing has accelerated with the types of instruments available, it is still short of the US$100 billion per year commitment made at COP15[15]. **There is urgent need to rapidly scale up clean energy solutions and capacity in Asia, and this cannot be accomplished without targeted investments and transfer of technology transfer from the international community.** This is not an isolated issue. Many developing countries have called for support from developed countries and international communities, both on technical and financial assistance.

Green bond markets

Green bonds are use-of-proceed bonds that fund eligible projects with positive climate and environmental benefits. Green bonds have grown in volume and popularity in recent years. **For Asia, the growth is mainly driven by net zero commitments, decarbonization initiatives and the structural changes in Asia's energy mix, spearheaded by governments and businesses alike, which have established a pipeline of green projects and investments.** Green bond issuance from issuers in Asia has reached a milestone of more than US$100 billion in 2021. There is considerable scope for the segment to expand further as we expect to see enhanced transparency and disclosure that will be more in line with global standards, and altogether to improve the attractiveness of green bonds issued from Asia for investors.

14. International Energy Agency: Financing Clean Energy Investment 2021
15. UN and COP

Physical Risks in Asia

Besides the transition risk, Asia stands out to be one of the regions most exposed to physical climate risk, as millions of people are living in coastal regions. Extreme weather and climate hazards such as heat waves, rising sea levels, floods, storms, and droughts would have dreadful impacts in many parts of Asia; even worse, these extreme weather events are expected to be more frequent.

According to Verisk Maplecroft's research[16], **99 out of 100 most risk-prone cities in the world are located in Asia.** Extreme weather events have and will continue to cost Asia greatly. The loss in economic value for Asia would be around 15-20% of GDP in the likely range of global temperature gains of 2-2.6°C by mid-century. The worst of all is Southeast Asia at 29% loss in GDP by mid-century under the same scenario as projected by Swiss Re Institute[17].

Impact on GDP in all regions by mid-century under temperature rise scenario

	Temperature rise scenario, by mid-century			
	Well-below 2°C increase	2.0°C increase	2.6°C increase	3.2°C increase
	Paris target	*The likely range of global temperature gains*		*Severe case*
Simulating for economic loss impacts from rising temperature in % GDP, relative to a world without climate change (0°C)				
World	-4.2%	-11.0%	-13.9%	-18.1%
OECD	-3.1%	-7.6%	-8.1%	-10.6%
North America	-3.1%	-6.9%	-7.4%	-9.5%
South America	-4.1%	-10.8%	-13.0%	-17.0%
Europe	-2.8%	-7.7%	-8.0%	-10.5%
Middle East & Africa	-4.7%	-14.0%	-21.5%	-27.6%
Asia	-5.5%	-14.9%	-20.4%	-26.5%
Advanced Asia	-3.3%	-9.5%	-11.7%	-15.4%
ASEAN	-4.2%	-17.0%	-29.0%	-37.4%
Oceania	-4.3%	-11.2%	-12.3%	-16.3%

Note: Temperature increases are from pre-industrial times to mid-century and relate to increasing emissions and/or in creasing climate sensitivity (reaction of temperatures to emissions) from left to right.

Source: Swiss Re Institute

16. Verisk Maplecroft: Environmental Risk Outlook 2021
17. Swiss Re Institute: The economics of climate change: no action not an option

Extreme weather not only has an impact regionally, but also globally due to Asia's prominent role in the global production and supply chain. Rising temperatures will result in reduced working hours in industries that are labor intensive in outdoor environment such as agriculture and construction. Rising sea levels and severe flooding create threats that may require relocation of people and critical infrastructure.

At present, Asia has a high level of critical infrastructure in hazard risk areas. According to the World Meteorological Organization (WMO), more than a third of power plants, cable networks, airports and road infrastructures in the region are located in higher risk areas prone to climate hazards[18]. The disturbances from erratic climate patterns mean that potential loss from extreme weather events will only be on the rise. Therefore, it is important to build resilience specific to each region and reduce exposure as much as possible.

