FAIR FINANCE ASIA

SEI Stockholm Environment Institute

FINANCING THE JUST TRANSITION

POWERING ASIA'S SUSTAINABLE ENERGY FUTURE

DECEMBER 2022

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CONTENTS

CONTENTS

SUMMARY AND HIGHLIGHTS

Fossil fuels will continue to dominate energy consumption in Asia in the coming decade. This creates a huge challenge for the region to align with international agreements to limit global temperature rise to a maximum of 1.5°C. South Asia and Southeast Asia are the regions least dependent on fossil fuels while West and Central Asia are the most dependent. While China, India, Pakistan and the Philippines have seen particularly strong growth in wind, solar and geothermal energy production, but the production of fossil fuel power has also grown. For all Asian countries, the challenges to achieve a just energy transition – a fair and equitable process of moving towards a post-carbon societyjust energy transition – are enormous.

FINANCIAL FLOWS TO RENEWABLE ENERGY AND FOSSIL FUELS IN ASIA

As this report highlights the role of the financial sector in a just energy transition, the research began with an analysis of the energy sector financing and investments of Asian financial institutions from 2016 to 2022. This produced the following key findings:

- Energy financing and investments by Asian banks and investors are still predominantly directed towards fossil fuels. Renewable energy accounts for only 14% of Asian banks' energy financing during the past six years on average, with no discernible upward trend. Of all the outstanding energy investments by Asian investors as of September 2022, only 21% supported renewable energy.
- Some Chinese banks, as well as some important investors from China and the Philippines are transitioning towards renewable energy. This trend should point the way for other financial institutions across Asia, especially in Japan, China and India which are still massively funding fossil fuels.

CHALLENGES TO THE JUST ENERGY TRANSITION IN ASIA

Case studies of 13 Asian countries were then conducted using literature reviews, semi-structured interviews and an NGO survey. These countries, which included Cambodia, India, Indonesia, Japan, Pakistan, Philippines, Thailand and Vietnam, are a mix of Fair Finance Asia (FFA) member countries and other countries vital to Asia's just energy transition namely Bangladesh, China, Malaysia, Singapore and South Korea given their significant financial flows significant financial flows and dependence on fossil fuel energy.

Lessons were then drawn from the main challenges these countries face with a just energy transition. The following challenges were identified, with (groups of) countries distinguished as much as possible:

- The climate commitments of the 13 Asian countries featured in this study are sufficiently aligned with a 1.5°C scenario, as their plans do not lead to a sizable reduction of greenhouse gas (GHG) emissions up to 2030. This is due to the following shortcomings and obstacles:
  - All countries are still planning to add new fossil fuel-based power plants to their existing capacity and many are planning to build new coal-fired power plants.
  - There is a widespread belief among Asian governments circles that a larger share of renewable energy will lead to higher electricity prices and a less reliable electricity supply.
  - Fossil fuel subsidies in nine of the 13 countries are difficult to abolish because of interests in the fossil fuel sector (especially in countries with a large coal mining industry such as China, India and Indonesia) and because politicians fear losing popular support.
  - National electricity companies (e.g. Indonesia, Thailand and Vietnam) control access to the grid and can almost unilaterally determine power procurement plans. As a result, no Asian country, apart from India and the Philippines, offers attractive conditions to independent power producers to develop renewable energy projects.
  - The carbon taxes being implemented or considered in seven of the countries are much too low to have a meaningful impact, and the carbon trading schemes being introduced in six of the countries are not well-developed and also have priced carbon too low.
- Archipelagic countries such as Indonesia, the Philippines and countries in the Mekong region, struggle with underdeveloped national and cross-border power grids.

- Asian financial institutions could potentially play an important role in supporting a just energy transition, but very few have committed to stop financing coal and/or develop concrete net-zero commitments.
- Financial regulators across Asia have adopted taxonomies that aim to indicate which technologies and activities should receive financing and which ones should not. However, most fall short of labelling investments in coal as unsustainable and do not indicate when or how other fossil fuel investments should be phased out.
- Especially in countries with significant coal mining sectors (such as China, India, Indonesia, Japan and South Korea) labor policies are needed that give more attention to skills training and are guide coal miners towards green jobs and green industries.
- While pressure to reduce or abolish fossil fuel subsidies is growing, alternative policies that compensate consumers and other fossil fuel dependent groups still need to be developed.
- Consideration of the gendered impacts of the just energy transition and the impacts on vulnerable groups of the energy transition process is mostly limited to international donors and civil society organizations (CSOs), while government policies are largely absent in Asia.
- Preventing and mitigating the socio-ecological impacts of renewable energy production, such as water use, land rights, food security and pollution, do not yet receive sufficient attention in the energy policies of the 13 Asian countries.

RECOMMENDATIONS TO ACCELERATE THE JUST ENERGY TRANSITION IN ASIA

Based on the findings of this study, recommendations were formulated for governments, companies, financial regulators and financial institutions – all key actors in accelerating the just energy transition in Asia. The following is a summary of recommendations to achieve the nine principles of the just transition:

1. **No financing for new coal projects for electricity generation and phasing out existing coal-based power generation**

   Governments should develop, together with other stakeholders, a national strategy to speed the transition from coal to renewable energy. These plans should include a ban on all new coal projects and a detailed phase out-plan for existing coal-based power generation. The power and influence over government policies of vested interests promoting coal, such as coal mining companies and national electricity companies, should be drastically reduced.

   Financial institutions need to commit to an immediate ban on the financing of coal, and financial regulators should develop standardized and mandatory taxonomies that clearly exclude all coal-related activities. Energy companies, financial institutions and governments need to develop an active strategy for decommissioning coal-fired power plants, mobilizing the necessary funding.

2. **Development of a time-bound transition away from other fossil fuels for electricity generation**

   To achieve national plans for a just energy transition, governments should focus on drastically decreasing and eventually abolishing fossil fuel subsidies and introducing a high carbon tax instead of Emission Trading Schemes (ETSs).

   Financial regulators should support national just energy transition plans with standardized and mandatory taxonomies that define both 'green and brown' activities in each relevant economic sector. These categories should be revised regularly to ensure the taxonomy remains aligned with the 1.5°C pathway and concrete intermediate targets for all economic sectors.

   Energy companies should close, not sell, fossil fuel infrastructure and engage in responsible disengagement as part of a just transition.

3. **Active investment in renewable energy generation**

   Governments should develop, together with other stakeholders, a national strategy to accelerate the transition to renewable energy while also countering (perceived) risks, such as less grid stability, higher electricity prices and negative social consequences. This requires public and private investments in the development of electricity grids and energy storage facilities.

   It also crucial to establish transparent energy and electricity market auctions for renewable energy power procurement, including transparent Power Purchase Agreements (PPAs) and favorable Feed-in Tariffs (FiTs), to abolish fossil fuel subsidies and introduce a significant carbon tax.

   Financial institutions should take a proactive approach to financing renewable energy projects, for example, by offering technical assistance to project developers to make projects bankable and by creating a (collective) insurance mechanism to cover potential losses of renewable energy projects and bring down interest rates.

4. **Long-term planning and strategies to mitigate the adverse environmental and social impacts of renewables**

   The just energy transition requires the development of a national strategy to accelerate renewable energy investments. This should be guided by a careful planning process designed to prevent and mitigate adverse environmental and social impacts. Renewable energy development should focus on high-potential, low-risk country sites to simplify siting and permitting and avoid issues in the planning stages.

   Strategic land use options and technologies for less land-intensive deployment of renewable energy need to be explored, such as offshore wind projects and solar energy projects combined with agriculture.

   Regular social dialogue should take place to ensure the development process is accountable, and it should be standardized with due diligence processes and disclosure requirements. This requires protecting the civic space for participation in transition policies, particularly allowing CSOs to maintain their autonomy and independence in the process.

   Research funding should be made available to schools and universities, local communities and organizations, and small- and medium-sized businesses that want to participate in the just energy transition. This funding should not just be used for the development of renewable energy technologies, but also for research on behavior transformation, which is equally important in the transition.

5. **Respect for land rights and Free, Prior and Informed Consent (FPIC), and clear policies for community participation, gender sensitivity and consultation with CSOs in large energy projects**

   Due to their intensive land use, renewable energy projects must seek Free, Prior and Informed Consent (FPIC) from communities. Land should be acquired in a just manner, compensation must be adequate and the adverse impacts on communities and the environment should be minimized. The use of local practices in environmental and biodiversity conservation, as well as the participation of women, are key features of several successful cases of distributed renewable energy systems.

   Ensure that affected communities can participate fully, meaningfully and effectively throughout the entire project and strengthen their participation by including project planning, implementation, management and monitoring and evaluation (M&E). Resettlement plans and safeguard policies must be adequate and consistent with the cultural preferences and lifestyles of relocated communities. Ensure that mutually agreed legal grievance, mediation and settlement mechanisms are in place for affected communities to seek redress and hold developers accountable for any human and land rights violations.

   Engage local governments, community representatives and leaders as co-creators in the collection of baseline data on the characteristics of the area, its resources, socio-economic status and other relevant factors through participatory rural appraisal.

6. **Protection of the rights of workers and mainstreaming of Human Rights Due Diligence (HRDD) during the energy transition**

   Governments and energy companies should encourage mobility and training for workers, including holding special recruitment activities for workers to be resettled, providing employment services and vocational training for workers to transition to other sectors. Decent jobs need to be created with respect for workers' rights and equal opportunities for women, youth and minorities need to be provided through higher education, apprenticeship schemes, and on-the-job training.

   Financial institutions should embed HRDD in their decision-making processes for funding the energy transition programs and plans of governments and companies.

7. **Safeguarding the health, livelihoods, culture and heritage of communities impacted by the continued use of fossil fuels**

   Governments should require environmental and social impact analyses for energy project applications. Permits should only be given if applicants can provide and fund alternative solutions to minimize impacts on health, livelihoods and communities.

   Energy companies should implement nature-based solutions that lower the risk of a new renewable energy projects and provide environmental, social and economic benefits to communities. Investors and financiers should use sustainability-linked loans and bonds to finance energy projects with interest rates tied to environmental, social and governance (ESG)-related KPIs.

8. **Active and meaningful engagement and participation of women in the energy transition**

   A gender lens is necessary in all stages and aspects of the just energy transition. Governments should therefore ensure that

national climate and energy policies are sensitive to women's rights, particularly in the most vulnerable sectors and communities. This also requires building the skills of women, both through vocational training and higher education, and creating decent jobs that respect women's rights and provide them equal opportunities as their male counterparts

Energy companies should increase gender diversity, ensure a gender-balanced hiring strategy and establish a culture to foster gender-responsive working conditions for women that will cultivate their potential.

Financiers and investors should develop a set of gender-responsive approaches to the just energy transition and ensure their efforts are consistent, credible and transparent. They should also ensure that the projects being funded encourage transparent and inclusive planning, implementation and monitoring processes.

9. **Investments in access to electricity for all**

   Access to electricity for all is an important principle of the just energy transition that leaves no one behind. Instead of fossil fuel subsidies, new mechanisms are needed to compensate low-income households that spend a significantly higher proportion of their income on energy and to subsidize access to renewable energy where necessary.

   Governments should also create dedicated departments or specific programs for renewable energy development and planning, and should explore other means of private participation in the energy sector.

   Small-scale and distributed renewable energy solutions should receive the same fiscal and policy benefits as their large-scale counterparts. The lengthy administrative processes that energy companies and financiers must go through are a barrier to investment in remote, off-grid renewable energy projects and need to be streamlined.

   Banks and investors should explore how to finance infrastructure that will connect remote communities to the power grid and provide transboundary energy infrastructure for countries that share a land border.

ABBREVIATIONS

ADB	Asian Development Bank
AMS	ASEAN Member States
ASEAN	Association of Southeast Asian Nations
ASSET	Advanced technologies promotion Subsidy Scheme with Emission Reduction Targets
BSP	Bangko Sentral ng Pilipinas
CCPT	Malaysian Climate Change and Principle-based Taxonomy
CCS	Carbon Capture and Storage
CDM	Clean Development Mechanism
CSP	Concentrated Solar Power
DEDE	Department of Alternative Energy Development and Efficiency
DoE	Department of Energy
ESCO	Energy Service Company
ETM	Energy Transition Mechanism
ETP	Energy Transition Partnership
ETS	Emissions Trading Scheme
FFA	Fair Finance Asia
FiP	Feed-in-Premium
FiT	Feed-in-Tariff
FSC	Financial Services Council
GCEL	Global Coal Exit List
GFANZ	Glasgow Financial Alliance for Net Zero
GHG	Greenhouse Gas
GOGEL	Global Oil & Gas Exit List
ILO	International Labour Organization
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
IRENA	International Renewable Energy Agency
JCM	Joint Crediting Mechanism
KEPCO	Korea Electric Power Corporation
K-Taxonomy	Korean Green Taxonomy
LTS4CN	Cambodia's Long-Term Strategy for Carbon Neutrality
MNRE	Ministry of New and Renewable Energy (India)
NDC	Nationally Determined Contribution
NREP	National Renewable Energy Program
NSDC	National Skill Development Corporation
NZBA	Net-Zero Banking Alliance
OJK	Indonesian Financial Services Authority
PDP	Vietnamese Power Development Plan
PLN	Indonesian State-Owned Power Utility
PPA	Power Purchase Agreement
RUPTL	Indonesia's National Electricity Plan
SEACEF	Southeast Asia Clean Energy Facility
SEDA	Sustainable Energy Development Authority
SERC	Securities and Exchange Regulator of Cambodia
SOE	State-Owned Enterprise
SREDA	Sustainable and Renewable Energy Development Authority
TEP	Tradeable Emissions Permit
TCFD	Task Force on Climate-Related Financial Disclosures
TPES	Total Primary Energy Supplies
UN ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNEP	United Nations Environment Programme

INTRODUCTION

The Intergovernmental Panel on Climate Change (IPCC) warns that the world has less than 10 years to drastically reduce global greenhouse gas (GHG) emissions and avoid a catastrophic climate breakdown. At the end of 2020, the United Nations Environment Programme (UNEP) concluded that "to follow a 1.5°C-consistent pathway, the world will need to decrease fossil fuel production by roughly 6% per year between 2020 and 2030".[1]

In Asia, where there is heavy reliance on fossil fuels, a new vision of an energy future is urgently needed. In November 2021, Fair Finance Asia (FFA) published a study conducted by Profundo on the role of the financial sector in the just energy transition in Asia.

The study, **A future without coal: Banking on Asia's just energy transition,** revealed continued growth in Asia's coal sector even after the signing of the Paris Agreement in 2015 due to continued financing by banks and investors operating in the region.[2]

Financial institutions that fund Asia's energy sectors have an important role to play in developing and implementing a new vision of a just energy transition in Asia. The report defined the nine principles that must be met to achieve a just energy transition:

1. No financing for new coal projects for electricity generation and phasing out existing coal-based power generation.
2. Development of a time-bound transition away from other fossil fuels for electricity generation.
3. Active investment in renewable energy generation.
4. Long-term planning and strategies to mitigate the adverse environmental and social impacts of renewables.
5. Respect for land rights and Free, Prior and Informed Consent (FPIC), and clear policies for community participation, gender sensitivity and consultation with civil society organizations (CSOs) in large energy projects.
6. Protection of the rights of workers and mainstreaming of Human Rights Due Diligence (HRDD) during the energy transition.
7. Safeguarding the health, livelihoods, culture and heritage of communities impacted by the continued use of fossil fuels.
8. Active and meaningful engagement and participation of women in the energy transition.
9. Investments in access to electricity for all.

In this context, FFA commissioned this follow-up study to assess Asia's readiness to meet the nine principles of a just energy transition and highlighting the role of the Asian and global financial sector.

A summary of the findings of this study can be found in the first pages of this report.

THE REPORT IS STRUCTURED AS FOLLOWS

Chapter 1

Describes the research methodology.

Chapter 2

Presents an overview of the current dependence on fossil fuels as a primary source of energy and electricity in Asia, highlighting the barriers the barriers to a just energy transition in Asian countries.

Chapter 3

Identifies financing trends in renewable energy and fossil fuel by Asian financial institutions between in the period 2016 and 2021.

Chapter 4

Analyzes the challenges that which need to be addressed to achieve the nine principles of a just energy transition in Asia.

Chapter 5

Analyzes the which actions being taken, or could be taken, by different stakeholders to address these challenges identified.

Chapter 6

Draws conclusions from the study and offers recommendations on the steps different stakeholders can take to accelerate the just energy transition in Asia. rack.

1

METHODOLOGY

This chapter describes objectives, research questions and scope of the study and the methodology used to gather data and conduct the analysis.

1.1 OBJECTIVES, RESEARCH QUESTIONS AND SCOPE

1.1.1 OBJECTIVES

The overarching objective of this study was to explore the challenges and opportunities for a just energy transition in Asia. The term "just transition" was coined by the labor movement in the United States in the 1980s to express the need to retain jobs and protect the rights of workers when closing down coal mines and coal-fired power plants.[3] Today, "just transition" has expanded to encompass the "fair and equitable process of moving towards a post-carbon society"[4] and describes an advocacy strategy to address the "legacy of exploitation, ecocide and environmental, energy, climate and economic injustice."[5]

To explore the challenges and opportunities to meet the nine principles of the just energy transition in Asia and to highlight the potential role of the Asian and global financial sector, the study had the following objectives:

- Map financial flows to renewable energy, hydropower and fossil fuels in Asia to analyze whether financial flows are on track to realize a just energy transition.
- Identify the key challenges to increasing and accelerating financial flows to renewable energy in Asia.
- Identify the key social and environmental risks, with specific attention to gender-related risks of accelerating the development of renewable energy in Asia.
- Analyze regional and national policies on the energy transition to assess whether Asian countries are addressing the challenges and risks of accelerating renewable energy to achieve Nationally Determined Contributions (NDCs).
- Develop a set of recommendations for energy policymakers, financial institutions, financial regulators and other relevant stakeholders to set financial flows on a pathway to a just energy transition in Asia.

1.1.2 RESEARCH QUESTIONS

The following research questions were formulated:

1. What is the composition of the financial flows directed to renewable energy, fossil fuels (extraction, refining and power generation) and other non-fossil energy sources in Asia from 2016–2021, since the Paris Climate Agreement entered into force?
2. To what extent are financial flows to the Asian energy sector on track to realize a just energy transition?
3. What are the key challenges to increasing and accelerating financial flows to renewable energy in Asia?
4. What are the key social and environmental risks, with specific attention to gender-related risks, of accelerating the development of renewable energy in Asia?
5. Are national policies on the energy transition in Asian countries sufficiently addressing the challenges and risks of accelerating the development of renewable energy to achieve NDCs?
6. What role can different stakeholders play in setting financial flows on a pathway to a just energy transition in Asia?

   This question relates specifically to the following groups of stakeholders:

   - Multilateral development banks (MDBs);
   - Private financial institutions, such as banks and institutional investors, both Asian and non-Asian;

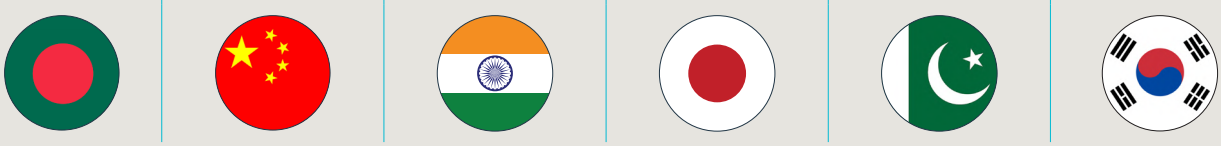
TABLE 1 - ASIAN COUNTRIES COVERED IN THIS STUDY

ASEAN Member States

Cambodia	Indonesia	Malaysia	Philippines	Singapore	Thailand	Vietnam
Lower-Middle Income	*Lower-Middle Income*	*Upper-Middle-Income*	*Lower-Middle Income*	*High-Income*	*Upper-Middle-Income*	*Lower-Middle Income*

Other Asian Countries

Bangladesh	China	India	Japan	Pakistan	South Korea
Lower-Middle Income	*Upper-Middle-Income*	*Lower-Middle Income*	*High-Income*	*Lower-Middle Income*	*High-Income*



Source: The World Bank (n.d.), "World Bank Country and Lending Groups", online: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups, visited on November 2022.

- Financial regulators in Asia and in the countries of origin of important financiers of the Asian energy sector; and
- Energy policymakers in Asia.

1.1.3 SCOPE

This study takes a regional perspective to identify obstacles and challenges to finance a just energy transition in Asia. Specifically, the study covers the 13 countries listed in Table 1.

1.2 FINANCIAL FLOWS ANALYSIS

The financial flows analysis in this report not only identifies trends in renewable energy financing in Asia, but also trends in fossil fuel financing from 2016 to 2021. This is because fossil fuel financing the latter undermines renewable energy financing: the more that is invested in fossil fuels, the more investments are needed in renewable energy to achieve a just energy transition. To analyze the trends in the financing of fossil fuels and renewable energy in Asia, the following methodology was applied.

1.2.1 DEFINITION OF FOSSIL FUELS, RENEWABLE ENERGY AND OTHER NON-FOSSIL FUEL SOURCES

Table 2 lists the energy sources that are considered renewable based on median life-cycle GHG emissions of below 50 grams of CO_2-equivalent per kilowatt hour. The table also indicates which energy sources are considered fossil fuels and other non-fossil sources.

Other non-fossil fuel sources are listed separately in Table 2 because although they are not fossil fuels, they are also not considered as renewable energy sources. This is partly because of the high life-cycle GHG emissions generated by some of these energy sources, and partly because of the huge environmental and social problems they create. It is useful to analyze this category of energy sources separately, as many Asian countries see them as alternatives to reduce their dependence on fossil fuels. However, the negative social and environmental impacts associated with these energy sources, and for some the high life-cycle emissions, make it very questionable whether expanding the production of these energy sources will contribute to a just energy transition.

1.2.2 SELECTION OF ENERGY COMPANIES

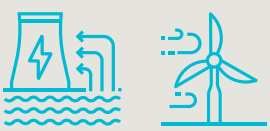
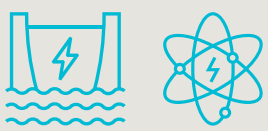
Global and Asian energy companies and projects were selected with a focus on companies and projects involved in renewable energy, other non-fossil fuel sources and/or fossil fuels (both in terms of input production and electricity generation). For each of the renewable energy activities listed in Table 2, as well as for non-fossil fuel sources, the largest companies in the Asian market were selected. This selection was based on market studies, data from industry federations and other reliable sources.

The selection of fossil fuel companies was based on companies included in the Global Coal Exit List (GCEL)[6] and the Global Oil & Gas Exit List (GOGEL)[7] that are active in Asia. This is because GCEL and GOGEL represent the most extensive lists of fossil fuel companies. The financing data prepared by Profundo for GCEL and GOGEL were used as the basis for the fossil fuel financing research.[8]

Among the companies involved in renewable energy, dedicated and diversified electricity generation companies were selected. Producers of windmills, solar cells and other equipment needed for the production of renewable energy were also included.

TABLE 2 - CLASSIFICATION OF ENERGY SOURCES

Fossil fuels	Renewable energy	Other non-fossil sources
Coal	Geothermal	Biomass (co-firing)
Gas	Concentrated solar power (CSP)	Biomass (dedicated)
Oil	Solar PV	Large hydropower
	Wind (onshore)	Nuclear power
	Wind (offshore)	Waste to energy
	Ocean and tidal energy	
	Micro-hydropower	

A total of 234 global and Asian energy companies were selected for the three categories. These companies cover around 75% of Asian production volumes in the past three years for all activities related to renewable energy, other non-fossil fuel sources and fossil fuels listed in Table 2.

1.2.3 ANALYSIS OF THE ACTIVITIES OF THE ENERGY COMPANIES

For each of the selected companies, an analysis was conducted of the proportion of their activities that could be attributed to fossil fuels, renewable energy, other non-fossil fuel sources and to other activities outside the energy sector. Using these segment adjusters made it possible to attribute the percentages of each loan to, and each investment in, companies involved in fossil fuel, and/or renewable energy, and/or other non-fossil fuel sources and/or other activities.

To further clarify the role played by segment adjusters, it is important to realize that a general corporate loan to an energy company, or an investment in the shares of that same company, can be used by the energy company to finance all types of activities. For general corporate loans and investments provided to companies active in more than one type of energy activity (fossil fuels, renewable energy and other non-fossil fuel sources) and/or in non-energy activities, the segment adjusters are used to attribute financing and investment amounts to the different types of energy in which the company is involved.

Due to a lack of available data, segment adjusters were not calculated in the same way for each company. Preferably, data on the annual capital expenditure (capex) per sector or segment in which the company is active were used. This data is also referred to as the annual addition to non-current assets per sector/segment.

For some companies, capex- data per segment was either not available, or the segment classification used by the company was too broad to distinguish between the activities listed in Table 2. In these cases, the following proxies were used, in order of preference:

- Installed electricity generation capacity by energy source (for electricity companies);
- Segment distribution of assets;
- Segment distribution of costs;
- Segment distribution of profits; and
- Estimate based on the description of the company's activities.

The segment distribution of capex, assets, costs and/or revenues was primarily identified through annual reports, stock exchange filings and investor presentations. Segment adjusters were calculated separately for each of the years researched in this study (2016–2021).

1.2.4 RESEARCH ON THE FINANCING OF ENERGY COMPANIES

To identify loans and underwriting services provided from 2016 to 2021 to all energy companies in this study, the following sources were used:

- Bloomberg, Refinitiv, Orbis, IJGlobal and Trade Finance Analytics databases;
- Annual reports and stock exchange filings of the energy companies;
- Company registers; and
- Media archives.

Refinitiv and portfolios published by investors were used to identify shareholdings in the selected companies per quarterly interval in the same period. Finally, this research used the Emaxx database to identify bond holdings at the most recent filing date at the time of the research, as historical bondholdings data were not available.

Using these data sources, data are collected on all Asian financial institutions, public and private, financing the energy companies selected in section 1.2.2. The data clarify for each financial institution which energy companies it has financed or invested in and for which amounts. These data are split out per year for the period 2016-2021.

1.2.5 COMBINING FINANCING AND INVESTMENTS WITH SEGMENT ADJUSTERS

The financing and investment data identified for each financial institution (section 1.2.4) are combined with the relevant segment adjusters (section 1.2.3). For example, we might have found that Oil Company A received a general corporate loan from Bank B for USD 100 million in 2019. During this financial year, 95% of Oil Company A's capex went to oil, 3% to wind power, and 2% to other activities outside the energy sector. This would mean that of this USD 100 million loan, USD 95 million is attributed to fossil fuels, USD 3 million to renewable energy, and USD 2 million is not included in the analysis.

In this way, all loans and investments by Asian banks and investors are assigned to two different forms of energy: fossil fuels and renewable energy. The financing of, and investments in, other non-fossil fuel sources and non-energy activities of the selected energy companies are not considered.

1.2.6 ANALYSIS OF THE RESULTS

The results of this financial research were analyzed to assess whether financing in renewable energy and

financing away from fossil fuels in Asia was on track in the 2016–2021 period. The analysis specifically assessesed:

- The proportion of financing for fossil fuels and renewable energy across Asian financial institutions between 2016–2021.
- The proportion of financing for fossil fuels and renewable energy for each of the main financiers in Asia between 2016 and 2021. Based on this analysis, we identified which financial institutions were frontrunners in financing renewable energy and which ones were behind and predominantly financing fossil fuels.

1.3 ANALYSIS OF POLICIES AND ROLES OF DIFFERENT STAKEHOLDER GROUPS

The analysis of the policies of the 13 countries included in this study and the roles of different stakeholder groups to identify the challenges related to achieving the nine principles need of a just energy transition, as well as the steps that stakeholders can take to overcome these challenges. The approach to this analysis is described in the following sub-sections.

1.3.1 POLICY AND LITERATURE REVIEW

To address research questions 3 to 6, policy documents and research reports were analyzed to the challenges and opportunities to achieve a just energy transition in each of the 13 countries. In the framework of this study, it was not possible to study these challenges and opportunities in depth.