Countries and businesses start to identify the pressing need to prepare for the worst of climate impacts. Common measures to minimize such exposure include elevating critical infrastructure as the case in Singapore where new airports and ports are being built higher than before (at least 5 meters above sea level), and strengthening defenses such as wetlands, mangroves, seawalls, or earthen bunds to protect from rising sea levels. Other adaptive measures such as forecast, monitoring, early warning system and relief shelters also need to improve on the pace and scale of implementation. For instance, Tokyo Metro has started monitoring precipitation data from satellite[19]. Relocating of people and critical infrastructure is one of the toughest decisions to make but sometimes it is the most viable one as seen in Indonesia where they decided to relocate the sinking capital city from Jakarta to the island of Borneo.

18. World Meteorological Organization: State of the Climate in Asia 2020
19. The Government of Japan: Using Radar to Scan rainclouds in 3D to Protect Subways from Flooding

Just transition

Transition towards a clean and sustainable economy must be in a fair and just approach that is inclusive of all people and societies. Embarking on a rapid energy transition in Asia, particularly for higher emission industries and sectors, could often lead to job transformation, replacement or loss if not planned properly. Careful planning needs to be part of the big transition picture to ensure that the negative impacts on vulnerable people and communities are alleviated given that much of the economic development and hence livelihood of people have been dependent on coal in recent years. Accommodative policies and measures to encourage development of alternative industries and creation of jobs are desired to avoid hollowing out communities and families in need.

Energy transition does come with new opportunities and job creation across the clean energy value chain. Based on the International Labor Organization's research, **net job creation is estimated at 14 million in Asia in the green economy**[20]. Although Asia is on the top of the list for job creation in clean energy, the pace and progress of reskilling is rather lagging. With Asia's relatively nascent renewable energy market and the requisite for reskilling and upskilling existing large workforce, more and more countries and businesses are putting these as top priority in employment development. As discussed **in Amundi's ESG research report on "Stakeholders in the Just Transition" series**[21]**,** transparent social dialogue, anticipation of change through technology investments, universal access to training and skill development, and the needs for social safety nets are some of the areas of action in the just transition roadmap. The international community can provide financial and technical support as well.

From a physical risk perspective, some of the poorest communities reside in places most susceptible to climate risks; very often, they are also the most deprived, whether socially, economically or both. Extreme cyclones, monsoons and floods have led millions of people in China, India, Bangladesh, Pakistan and other places to face displacement - some are temporary, pre-emptive measures, but many end up long term. Such displacement could put people in poverty because they may need to abandon what they have originally, be it job, house, and wealth.

As the costs of extreme events in Asia are rising and the trends are expected to continue, **countries must step up efforts to adapt to climate change events and to invest in clean energy and other adaptive and mitigating technologies.** This should benefit not just environmentally but socioeconomically too, with new job creations and opportunities.

The fight against climate change and inequalities are inseparable. Climate change can have a negative effect on inequality, sometimes deepening and exacerbating the existing divides between the haves and have-nots. UN experts estimated that climate change could force an additional 120 million of people into poverty by 2030[22]. Ensuring the transition is inclusive and equitable will require coordinated efforts where key stakeholders must take into account both environmental and social issues.

20. International Labor Organization
21. Amundi ESG Research: Stakeholders in the Just Transition - N°1 Integrating workers into Investment and Financing
22. United Nations

Conclusion

Climate transition in Asia has its distinct challenges. Balancing economic development, climate actions, and social inclusion will be critical to ensure a just transition pathway that leaves no one behind. Today, climate change commitments, capabilities and funding levels have stepped up but have yet to fully answer the call. For many parts of Asia, the focus has moved from target setting to detailed planning and implementation in a holistic and just approach that addresses both the environment and social issues. Building a conducive policy environment and directing capital and funding into clean energy areas are essential to achieve climate goals.

All in all, a just transition to fight against climate change requires a global effort and support from all stakeholders – from developed to developing countries, from public to private sectors, from communities to individuals – to work together and reach shared goals.