The policy and literature review therefore focused on two main sources. First, government policy documents were collected that focused on two policy areas: climate change and financial regulation. These policy documents included each country's most recent NDC submission to the UNFCCC, as well as other policy documents that spelled out their climate mitigation and adaptation pathways. It also included the most recent policy documents published by financial regulators, central banks or securities exchange commissions on sustainable finance and investment.

The second source of information was reports by academics, think thanks, industry associations, consultancies and CSOs that summarized and analyzed key policies and developments in the 13 countries. This includes:

- *The Asian Development Bank's (ADB) Financing Clean Energy in Developing Asia*[9] and IRENA and CPI's *Global Landscape of Renewable Energy Finance*.[10] These two reports were reviewed in their entirety and key references from relevant sections were consulted.
- A literature search of the SCOPUS academic database for peer-reviewed literature.
- Google searches to identify key reports on specific subjects and countries.

The policy documents and reports way were analyzed and relevant data and analyses were included in this report. Based on these reports, interview questions were formulated for the interviews with key experts (section 1.3.2).

1.3.2 INTERVIEWS WITH KEY EXPERTS

To elaborate and refine the analysis and corroborate findings from the policy and literature review (section 1.3.1), **31 semi-structured interviews were conducted with key experts.**

The interviews aimed to identify the current challenges to increasing and accelerating a just energy transition in Asia, to identify important social and environmental risks (especially gender-related risks) and to discern whether current policies were sufficiently addressing these challenges and risks. Experts from different stakeholder groups were selected to capture diverse perspectives and different views on the research questions.

An anonymized list of the interviewees is included in Appendix 1 of this report. Minimal demographic data is provided to protect the safety and privacy of all stakeholders. The organizations that the interviewees represented are also not included in this report. However, we can disclose that of the 31 interviewees, nine represented international development organizations (including, among others, GIZ and the World Bank), four represented banks and other financial institutions, 11 represented smaller CSOs, NGOs and think tanks, one represented a university, four represented energy companies, and two were policymakers.

1.3.3 SURVEY OF ASIAN NGOs

An online survey of NGOs in Asia was conducted to capture their views on the challenges and opportunities for a just energy transition in the region. The survey of eight questions was sent to more than 300 CSOs and NGOs in the 13 countries included in the study. The list of potential respondents was compiled mainly through desk research of grassroots organizations, CSOs and coalitions that advocated for the environment, climate change, women and gender equality, energy, sustainable development and related areas. A minimum of 20 organizations were identified per country through manual web scraping. The response rate was low at less than 5% from organizations in 11 of the 13 countries. As such, additional data was gathered from literature, company reports and case studies to supplement the findings on the role of CSOs in Asia's energy transition.

1.4 PRINCIPLES OF THE JUST ENERGY TRANSITION

The nine principles of the just energy transition in Asia are covered in the following chapters and sections:

1. No financing for new coal projects for electricity generation and phasing out existing coal-based power generation: chapter 3 and sections 4.2.1, 4.6.1 and 5.1.
2. Development of a time-bound transition away from other fossil fuels for electricity generation: sections 4.1 and 5.1.
3. Active investment in renewable energy generation: chapter 3 and sections 4.2 and 5.1.
4. Long-term planning and strategies to mitigate the adverse environmental and social impacts of renewables: sections 4.7 and 5.3.
5. Respect for land rights and Free, Prior and Informed Consent (FPIC), and clear policies for community participation, gender sensitivity and consultation with CSOs in large energy projects: sections 4.7, 5.3, 5.7 and 5.8.
6. Protection of the rights of workers and mainstreaming of Human Rights Due Diligence (HRDD) during the energy transition: sections 4.7.2 and 5.8.
7. Safeguarding the health, livelihoods, culture and heritage of communities impacted by the continued use of fossil fuels: sections 5.7 and 5.8.
8. Active and meaningful engagement and participation of women in the energy transition: sections 5.7 and 5.8.
9. Investments in access to electricity for all: sections 4.4, 4.7.3 and 5.6.2.

1.5 DRAWING CONCLUSIONS AND FORMULATING RECOMMENDATIONS

The report concludes with the steps needed to leverage financing to achieve net-zero targets in Asia and move the region towards a just energy transition. The conclusions are divided into the nine principles of the just energy transition.

The conclusion also offers recommendations on the roles that different stakeholders can play in directing financial flows to a just energy transition in Asia. Specific recommendations are provided for:

- Energy and climate policymakers in Asia;
- Financial regulators in Asia and the countries of origin of important financiers of the Asian energy sector;
- Private financial institutions, such as banks and institutional investors, both Asian and non-Asian;
- Energy companies active in Asia;
- MDBs and international development organizations;
- International CSOs and philanthropic foundations; and
- Civil society and grassroots organizations in Asia.

The conclusions and practical recommendations are drawn from the research, especially the literature review and the interviews, as well the researchers' experience and expertise. The financing analysis also informed this section, as the recommendations to financial institutions differentiate between frontrunners and laggards (section 1.2).

1.6 LIMITATIONS AND GAPS

The analysis in this report has limitations due to the limited resources and time available for this research project. First, it was not feasible to conduct a systematic and exhaustive review of the policy and market conditions in each of the 13 countries. Collecting and analyzing a broad range of primary sources was not possible so, instead the research team relied primarily on reports by think tanks, consultancies, academics and CSOs.

To some extent, and for some countries more than others, this limitation was overcome by the large number of interviews conducted with experts, each of whom had been working for years on some of the issues covered in this report. However, as the anonymized interviewee list (see Appendix 1) shows, there were more interviewees with expertise on certain countries (Indonesia, Philippines, Thailand, India) than others (e.g., Pakistan, China, South Korea, Japan).

As a result, the findings do not provide an all-encompassing picture of the challenges and opportunities of the just energy transition. Rather, the report offers key messages about the options available for different stakeholders to accelerate and promote the just energy transition in Asia. Each of these options merits further study to dig deeper into the specific country contexts.

2

ASIAN DEPENDENCE ON FOSSIL FUELS

This chapter assesses the dependence of Asian economies on fossil fuels, explores the extent to which renewable energy has been integrated in electricity grids and addresses the challenges and opportunities for Asian countries in a just energy transition.

2.1 PRIMARY ENERGY SUPPLY AND FOSSIL FUEL RELIANCE IN ASIA

Fossil fuels continue to dominate both Total Primary Energy Supplies (TPES) and electricity mixes across the Asian continent. Table 3 presents some regional and national estimates of TPES reliance on fossil fuels, as of 2018. As shown, South Asia is the least dependent region on fossil fuels, which account for 62% of TPES while Central Asia is 97% dependent on fossil fuels. India (77%), Japan (88%) and China (89%) also rely heavily on fossil fuels. It is noteworthy that *"except for Japan, all other countries and subregions experienced a rise in TPES fossil fuel dependence in 2018 compared to that in 2000."*[11]

Electricity mixes are also intricately tied to fossil fuel consumption (see Table 4). Note that the sum of the two columns in Table 4 do not necessarily add up to 100% because only solar PV, wind and geothermal power are included in the percentage mix of renewables. This notably excludes hydropower, on which some nations depend heavily.

On average, the 13 countries depend on coal, oil and natural gas to meet 77% of their electricity demands, with more than half (seven) relying on fossil fuels for at least 80% of power production. Notably, Singapore relies on natural gas to produce almost 97% of its electricity and is therefore the most fossil fuel-dependent country in the sample.

Dependence on fossil fuel for energy and electricity consumption is the result of significant investment in the industry. Table 5 denotes domestic Chinese energy investments from 2016 to 2019, disaggregated by industry. As shown, China invested more than RMB 13 trillion (USD 1.9 trillion) in coal mining alone, and more than RMB 10 trillion (USD 1.4 trillion) in oil and natural gas extraction.[12] More recently, according to the China Electricity Council, Chinese investments in thermal power stood at RMB 67 billion (USD 9.7 billion) in 2021 and RMB 41 billion (USD 5.9 billion) in 2022 (from January through July inclusive).[13]

TABLE 3 - ESTIMATES OF ASIAN TPES RELIANCE ON FOSSIL FUELS IN 2018

Country or region	Quantity fossil fuel (Mtoe)*	Fraction of total TPES (%)
India	920	77
Japan	426	88
China	3,198	89
Central Asia	159	97
East Asia	426	86
West Asia	25	90
Southeast Asia	683	79
South Asia	178	62

Source: Susantono, B., Zhai, Y., Shrestha, R. M. and L. Mo (eds) (2021), Financing Clean Energy in Developing Asia, Manilla: Asian Development Bank, p.137.
*Mtoe = millions of tonnes of oil equivalent.

TABLE 4 - SHARES OF FOSSIL FUELS AND RENEWABLES IN THE 2020 ELECTRICITY MIXES IN ASIA

Country	% fossil fuel	% renewables+
Bangladesh	85.5	3.6
Cambodia**	51.4	1.0
China	67.4	27.8
India	58.5	28.3
Indonesia	84.7	13.0
Japan*	77.0	17.0
Malaysia	81.6	16.7
Pakistan	61.0	29.0
Philippines	78.0	22.0
Singapore	96.8	3.2
South Korea**	87.0	3.0
Thailand	84.1	4.3
Vietnam	84.0	16.0

Source: Various – see section 1.2.3.
*2018 values reported as more recent and reliable data was not available.
**2019 values reported as more recent and reliable data was not available.
+Renewables only include solar and wind power.

TABLE 5 - CHINA'S INVESTMENTS IN THE ENERGY INDUSTRY, BY SECTOR (RMB BILLIONS)

Industry	2016	2017	2018	2019
Coal mining	3,037	2,649	2,804	3,634
Oil and natural gas extraction	2,330	2,649	2,630	3,306
Electricity, steam and hot water production and supply	24,772	24,284	19,342	19,303
Petroleum processing and coking	2,696	2,677	2,947	3,313
Gas production and supply	2,135	2,230	2,733	2,802
Total	**34,972**	**34,489**	**32,830**	**35,162**

Source: China's National Bureau of Statistics, data on China's fixed asset investments in the electricity industry 2016–2019, online: https://data.stats.gov.cn/easyquery.htm?cn=C01, viewed in August 2022;
Wang, Q., (2020), Energy Data 2020, Beijing: iGDP, online: https://www.efchina.org/Attachments/Report/report-lceg-20210430-3/2020%E8%83%BD%E6%BA%90%E6%95%B0%E6%8D%AE.pdf, viewed in August 2022.

FIGURE 1 - COAL RESERVE DISTRIBUTION IN ASIA AS OF 2021

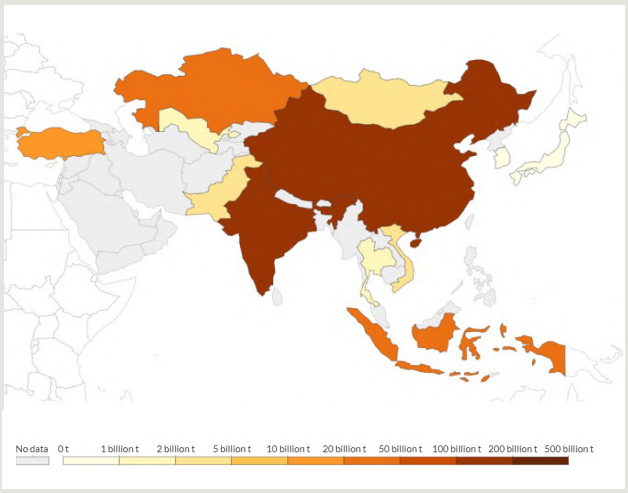
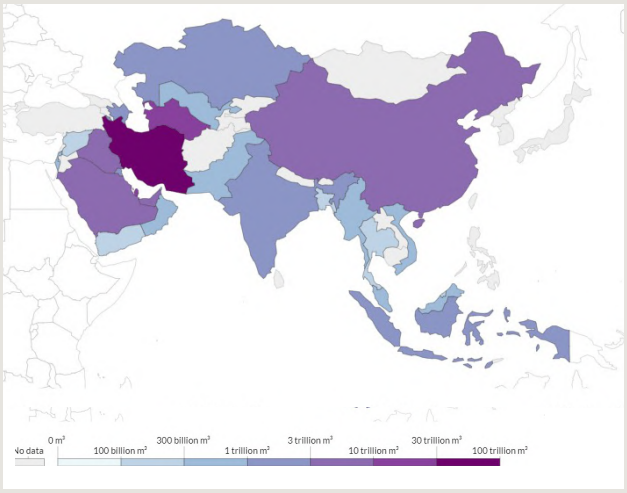


FIGURE 2 - NATURAL GAS RESERVE DISTRIBUTION IN ASIA AS OF 2021



Source: Ritchie and Roser (2022), "Our World in Data: Fossil Fuels", Our World in Data, online: https://ourworldindata.org/fossil-fuels#coal-reserves, viewed in September 2022.

Cambodia and India are, on the surface, the two least fossil fuel-dependent countries in the sample, but there are two caveats. Cambodia used coal (3,734 GWh) and oil (732 GWh) to generate 51.4% of its 8,675 GWh of electricity in 2020, but only generated 93 GWh (1.0%) with renewables (entirely solar PV) and the remainder was almost entirely hydropower (4,025 GWh, or 46.4%). In India's case, a 58.5% dependence on fossil fuel for electricity production translates to more than 236 GW of installed fossil power capacity, the bulk of which is in the form of coal (204 GW) and natural gas (25 GW). Altogether this indicates that fossil fuels, particularly coal and natural gas, remain pivotal for electricity generation throughout the Asian continent, even for economies that are increasing the share of renewables in their energy mix, like India (see section 2.3).

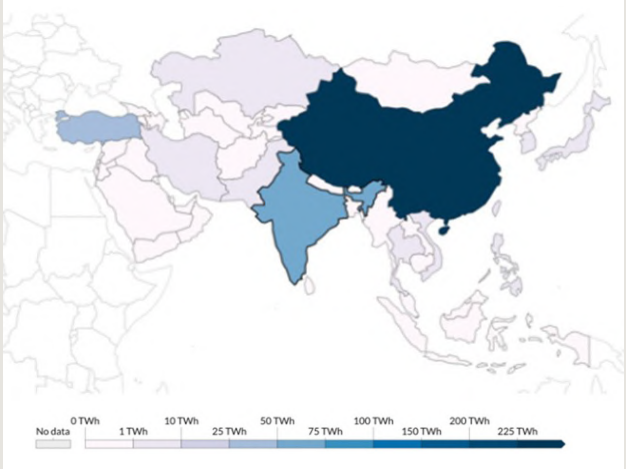
Figure 1 and Figure 2 map the distribution of proven coal and natural gas reserves in Asia. Clearly, some countries rely heavily on domestic reserves to meet the fossil fuel-intensive energy demands depicted in Table 4, including China, India and Indonesia. Meanwhile, other players have much lower fossil fuel reserves and therefore rely on imports to meet demand, including Japan, South Korea and Singapore.

2.2 RENEWABLE ENERGY ACROSS ASIA

Despite immense dependence on fossil fuels across the continent (see section 2.2), Asia has experienced impressive growth in installed renewable energy capacity in recent years. Although biomass and hydropower have historically accounted for the greatest shares of "clean" installed capacity in the region, the share of wind and solar PV in national energy mixes has increased throughout the continent from 2000 to 2018. The exceptions are Japan and in East Asia where shares of non-renewable power have grown in the same period.[14] Moreover, between 2010 and 2018, solar electricity generation in Asia *"increased by fifty-four-fold, i.e., from over 5.3 terawatt-hours (TWh) in 2010 to over 292 TWh in 2018. During the same period, the global production of solar electricity increased by only sixteen-fold"*.[15] Installed solar capacity in Asia increased by another 19% from 2020 to 2021, namely from 702 GW to 849 GW.[16] Meanwhile, onshore and offshore wind power production experienced a more humble five-fold increase between 2010 and 2018, from 71 TWh to 440 TWh.[17]

Figure 3, Figure 4 and Figure 5 disaggregate the renewable energy data presented in Table 4 by energy type and maps the distribution of solar PV, wind and geothermal power-producing centers in Asia. Solar power generation is universal across Asia, with China (327 TWh), Japan (86,27 TWh), India (68.31 TWh), Vietnam (25.77 TWh) and South Korea (21.82 TWh) generating the most electricity. Installed geothermal energy capacity is highly concentrated in archipelagic nations such as Indonesia (2,131 MW),

FIGURE 3 - MAP OF WIND POWER PRODUCTION CENTERS IN ASIA



Source: Ritchie and Roser (2022), "Our World in Data: Fossil Fuels", Our World in Data, online: https://ourworldindata.org/fossil-fuels#coal-reserves, viewed in September 2022.

FIGURE 4 - MAP OF SOLAR POWER PRODUCTION CENTERS IN ASIA

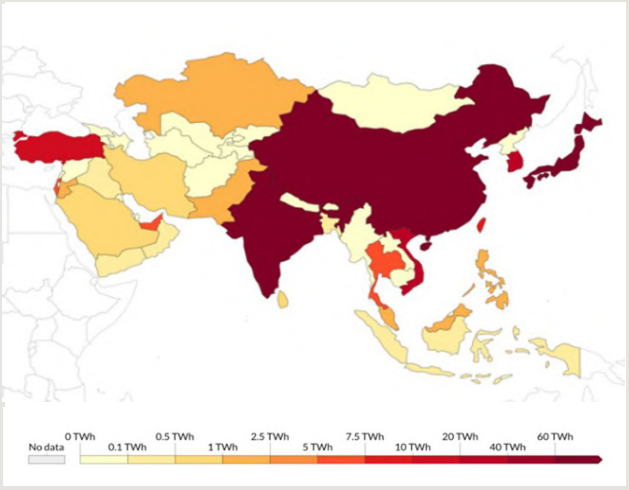
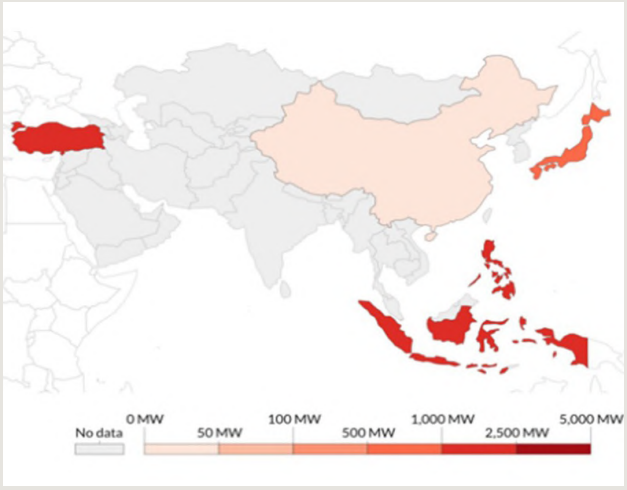


FIGURE 5 - MAP OF GEOTHERMAL POWER PRODUCTION CENTERS IN ASIA



Source: Ritchie and Roser (2022), "Our World in Data: Fossil Fuels", Our World in Data, online: https://ourworldindata.org/fossil-fuels#coal-reserves, viewed in September 2022.

the Philippines (1,928 MW) and Japan (525 MW). While most Asian countries generate a small amount of onshore and offshore wind power each year, it is insignificant compared to China (655 TWh) and India, a far second (68.09 TWh).[18]

2.3 KEY MESSAGES

- **None of the countries in this study are meeting principles 1 ("No financing for new coal projects") and/or 2 ("A time-bound transition away from other fossil fuels") of a just energy transition in Asia.** While fossil fuels continue to dominate both TPES and electricity mixes across Asia, reliance on fossil fuels varies across regions. South Asia and Southeast Asia are least dependent on fossil fuels while West and Central Asia are the most dependent. Singapore, South Korea, Bangladesh, Thailand, Korea, Vietnam, Indonesia and Malaysia are at least 80% reliant on fossil fuels in their electricity mix.
- **National income cannot be correlated with fossil fuel dependence.** Both high-income and low-income countries are more than 80% reliant on fossil fuels. **Geography also does not determine fossil fuel dependence**, as both landlocked and archipelagic countries have high dependency levels. Countries such as China, India and Indonesia rely primarily on domestic reserves of coal and natural gas while high-income countries such as Japan, South Korea and Singapore can afford to import fossil fuel-based resources.
- **Some of the countries in the study are meeting principle 3 ("Active investment in renewable energy generation")**. China, India, Pakistan and the Philippines in particular have seen growth in wind, solar and geothermal energy production, although the production of fossil fuel power has also grown in these countries.
- **Topography and income play a role in renewable energy development**. Emerging economies China and India, alongside Pakistan and the Philippines, have the largest share of renewables in their energy mixes. At the same time, high-income nations Singapore and South Korea, alongside low-income countries Cambodia and Bangladesh, have the smallest proportion of renewables.
- **Solar energy thus far has seen the highest growth in Asia, overall**. China and India, both landlocked countries with large land areas, lead in wind power development while geothermal energy is predominant in archipelagic countries such as Indonesia, Japan and the Philippines.

3

FINANCIAL FLOWS TO RENEWABLE ENERGY AND FOSSIL FUELS

This chapter identifies trends in the renewable energy and fossil fuel financing of private Asian banks and investors between 2016 and 2022.

3.1 LOANS AND UNDERWRITING FOR THE ENERGY SECTOR BY ASIAN BANKS

This section analyzes the annual volumes of energy financing (loans and underwriting) by private Asian banks between January 2016 and September 2022. The data is based on an analysis of the financing of 234 global and Asian energy companies, including all major companies active in the coal, oil and gas and renewable energy supply chains (see section 3.3).

In this period, Asian banks provided a total of USD 1.482 billion in financing to 203 companies in the global energy sector, in the form of loans and underwriting, as shown in Table 6. Of this amount, USD 1.277 billion was earmarked for fossil fuels and USD 205 billion for renewable energy. The share of renewable energy in total energy financing in Asia increased from 8% in 2016 to 18% in 2021 and 2022. On average over the period, 14% of total energy financing by Asian banks was earmarked for renewable energy.

Table 6 also shows that the energy financing trends in Asia from 2016 to 2022 are not compatible with the pathways laid out by the International Energy Agency (IEA) in their 1.5°C scenario,[19] nor with the UNEP Production Gap Report, which explains that staying under 1.5°C requires annual reductions in fossil fuel production between 2020 and 2030 of 11% for coal, 4% for oil and 3% for liquefied natural gas (LNG).[20] This contrasts sharply with the figures in Table 6, which show that in 2021 (the last full year for which figures are available), the annual amount of fossil fuel financing provided by Asian banks had *increased* 4% in comparison with 2016 (USD 204 billion vs. 196 billion).

Figure 6 breaks down the loans and underwriting provided by private Asian banks for fossil fuels and renewable energy between 2016 and 2022 by country of origin of the banks. It shows that Chinese banks are by far the most important providers of energy financing, both for fossil fuels (60%) and renewable energy (86%). Japanese banks come in second, but their role in fossil fuel financing (32%) is clearly more important than their role in renewable energy financing (9%).

Meanwhile, India (4%), Singapore (1%) and Indonesia (1%) rank far behind Chinese and Japanese banks in fossil fuel financing. For renewable energy financing, Chinese and Japanese banks are followed by banks from India (2%) and Thailand (1%).

TABLE 6 - LOANS AND UNDERWRITING BY ASIAN BANKS FOR THE ENERGY SECTOR (USD MILLIONS), 2016–2022

Year	Fossil fuels	Renewables	Total	% renewables
2016	195,916	16,940	212,856	8%
2017	142,074	27,919	169,993	16%
2018	152,637	31,893	184,530	17%
2019	199,162	20,558	219,720	9%
2020	220,297	26,310	246,607	11%
2021	204,007	44,981	248,988	18%
2022	163,306	36,341	199,647	18%
Total 2016–2022	**1,277,400**	**204,942**	**1,482,342**	**14%**

FIGURE 6 - ASIAN BANK FINANCING OF FOSSIL FUELS (LEFT) AND RENEWABLE ENERGY (RIGHT), BY COUNTRY OF ORIGIN

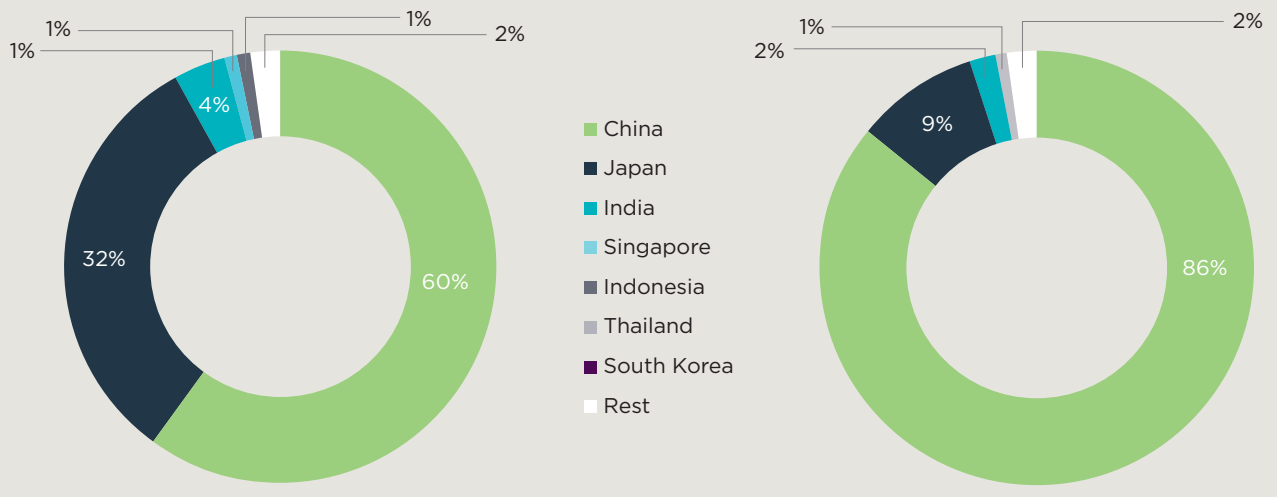


FIGURE 7 - SHARES OF FOSSIL FUELS AND RENEWABLE ENERGY IN THE ENERGY FINANCING OF ASIAN BANKS, 2016–2022

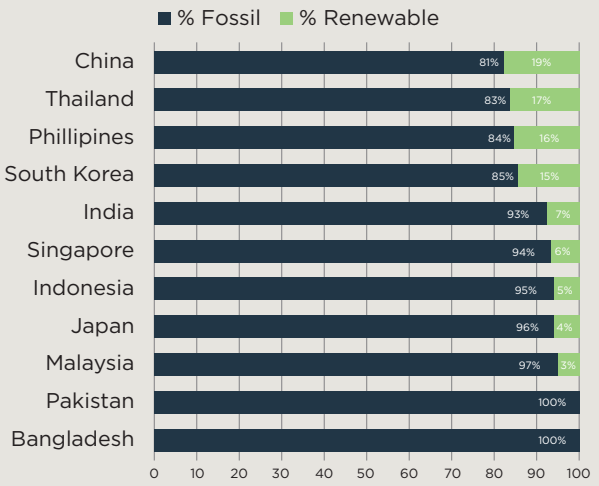


FIGURE 8 - ASIAN ENERGY INVESTMENTS BY TYPE OF ENERGY, AS OF SEPTEMBER 2022

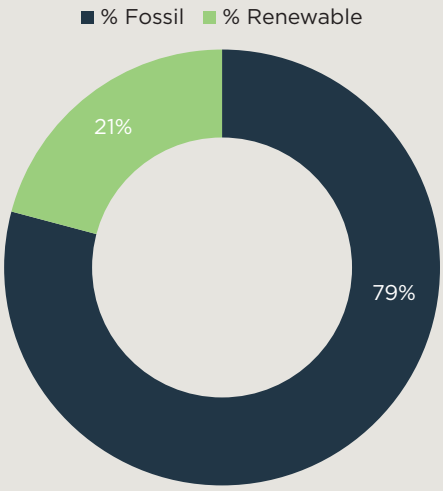


Figure 7 shows how energy financing by banks from 11 countries is distributed between fossil fuels and renewable energy. No energy financing was found for banks from Cambodia and Vietnam in this period (2016–2022). The figure shows that banks from all 11 countries spent at least 80% of their energy financing on fossil fuels. Chinese banks scored relatively highest, with 81% fossil fuel financing and 19% renewable energy financing, followed by banks from Thailand (83% and 17%) and the Philippines (84% and 16%). Banks from Pakistan and Bangladesh scored lowest, with 100% fossil fuel financing and no renewable energy financing. On average, 84% of the energy financing of Asian banks between 2016 and 2022 was for fossil fuels while 16% was for renewable energy.

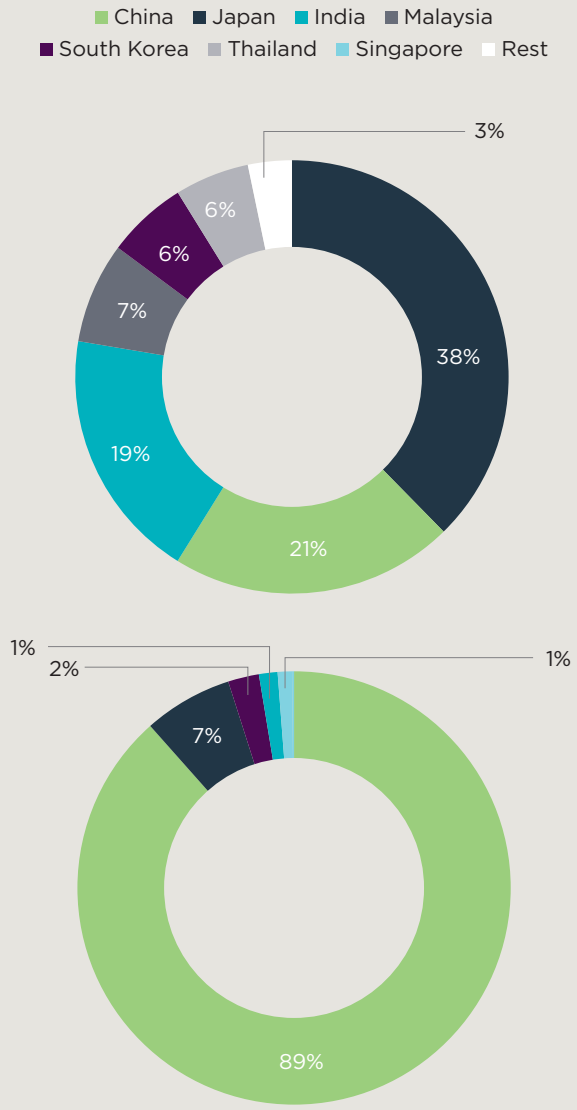
3.2 INVESTMENTS IN ASIA'S ENERGY SECTOR

As of the latest filings (up to September 2022), Asian investors had energy sector shares and bonds in their portfolios with a total value of USD 245.6 billion. This is based on an analysis of the ownership of shares and bonds issued by 168 global and Asian energy companies, including all major companies active in the coal, oil and gas and renewable energy supply chains (see section 1.2).

Of these investments, 79% (USD 194.3 billion) was used to finance fossil fuel activities as shown in (Figure 8,), while 21% was used to finance renewable energy activities (USD 51.2 billion).

Figure 9 breaks down these investments by country of origin of the investors (as of September 2022). It shows that Japanese investors are the most prominent Asian investors in fossil fuels (38%) followed by investors from China (22%) and India (19%). Smaller roles are played by investors from Malaysia (7%), South Korea (6%), Thailand (6%) and other selected Asian countries (3%).

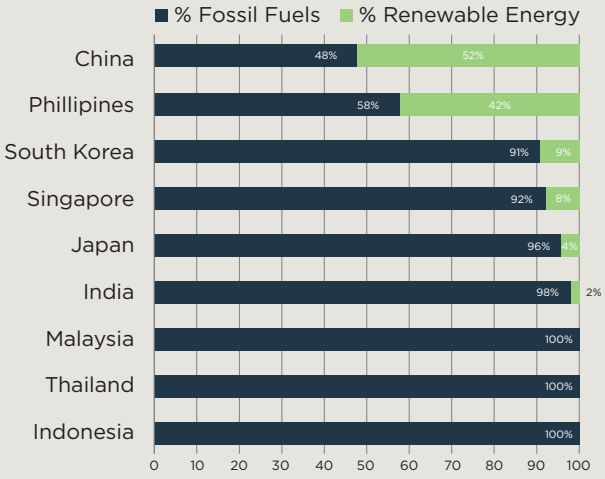
FIGURE 9 - ASIAN INVESTMENTS IN FOSSIL FUELS (TOP) AND RENEWABLE ENERGY (BOTTOM), BY COUNTRY OF ORIGIN OF THE INVESTORS



For renewable energy investments, the picture is quite different. Chinese investors dominate, with 89% of all Asian investments in renewable energy. Following far behind are investors from Japan (7%), South Korea (2%), India (1%) and Singapore (1%). Investors from other countries account for less than 0.2%.

Figure 10 shows how the energy investments of Asian investors from nine selected countries are distributed between fossil fuels and renewable energy (based on the latest filings available in September 2022). No energy investments were found for investors from Bangladesh, Cambodia, Pakistan or Vietnam. The figure shows that investors from China have invested 52% of their energy investments in renewable energy while their Philippine counterparts have invested 42% in renewable energy. The investment patterns in these two countries differ remarkably from the energy investments by investors from the other seven countries, which have all invested between 91% (South Korea) and 100% (Indonesia, Malaysia and Thailand) in fossil fuels. On average, 79% of the energy investments of Asian investors (as of September 2022) was used for fossil fuels while only 21% was used for renewable energy.

FIGURE 10 - SHARES OF FOSSIL FUELS AND RENEWABLE ENERGY IN THE ENERGY INVESTMENTS OF ASIAN INVESTORS, SEPTEMBER 2022



3.3 MAIN FINANCIERS OF THE ASIAN ENERGY SECTOR

This section explores in more detail the main financiers (banks and investors) of Asia's energy sector, identifying the proportion of their financing that went to renewable energy and to fossil fuels. Sub-section 3.3.1 discusses Asian banks while sub-section 3.3.2 focuses on other Asian investors.

3.3.1 ASIAN BANKS FINANCING THE ENERGY SECTOR

Table 7 shows the main Asian banks financing fossil fuels (left) and renewable energy (right). Both lists only include Japanese and Chinese banks. However, while three of the top four financiers of fossil fuels are Japanese banks, renewable energy financiers are completely dominated by Chinese banks, with none of the Japanese banks in the top 10.

TABLE 7 - MAIN ASIAN BANKS FINANCING THE ENERGY SECTOR, BY ENERGY TYPE, 2016–2022 (USD MILLIONS)

FOSSIL FUELS			RENEWABLE ENERGY		
Bank	**Country of origin**	**Financing (USD millon)**	**Bank**	**Country of origin**	**Financing (USD millon)**
Mizuho Financial	Japan	125,432	ICBC	China	21,917
Mitsubishi UFJ Financial	Japan	111,055	Ping An Insurance Group	China	18,565
ICBC	China	98,272	Bank of China	China	10,359
SMBC Group	Japan	90,455	China Everbright Group	China	10,208
Bank of China	China	64,932	CITIC	China	9,974
CITIC	China	47,687	China Merchants Bank	China	9,944
China Construction Bank	China	46,225	SPD Bank	China	9,073
Agricultural Bank of China	China	36,915	Bank of Shanghai	China	8,614
Ping An Insurance Group	China	36,027	China Construction Bank	China	7,636
China Development Bank	China	35,845	Agricultural Bank of China	China	6,948
China Merchants Bank	China	35,285	Mizuho Financial	Japan	6,203
China Everbright Group	China	33,432	Bank of Beijing	China	6,171
SPD Bank	China	27,543	Bank of Communications	China	6,027
Bank of Communications	China	24,054	CSC Financial	China	5,585
China Minsheng Banking	China	21,849	Huatai Securities	China	4,494
CSC Financial	China	21,408	Haitong Securities	China	4,416
Bank of Ningbo	China	19,890	China Development Bank	China	3,819
Hua Xia Bank	China	18,063	SMBC Group	Japan	3,293
JBIC	Japan	17,227	Mitsubishi UFJ Financial	Japan	3,065
China Eximbank	China	14,970	Guotai Junan Securities	China	3,045

FIGURE 11 - SHARES OF FOSSIL FUEL AND RENEWABLE ENERGY FINANCING BY TOP ASIAN BANKS, 2016–2022

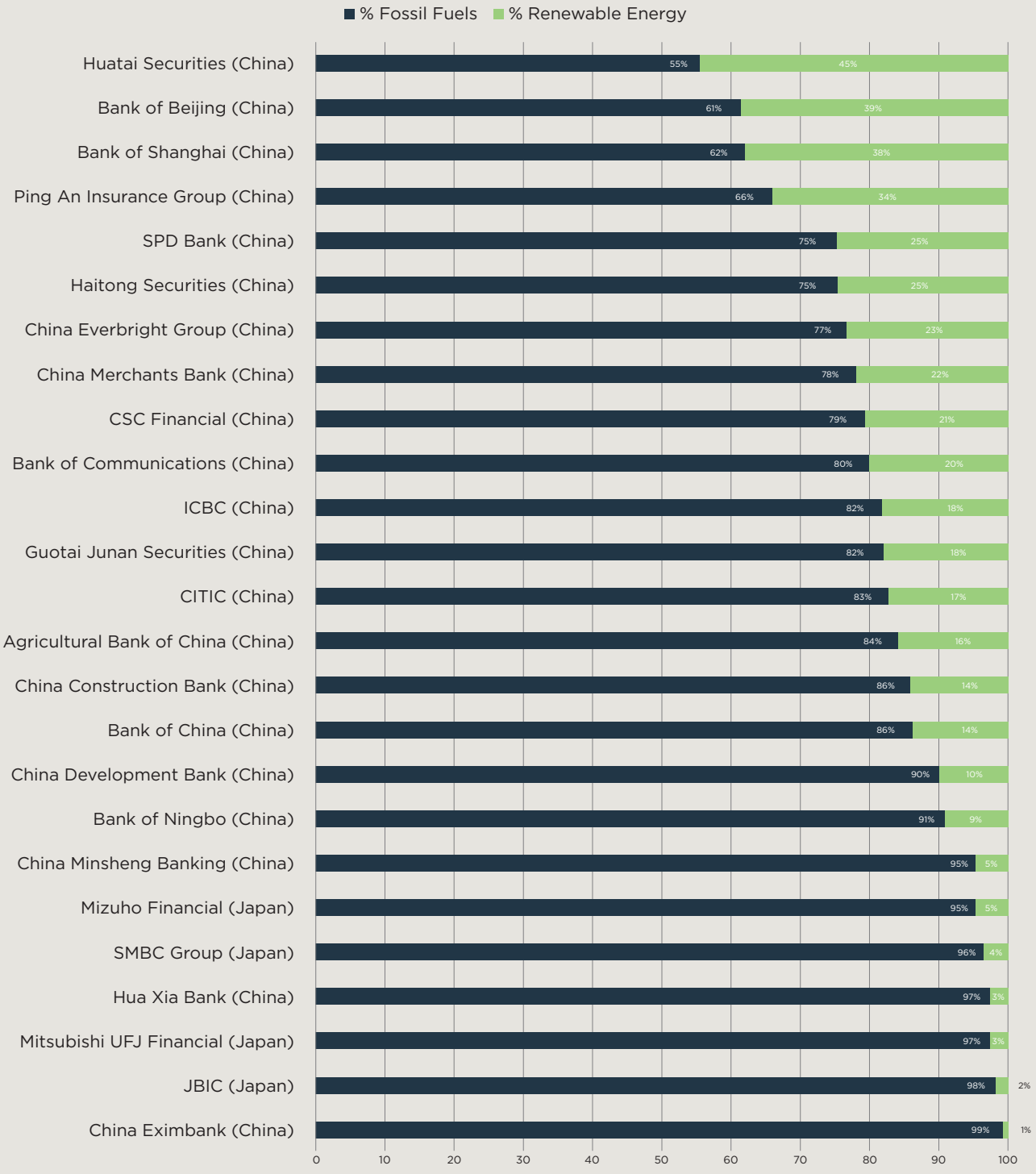


Figure 11 shows the share of fossil fuel and renewable energy financing by the main Asian banks financing the energy sector, as listed in Table 7. The figure shows that all banks finance more fossil fuels than renewable energy, but the share of renewable energy in their energy financing differs considerably, from 1% (China Development Bank) to 45% (Huatai Securities). The four Japanese banks in the ranking all perform relatively poorly, with only 2% (JBIC) to 5% (Mizuho Financial) of their total energy financing earmarked for renewable energy.

While Table 7 and Figure 11 only include Chinese and Japanese banks, Figure 12 provides additional information about the shares of fossil fuel and renewable energy financing in the portfolios of the main energy financiers from seven other Asian countries.

FIGURE 12 - SHARES OF FOSSIL FUEL AND RENEWABLE ENERGY FINANCING BY BANKS FROM SEVEN ASIAN COUNTRIES, 2016–2022

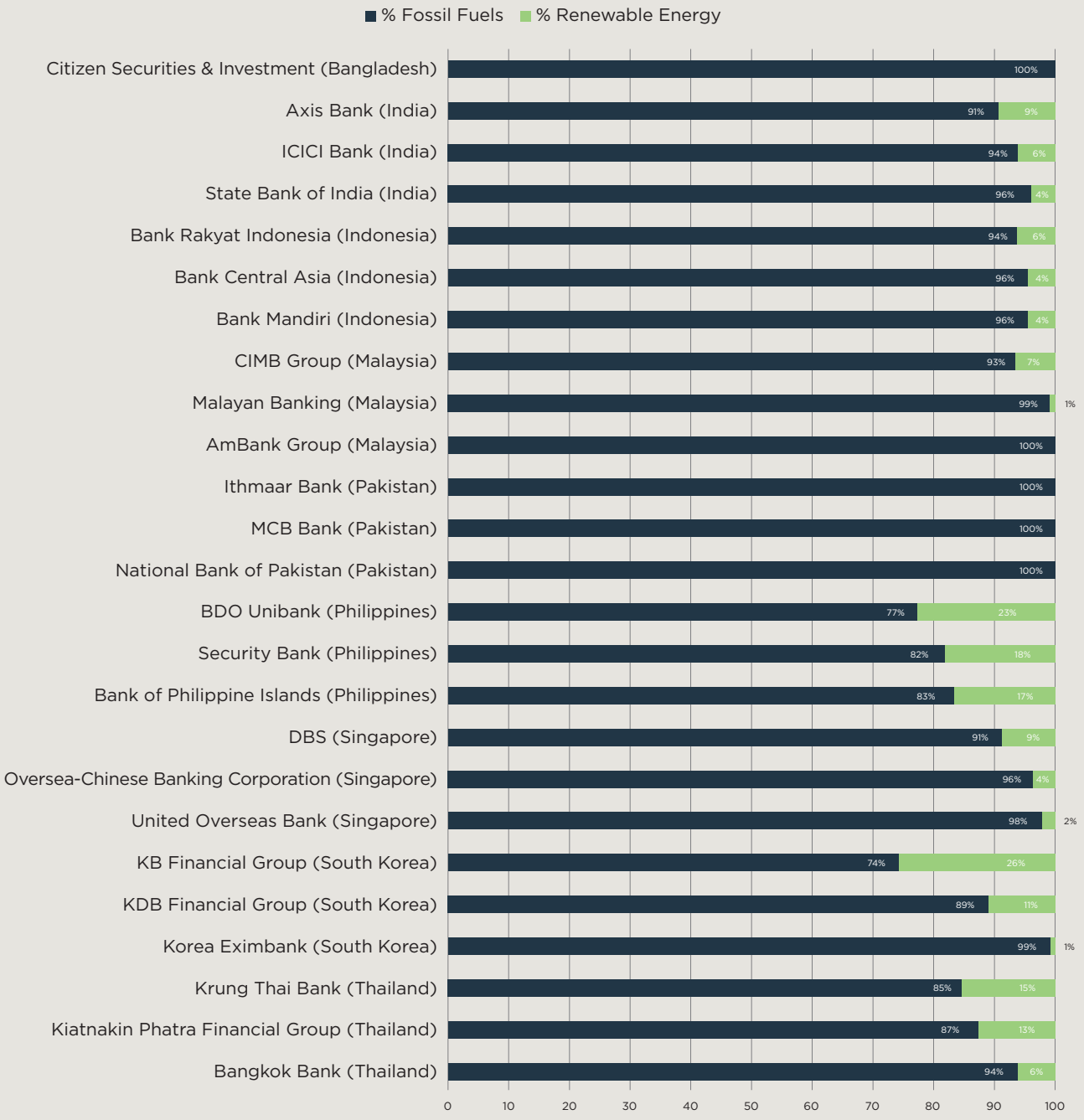


Figure 12 shows that the energy financing of the main banks is directed primarily towards fossil fuels. The share of renewable energy ranges from 0% to 26% from 2016 to 2022. Relatively, the most renewable energy financing came from KB Financial (South Korea, 26%) and BDO Unibank (the Philippines, 23%). The banks from Bangladesh and Pakistan, as well as AmBank from Malaysia, have only financed fossil fuels in the 2016–2022 period.

3.3.2 ASIAN INVESTORS IN THE ENERGY SECTOR

Table 8 provides an overview of the main Asian investors investing in fossil fuels (left) and renewable energy (right). It shows that the 20 biggest Asian investors in fossil fuels are from seven countries (China, India, Japan, Malaysia, Singapore, South Korea and Thailand), while eight Japanese investors dominate the top 10.

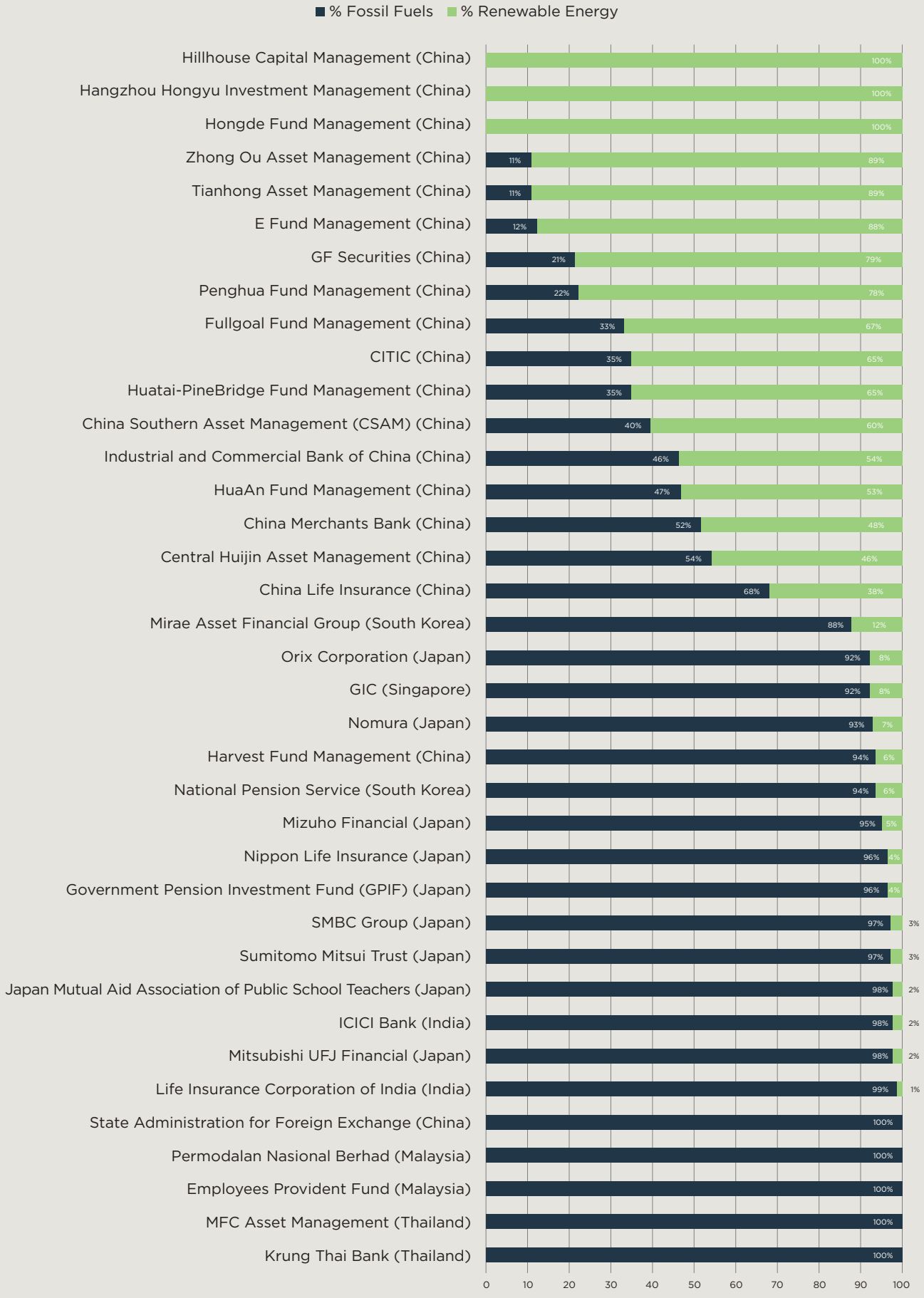
By contrast, the top 20 Asian investors in renewable energy is dominated by 18 Chinese investors, as well as one investor from Japan and one from South Korea.

TABLE 8 - MAIN ASIAN INVESTORS IN THE ENERGY SECTOR BY ENERGY TYPE, SEPTEMBER 2022 (USD MILLIONS)

FOSSIL FUELS			RENEWABLE ENERGY		
Investor	**Country of origin**	**Investment value (USD millons)**	**Investor**	**Country of origin**	**Investment value (USD millons)**
Life Insurance Corporation of India	India	17,541	Hillhouse Capital Management	China	6,648
Orix Corporation	Japan	13,081	E Fund Management	China	4,994
Harvest Fund Management	China	10,752	GF Securities	China	3,383
Mitsubishi UFJ Financial	Japan	9,740	Zhong Ou Asset Management	China	1,747
Government Pension Investment Fund (GPIF)	Japan	7,689	CITIC	China	1,568
SMBC Group	Japan	7,118	Central Huijin Asset Management	China	1,538
Sumitomo Mitsui Trust	Japan	6,245	Hongde Fund Management	China	1,527
Nippon Life Insurance	Japan	5,220	China Merchants Bank	China	1,359
GIC	Singapore	5,090	Huatai-PineBridge Fund Management	China	1,211
Nomura	Japan	5,088	China Southern Asset Management (CSAM)	China	1,093
ICICI Bank	India	4,858	Orix Corporation	Japan	1,092
Japan Mutual Aid Association of Public School Teachers	Japan	4,849	HuaAn Fund Management	China	1,060
State Administration for Foreign Exchange	China	4,740	Hangzhou Hongyu Investment Management	China	1,029
National Pension Service	South Korea	4,564	China Life Insurance	China	854
Mirae Asset Financial Group	South Korea	4,524	Penghua Fund Management	China	779
Permodalan Nasional Berhad	Malaysia	4,156	Harvest Fund Management	China	742
MFC Asset Management	Thailand	3,978	Fullgoal Fund Management	China	739
Krung Thai Bank	Thailand	3,977	Tianhong Asset Management	China	668
Mizuho Financial	Japan	3,923	ICBC	China	662
Employees Provident Fund	Malaysia	3,530	Mirae Asset Financial Group	South Korea	634

Figure 13 shows the share of fossil fuel and renewable energy investments of all investors listed in Table 8. It shows a wide variety between three Chinese investors that invest exclusively in renewable energy and five investors from China, Malaysia and Thailand that invest exclusively in fossil fuels.

FIGURE 13 - SHARES OF FOSSIL FUEL AND RENEWABLE ENERGY IN THE ENERGY INVESTMENTS OF TOP ASIAN INVESTORS, SEPTEMBER 2022



3.4 KEY MESSAGES

- **Energy financing and investments by Asian banks and investors are still predominantly directed towards fossil fuels.** Renewable energy accounts for only 14% of Asian banks' energy financing during the past six years on average, with no discernible upward trend. Of all outstanding energy investments by Asian investors (as of September 2022), only 21% supported renewable energy.
- **Collectively, Asian banks clearly contradict principles 2 ("A time-bound transition away from other fossil fuels") and 3 ("Active investment in renewable energy generation")** required for a just energy transition in Asia.
- **Some Chinese banks, as well as some important investors from China and the Philippines, are transitioning to renewable energy.** This trend should point the way for other financial institutions across Asia, especially in Japan, China and India, which are still massively funding fossil fuels.

4

CHALLENGES TO THE JUST ENERGY TRANSITION IN ASIA

This chapter analyzes the challenges that need to be addressed to achieve a just energy transition across Asia. These include shortcomings in climate policies, energy policies and regulations, regional and intranational energy infrastructure, government policies and regulations for the financial sector and the policies of financial institutions themselves, as well and the lack of social policies supporting a just energy transition.

4.1 CLIMATE POLICIES

This section addresses the broader climate policies of the 13 countries in this study (including their NDCs) and the ability of climate policies to regulate, facilitate and empower investment and financing for a just energy transition.

The aim of this analysis was to evaluate whether policies will achieve the dual purpose of a just energy policy: reducing GHG emissions in line with NDCs and ensuring that a just energy transition is equitable and respects human rights.

The following indicators were analyzed:

- Updated NDC emission reduction targets pledged by each nation (as of September 2022);
- Current (or most recent) annual GHG emissions (Mt CO_2e) rates and projected emissions rates through 2030, at the national level; and
- The ambitiousness of the NDC emissions reduction targets (i.e., to what extent they align with a maximum 1.5°C temperature rise).[21]

This section looks at overarching climate-related goals, not how these goals are translated into specific policies in different economic sectors. Policies for addressing climate change, one of the most relevant sectors to the energy sector, are discussed in section 4.2.

4.1.1 CARBON NEUTRALITY PLEDGES

Ten of the 13 countries featured in this report have announced a goal to achieve net-zero emissions, also known as carbon neutrality, by a certain year, most often by 2050 (see Table 9). China and Indonesia have announced net-zero pledges by 2060 while India aims to reach carbon neutrality by 2070. Bangladesh, Pakistan and the Philippines currently do not have net-zero targets. Bangladesh considers itself a low carbon-emitting country (215.9 Mt CO_2e in 2019)[22] and does not consider a net-zero pledge to be applicable,[23] while Cambodia, with a much smaller carbon footprint (40 Mt CO_2e in 2019),[24] aims to achieve carbon neutrality by 2050.[25]

Although many countries have announced net-zero commitments, as of September 2022 (pre-COP27), few have enshrined them in national policy. What these commitments include and exclude vary from country to country (see Table 10), but the absence of strategies to ensure fairness and equity is the most common gap. Not all 13 countries assessed in this report have assessed the elements of their net-zero targets.

TABLE 9 - NET-ZERO PLEDGES

2050	2060	2070	No pledge
Cambodia	China	India	Bangladesh
Japan	Indonesia		Pakistan
Malaysia			Philippines
Singapore			
South Korea			
Thailand			
Vietnam			

Source: NDCs of the respective countries and other policy documents as of September 2022 (pre-COP27).

The 12th Malaysia Plan includes carbon neutrality as one strategy and has committed to end construction of coal power plants.[26] Although South Korea has institutionalized a national strategy for attaining carbon neutrality through the Carbon Neutrality Act, it currently only covers CO_2 emissions.[27] The country's 2050 Carbon Neutral Strategy takes a multi-pronged approach to renewable energy, energy efficiency and carbon capture strategies. Requiring buildings of a certain size to be a zero-energy building is one of the lynchpins of South Korea's strategy to achieve net zero.[28]

Cambodia's long-term strategy for carbon neutrality (LTS4CN) prioritizes energy efficiency and conservation, a shift to low-carbon energy sources and the decarbonization of electricity production to achieve net zero. LTS4CN identifies several pathways to achieve the desired outcomes, including no new coal generation capacity beyond already committed projects, use of natural gas as a dispatchable transition fuel and increase renewable energy to 35% of the energy generation mix by 2050.[29]

4.1.2 GHG EMISSION TARGETS

Twelve of the countries have updated their NDCs for 2021–2022 from their earlier submissions in 2019–2020. The Philippines is, as of September 2022, the only country in the study to have submitted one version of its NDC.[30] Each country differs in its selection of metrics, such as CO_2 emissions (China, India), emissions intensity (Malaysia, Singapore) or GHG emissions (remaining countries), as well as different baseline years as reference points (2005 for China,[31] 2017 for South Korea[32]). Most of these countries have strengthened mitigation efforts by committing to greater reductions in total GHG

TABLE 10 - NET-ZERO INCLUSIONS AND EXCLUSIONS

Country	Inclusions	Exclusions/Gaps
China	• Less than 95% coverage of GHG emissions • International offset credits • Some explanation of fairness • Towards contribution to the global effort in reducing greenhouse gas emissions	• Net zero still in proposed legislation • International aviation, shipping • No separate reduction and removal target • No transparent assumption in carbon dioxide removals • Limited detail on pathways for achieving net zero
India		• Net zero not enshrined in policy • No information on long-term strategies and inclusions
Indonesia	• Net zero is announced but not enshrined in policy	• Net zero scenarios still undergoing assessment
Japan	• All GHG emissions • Net-zero target in the law • International offset credits	• International aviation, shipping • No sufficient details on emissions scope, use of carbon dioxide removals or reporting • No reference to fairness or equity
South Korea	• Less than 95% coverage of GHG emissions • Net-zero through domestic actions and no removals outside borders • Net-zero target in the law • Transparent assumptions or pathways for LULUCF* and removals • Separate emission reduction and removal targets	• Limited detail on pathways for achieving net zero • No reference to fairness or equity
Thailand	• Less than 95% coverage of GHG emissions • Net-zero through domestic actions and no removals outside borders • Separate emissions reduction and removal targets • Sector-specific analysis	• Net zero not enshrined in policy • International aviation, shipping • No reference to fairness or equity
Vietnam	• All GHG emissions • Net-zero target in the law • Separate emissions reduction and removal targets • Sector-specific analysis • International offset credits	• International aviation, shipping • No reference to fairness or equity • Transparent assumptions or pathways only for removals or only for LULUCF

Source: Compilation based on Climate Action Tracker country analyses
*LULUCF – Land Use, Land-Use Change and Forestry

emissions by 2030. For instance, Japan's 2021 updated NDC aims to reduce GHG emissions by 46%, a significant increase from the 26% indicated in 2015.[33]

However, there are countries that have maintained their NDC commitments. Singapore continues to aim for a 36% reduction in emissions intensity by 2030.[34] South Korea may have switched reference points for its target from reducing BAU emissions by 37% to 24.4% reduction from a 2017 baseline, but both still result in limiting 2030 emissions to 536 $MtCO_2e$.[35]

Twelve countries have strengthened adaptation mechanisms in their NDCs by identifying key sectors vulnerable to the effects of climate change. Japan is the only nation to not mention adaptation. Some NDCs, including those of Thailand, enhanced adaptation objectives by specifically referencing national adaptation plans as the guiding policy. India and the Philippines both assert the importance of climate change adaptation, but failed to enhance this section in their latest NDC submissions.

When NDC commitments are compared with World Bank country classifications (see Table 1), it becomes clear that these commitments depend on national income status. High-income and upper-middle-income countries, such as China, Japan, South Korea, Singapore and Malaysia, all have unconditional NDCs, indicating that GHG emissions could be reduced through domestic resources. The exception is Thailand which, despite being an upper-middle-income nation, has indicated that additional resources, enhanced access to technology and capacity building could expand target reduction by an additional 5 percent.[36]

Indonesia has been reclassified from an upper-middle-income country to a lower-middle-income country due to the COVID-19 pandemic, and joins other lower middle-income countries in the study (Bangladesh, Pakistan, Philippines and Cambodia) in requiring official development assistance in meeting NDC commitments. The Philippines may have one of the highest GHG emissions reduction targets at 75%, but 72.29% is conditional.[37]

TABLE 11 - SUMMARY OF THE MOST RECENT NDCS OF 13 FOCUS COUNTRIES (2021–22)

Country	Strengthened mitigation	Strengthened GHG targets	Enhanced sectoral targets	Added policies and actions	Strengthened adaptation
Bangladesh	◎	◎	◎	◎	◎
Cambodia	◎	◎	◎	◎	◎
China	◎	◎	◎	◎	◎
India	◎	◎	◎		
Indonesia			◎	◎	◎
Japan	◎	◎			
Malaysia	◎	◎			◎
Pakistan	◎	◎	◎	◎	◎
Philippines	◎	◎		◎	
Singapore		◎	◎	◎	◎
South Korea	◎	◎	◎	◎	◎
Thailand				◎	◎
Vietnam	◎	◎		◎	◎

Source: Climate Watch Data (n.d), "NDC Comparison," online: https://www.climatewatchdata.org/ndcs/compare/overview, viewed 26 August 2022

Table 11 summarizes the updated NDCs of the countries included in this study.

4.1.3 AMBITIOUSNESS OF TARGETS

Most of the countries' NDC commitments are not sufficiently aligned with the Paris Agreement target to limit global temperature rise to 1.5°C. While the updated NDCs strengthened and increased earlier 2030 targets, the emissions reduction goals are too conservative to have a significant impact, according to Climate Action Tracker.[38] Table 12 presents assesses NDC commitments for four key components.

For instance, China's goals to reduce carbon intensity to 45% below 2005 levels, increase non-fossil fuel capacity in power generation to 500 GW and increase the share of renewable energy to 50% by 2030, still result in emissions increasing rather than falling through to 2030.[39]

The current actions of Thailand and Indonesia[40] are projected to fit a global scenario in which there is a global temperature rise of 4°C.[41] The Philippines was initially fair-share compatible with 1.5°C but has been downgraded to 2°C due to the conditional

TABLE 12 - ASSESSMENT OF NDC COMMITMENTS

Country	Policies and action	Domestic target	Fair share target	Climate finance
Bangladesh	No current rating			
Cambodia	No current rating			
China	Insufficient	Insufficient	Highly insufficient	Not assessed
India	Critically insufficient	Insufficient	Insufficient	Not applicable
Indonesia	Critically insufficient	Insufficient	Critically insufficient	Not applicable
Japan	Insufficient	Almost insufficient	Insufficient	Critically insufficient
Malaysia	No current rating			
Pakistan	No current rating			
Philippines	No current rating			
Singapore	Highly insufficient	Critically insufficient	Critically insufficient	Not assessed
South Korea	Highly insufficient	Insufficient	Highly insufficient	Not assessed
Thailand	Critically insufficient	Critically insufficient	Critically insufficient	Not applicable
Vietnam	Critically insufficient	Critically insufficient	Critically insufficient	Not applicable

Source: Compilation based on Climate Action Tracker country analyses. Rating: Critically insufficient, Highly insufficient (<4°C world), Insufficient (<3°C world), Almost sufficient (<2°C world), Sufficient (compatible with 1.5°C)

nature of its commitment.[42] Singapore is in a unique situation because of ambitious early actions, such as shifting to natural gas, removing energy subsidies and imposing a vehicle quota system. However, since natural gas is still a fossil-fuel based gas, Singapore could achieve much more emissions by moving to renewable energy and energy efficiency strategies.[43]

Further reduction and avoidance of GHG emissions are needed to reach global warming temperature compatibility to 1.5°C pathway, but the actions of some Asian countries contrast with this goal. Indonesia needs to decrease reliance on coal to 10% of the electricity mix by 2030 to remain compatible with a 1.5°C ambition, yet the 10-year power plan indicates that coal will represent 64% of electricity generation by that year.[44] Japan is maintaining a 19% share of coal in the power generation mix by 2030 and refuses to sign a coal phase-out plan by 2030. These objectives are also inconsistent with actions needed to stay on track to limit global temperature rise to 1.5°C.[45]

4.1.4 KEY INSTRUMENTS

While addressing climate change is about more than energy production and consumption, such as avoiding deforestation and waste management, the climate policies and mitigation targets of most countries play a key role in the just energy transition. Although each of the 13 countries have identified key mitigation activities, not all have specific policies and instruments in place to achieve their NDC commitments. The ASEAN Member States featured in this report all have renewable energy and energy efficiency targets anchored to an ASEAN goal to increase the region's renewable energy output to 23% of the energy mix and reduce energy intensity by 30% by 2025.[46]

Key instruments used by non-ASEAN countries include Japan's Green Growth Strategy, which is in line with carbon neutrality in 2050. This is an industrial policy tackling emissions reduction through energy-efficient fuel combustion, capturing fugitive emissions from fuels and CO_2 transport and storage.[47]

South Korea's Green New Deal targets 42.7 GW of renewable power capacity through two major framework policies. The Third Energy Master Plan aims to increase the share of renewable electricity from 6% in 2020 to 20% by 2030 and the Ninth Electricity Plan sets a similar renewables target of 20.8% by 2030 by retiring 24 coal plants and increasing the role of gas and nuclear in the energy mix.[48]

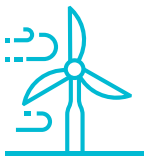
Pakistan's shift to 60% renewable energy is guided by the National Electricity Policy 2021 and Plan 2022–2026, the Energy Efficiency and Conservation Strategic Plan and the Indicative Generation Capacity Expansion Plan.[49] These policies are coordinated and led by regulators and specialized government agencies.[50]

BOX 1 - ENERGY TRANSITION POLICIES IN BANGLADESH

Up to 96.46% of emissions reduction in Bangladesh will come from the energy sector. This requires a shift in the country's energy mix from 80% fossil fuels in 2019 to a maximum of 23% by 2050.[51] In response, the **Energy Efficiency and Conservation Master Plan** aims to lower energy intensity by 20% in 2030 compared to 2013 levels, saving a total of 95 million tonnes of oil equivalent (toe) during the period. The country has launched the **Mujib Climate Prosperity Plan**, a strategic investment framework to mobilize financing for implementing renewable energy and climate resilience initiatives, particularly energy storage infrastructure, power grid modernization and training and skills development. The draft **National Solar Energy Roadmap**, 2021–2041 sets a long-term vision and capacity targets for the country's solar energy initiative. A new **National Action Plan for Clean Cooking Bangladesh (2020–2030)** has also been formulated.[52]

Sections 4.2 and 4.3 will discuss in more detail the energy policies of this study's focus countries and their alignment with climate policy targets, with section 4.2 focusing on energy production and section 4.3 on energy consumption.

4.2 SUPPLY-SIDE ENERGY MARKET POLICIES AND REGULATIONS



This section and section 4.3 look at energy-related policies and regulations in Asia, including their ability to regulate, facilitate and empower investments and financing for a just energy transition.

These policies and regulations can be categorized as either "demand side" or "supply side", with the former influencing the consumption of renewable- and fossil fuel-based energy, and the latter targeting the production of both energy types.[53] Examples of demand-side policies include, but are not limited to:

- (Carbon) emission taxes;
- Tradeable emissions permits/carbon trading schemes for consumption rights; and
- Energy efficiency programs.

These types of policies will be discussed further in section 4.3. This section will focus on supply-side policies that include, but are not limited to:

- Electricity production and procurement plans;
- (In)direct fossil fuel and renewable energy subsidies;
- Tradeable production permits;
- Production/extraction taxes;
- Bans and moratoria; and
- Electricity market regulations.[54]

This distinction is critical, because recent studies out of the University of Amsterdam, University of British Columbia, Arctic University of Norway and the Stockholm Environment Institute[55] suggest that relying exclusively on demand-side policies will not effectively or substantially promote an energy transition, and may result in an energy "addition", in which renewable power capacity is added to an predominantly fossil fuel-based system.[56] While the renewable percentage in the energy mix then goes up, the total production of fossil fuel energy – and therefore GHG emissions – will not go down. Academics therefore conclude that governments and policymakers should pursue a mix of both demand- and supply-side policies, perhaps with an emphasis on the latter, to catalyze a true transition that phases out fossil fuel energy and simultaneously phases in renewable energy.

Our analysis reveals that the 13 countries in this study are pursuing a variety of demand- and supply-side policies. This section presents a detailed (although not exhaustive) overview of some of the key supply-side policies that these governments are proposing and implementing.

4.2.1 ELECTRICITY PROCUREMENT PLANS

This section assesses the national electricity procurement (and accompanying investment) plans of Asian governments, and their respective electricity companies, to evaluate the extent to which fossil fuel- and renewable-based power is forecasted to be introduced to Asian power grids in the coming decades.

Given that the electricity market is highly regulated and government controlled market, national electricity plans play an important role in determining how much electricity production will grow and what energy sources will be used. All the countries in this study have disclosed plans (through their national electricity plans) to procure substantial fossil fuel-fired power capacity in the coming decades. For example, the Philippines government has announced plans to add 69.4 GW of new power capacity to their grid through 2040 (requiring roughly USD 104.7 billion in investments), 23.8 GW (or 34%) of which will be in the form of new fossil fuel power (requiring roughly 25% of this total investment or more than USD 26 billion).[57]

Similarly, the Indonesian national electricity plan (RUPTL) projects that Indonesia will procure 42 GW of additional power from 2021–2030, half of which (21 GW) will be coal- and fossil fuel gas-fired, with the remaining 21 GW taking the form of renewable energy.[58]

Finally, Japan plans to procure 20 GW of new installed capacity by 2030, 5 GW of which will be thermal power (coal, liquefied natural gas and oil-fired) and renewable power, with the remaining 10 GW being nuclear power. This will continue adding to Japan's current 156 GW of installed thermal capacity.[59] Plans to invest so heavily in fossil fuel-based power not only contradict national net-zero pledges (see section 4.1.1) and all progress towards a just energy transition, but also locks in Asian economies to carbon-based infrastructure for the long term.[60]

The ADB has estimated that in order to comply with the international climate objectives of the Paris Agreement, Asian countries (ASEAN members in addition to China, Russia, South Korea, Japan and Australia) must:

- Improve the carbon intensity of their electricity production from slightly over 500 gCO_2/kWh to less than 50 gCO_2/kWh; and
- Increase the share of zero-emissions vehicles in their national fleets from 15% to at least 45 percent.[61]

This is an ambitious target, but growth in renewable energy power production in recent years across the Asian continent shows promise. Plans to procure additional renewable power capacity are not absent or negligible; all of the countries in this study have disclosed plans to procure additional solar PV or wind power in the coming decade.

India, for instance, forecasts spending roughly USD 120 billion in renewable power and grid-scale storage systems between 2025 and 2030 (about 70% of which is expected be allocated by the private sector), and more broadly pledges that 90% of forthcoming energy investments will be for renewables rather than fossil fuel.[62] This would see Indian solar PV capacity growing tenfold, from 38 GW in 2019 to 367 GW in 2030, while China expects a fivefold growth in solar PV, from 205 GW to 1,106 GW between 2019 and 2030.[63]

Wind power capacity is expected to see more humble growth, with India's and China's capacity both forecasted to grow fivefold and threefold, from 38 GW to 163 GW and 201 GW to 614 GW, respectively. Japan's wind capacity is also projected to see almost fivefold growth, but at a much lower level, from 4 GW in 2019 to 18 GW in 2030.

TABLE 13 - SAMPLE RENEWABLE ENERGY SOURCING TARGETS OF ASEAN MEMBER STATES

ASEAN Member States	% primary energy sourced from renewables	By year
Indonesia	31	2030
Myanmar	47	2030
Thailand	30	2036
Vietnam	21	2030

Source: Koons, E. (2021, May 27), "Overcoming ASEAN's Renewable Energy Challenges", Energy Tracker Asia, online: https://energytracker.asia/overcoming-aseans-renewable-energy-challenges/, viewed in April 2022.

Regionally, ASEAN members have jointly pledged to source 23% of primary energy from renewables by 2025, although individual members have set their own targets (see Table 13).

Vietnam's national Power Development Plan (PDP) forecasts adding roughly 20 GW of solar and 19 GW of wind power to the national grid by 2030, although it simultaneously plans to add another 59 GW of fossil power, including 22 GW of fossil-fuel gas and 37 GW of coal-fired capacity.[64] Some of these targets may be within reach, as Vietnam has approved an additional 11.8 GW of wind power[65] to add to its already 16% share of renewable energy primary energy consumption (see section 2.2).

Investments in fossil fuel-based power remain part of national electricity procurement plans across Asia. There are several reasons for this, one of which is a belief that relying solely on renewable power will impede national access to affordable and reliable electricity. Given their intermittency, it is believed that solar and wind cannot reliably generate power at all times and at all locations, and as a result, *"some regions benefit from very low electricity prices from e.g., high solar radiation, like some parts of India with US cents 2–3 per kWh, but many others do not"*.[66]

Some opponents of an energy transition point to the Philippines to argue that an increase in renewable power procurement translates into higher electricity prices: *"the Philippines has some of the highest electricity tariffs in the region, so pushing too much for renewables will lead to people questioning the liberalization of the electrical market."*[67] In many Asian countries, this assumption that higher electricity prices are the result of more renewables in the energy mix (and it should be stressed that it is an *assumption*) is paralyzing the prospects for an energy transition in the short term, as the existential drive for affordable and reliable electricity trumps any pursuit of global environmental sustainability. These arguments are returned to later (see 4.7.3), as grappling with them will prove vital to catalyzing the phaseout of fossil fuels across the Asian continent.

Some experts agree that energy mixes *"have to be looked at more holistically; maybe 100% renewable is possible in the future, but right now we need a mix. In Thailand, for example, for every MW of new power introduced to the grid, half will be renewable and the other half conventional fossil."*[68] Others, however, argue that this *"myth concerning technical limitations of renewable energy has already been debunked, to the point where [the World Bank] has already convinced the Pakistani government to invest in a 30% renewable energy share by 2030."*[69] In fact, some posit that hydropower can, when appropriate, be used to replace the "base load" functionality of coal-fired power fleets, since it does not suffer from the intermittency challenges of solar and wind.[70] However, large-scale hydropower has other disadvantages, such as vulnerability to drought and strong social and environmental impacts.

4.2.2 POWER PURCHASE AGREEMENTS, FEED-IN TARIFFS AND FEED-IN PREMIUMS

While all Asian countries plan for new electricity generation capacity in their national electricity plans, this does not mean that all new electricity plants will be built by the state or state-owned enterprises. Mainly for financial reasons, most countries leave room for Independent Power Producers (IPPs): private companies that produce electricity. Typically, an IPP signs a Power Purchase Agreement (PPA) with the state-owned enterprise that manages the national electricity grid, with the latter contractually obligated to buy the electricity generated by the IPP at a fixed or fluctuating price for a defined period. PPAs have been concluded in the past between many fossil fuel-based IPPs and the companies managing the national electricity grids.

Some of these long-term PPAs signed with fossil fuel-based electricity producers are partially or substantially to blame for why fossil fuel-based power continues to occupy such a massive fraction of power production in Asia (see section 2.1).[71] Terminating these PPAs may yield a series of legal, litigative and financial repercussions as contracts are breached,[72] effectively locking the national energy system into fossil fuel-fired power for the long term. This problem is discussed further in section 4.2.4.

Despite these issues, PPAs provide a good framework for stimulating investment in electricity production, specifically in renewable energy. To meet their renewable energy goals, governments are now using the PPA instrument to encourage investment by IPPs in renewable electricity generation. These PPAs then include Feed-in Tariffs (FiTs) and Feed-in Premiums (FiPs) to guarantee that the renewable energy producers can sell their electricity for sufficiently attractive prices (or tariffs, usually per

kWh electricity produced) over a fixed (usually long-term) period.[73] The key difference between a FiT and a FiP is that the former usually offers IPPs a fixed tariff per kWh independent of the market price, whereas the latter offers a premium that is either constant or sliding above the market price.[74]

Countries with a *"clear and consistent legal, administrative, and institutional frameworks are the ones that have attracted the highest investments"* in renewable energy.[75] India is a good example of this, since *"25-year PPAs are backed by the Indian government, in which they take the lowest-cost provider, grant free grid access, and pursue a pan-India approach… this is a good way to secure and attract long-term financial capital."*[76]

However, power systems and grids are configured differently across Asia, and this can have an impact on how well the PPA instrument works. In many cases, state-owned utilities control national power generation, transmission and distribution, as in Indonesia (PLN), Thailand (EGAT) and Vietnam (ENV).[77] *"Access to [the] grid in nearly all ASEAN countries is controlled by the respective state-owned utilities."*[78] These State-Owned Enterprises (SOEs) are essentially able to monopolize power production because, in most cases, IPPs are only able to sell electricity to the national grid by selling directly to them under terms and conditions specified by the SOE (i.e., "single-buyer models").[79] In these cases, *"competition is highly limited and highly regulated; in fact, the competition doesn't exist, so if the state doesn't say a project should go through, then it simply won't."*[80] The SOE will then often sign a PPA with the IPPs, which must meet key metrics to sell to the grid (timeframe, tariff, etc.). These can often present unfavorable conditions for renewable energy IPPs, deter the purchase of renewable IPP electricity altogether or lock-in fossil-based power generation on the grid for 25+ years.

In some cases, a state monopoly can be advantageous, such as in Vietnam where the *"SOE introduced a FiT for renewable energy that was quite high and initially quite successful"*.[81] This is generally not the case, however. For example, *"Indonesia does not have any independent regulators, so when the state utility comes to the ministry of finance and says, 'here is the bill for this year' and expects a subsidy, this cannot be validated. Because of this, utilities have no incentive for them to be efficient (it's actually better for them to be inefficient), and as a result, the institutional power of state-owned utilities is just too big."*[82]

The opaque and bureaucratic legal and regulatory frameworks in most Asian countries have deterred both electricity companies and financial institutions from investing in renewable power. For example, in Cambodia and Indonesia, "unclear guidelines of grid interconnection from renewable energy power plants" have limited IPPs from engaging with and attempting to strike deals to generate electricity with their respective national grid operators.[83] Moreover, *"a lack of clear policies and regulatory frameworks regarding renewable energy procurement in Thailand have prompted Thai private investors to shift their capital to neighbouring Vietnam instead."*[84]

At least seven of the 13 countries in this study have adopted a semblance of a FiT or FiP policy, including China, Japan, Malaysia, Pakistan, Philippines, Thailand and Vietnam. In Vietnam, generous FiTs have been key to ramping up solar PV and wind power procurement, even though coal-fired electricity prices are capped at artificially low levels through government subsidies (see section 4.2.3).[85] Under decision No.11/2017 of the Ministry of Industry and Trade, the FiTs were revised to fall between 6.67 and 10.87 US cents per kWh, depending on the type of project.[86] Despite the COVID-19 pandemic, Vietnam's grid added more than 8.5 GW of new solar capacity between June and December 2020 (mobilizing around USD 3.6 billion in domestic debt finance) after launching phase two of its FiT programs in April of the same year.[87]

Despite these attractive conditions and success,[88] Vietnam's FiT continues to face several challenges, including *"unclear and long process of PPA permitting process, oversubscription… unclear grid interconnection guidelines,"* short timeframes (through 2022),[89] curtailment issues and currency risks, all of which have hampered investment.[90] Meanwhile, the absence of a FiT in Cambodia has been argued to have deterred the deployment of renewable energy in the national grid.[91]

Counterintuitively, Indonesia has suffered from a renewable energy tariff that has inhibited, rather than incentivized, investment. Under the current regulation (Permen ESDM no. 4/2020, an amendment to no. 50/2017) in which tariffs are negotiated between PLN (Indonesia's state-owned utility that controls the bulk of power generation, transmission and distribution) and the developer, *"if a project is located in an area where the regional electricity generation costs (Biaya Pokok Produksi, or BPP) are greater than the national average BPP, the negotiated tariff is not allowed to exceed 85% of the regional BPP for wind and solar, or 100% of the regional BPP for other technologies"*.[92] The national average BPP is set to IDR 1,334 per kWh,[93] but this price level is based to a large extent on PLN's electricity production from coal, which is heavily subsidized by the government (see section 4.2.3). The price set for renewable energy, at 85% of the BPP, thus creates an unattractive environment for renewable energy IPPs. They are obligated to sell

the electricity they produce at a price that does not reflect the true cost of production, often preventing them from turning a profit or breaking even on their investment.[94] The Indonesian government is ostensibly revisiting and proposing new regulations to this FiT policy, but the details remain unknown.[95]

Vested interests of companies active in coal mining, oil and gas and electricity generation, which are often well represented in governments and politics, have shaped a legal and regulatory environment that continues to support the perpetual growth of the fossil fuel industry, or at least maintain the status quo. This is the case in Pakistan, where most national coal reserves are located in the poor Sindh Province, and employment and the revenue-generating prospects of coal commercialization are leading local authorities to challenge national climate pledges and energy diversification plans.[96]

The same is true in India, which is home to Coal India, *"the largest coal company in the world by a mile."* Although it is publicly traded, it is *"majority owned by the Indian government. Even though they have announced plans to diversify into aluminium, iron ore, and build 5 GW of renewables, the consensus is that the government wants Coal India to survive."*[97] This implies that coal will indisputably remain part of India's energy mix for the indefinite future. Given India's pledge to achieve net-zero emissions by 2070 (see section 4.1.1), this implies that *"coal will still be consumed in India for 48 years."*[98]

In other countries, such as the Philippines, power generation is largely driven by the private sector.[99] The Electric Power Industry Reform Act (EPIRA) privatized the Philippine grid in 2001, which was almost entirely state controlled in terms of generation and transmission. This was done in the hope of circumventing slow and bureaucratic government processes.[100] Since the EPIRA, however, it is estimated that national electrification rates have increased from 76% in 2000 to more than 91% in 2015.[101]

4.2.3 SUBSIDIES AND PUBLIC FINANCIAL SUPPORT

Subsidies for fossil fuels and renewable energy are vital policy instruments for both driving and inhibiting a just energy transition. Subsidies allocate public funds to power producers (either IPPs or SOEs) to lower the cost of producing each unit of electricity generated and subsequently lower prices for consumers. Such subsidies could be used to, for example, *"cover a part of the upfront capital cost of an asset (such as a solar water heater) and may include consumer grants, rebates or one-time payments by a utility, government agency or government-owned bank."*[102] These subsidies are considered "supply-side" instruments because they have a direct influence on the ability of a power producer or energy company to produce (and therefore, supply) fossil fuel and non-fossil fuel-based power.

Eleven of the 13 countries in this study currently subsidize renewable energy production in some way, including Bangladesh, China, India, Indonesia, Japan, Malaysia, Pakistan, Philippines, South Korea, Thailand and Vietnam.[103] Japan, for instance, offers subsidies (either direct monetary infusions or indirect tax incentives) for large/utility-scale solar PV (Hokuto-shi), support for introducing housing solar PV and support for solar PV power generation (Kawasaki-shi) and wind power (Hokuei-cho) more broadly.[104]

However, in most Asian countries, more subsidies are often funneled to the fossil fuel sector for both power production and transport fuels, and experts often argue that removing these subsidies should be the first step in an effective energy transition.[105] Fossil fuel subsidies in Asia are highest in Indonesia with a per capita subsidy of USD 25, in China at USD 18 and in India at USD 17 (see Table 14).[106] Vietnam lowered fossil fuel subsidies to USD 3 per capita in 2019 (see Table 14).[107]

As one expert has pointed out, *"Another issue that has held off renewable energy development is that many developing nations offer subsidized power to consumers to keep electricity and fuel bills down and expand energy access. Tariffs often do not reflect the true cost of power generation which means that cheap renewable energy doesn't compete on a level playing field with more expensive, imported fossil fuel-based power generation".*[108]

Indonesia is a case in point. The country's fossil fuel subsidies reached as much as IDR 356 trillion (USD 24 billion) in 2019, a 200% increase from 2017. These funds subsidize both highly polluting motor fuels (gasoline) as well as fossil fuel-based (mostly coal) electricity.[109] In 2020, Indonesia's fossil fuel subsidies were roughly IDR 97 trillion (USD 7 billion), distributed across the power sector (IDR 50 trillion/ USD 3.4 trillion), LPG (IDR 33 trillion/USD 2.3 billion) and other transport fuels (IDR 15 trillion/USD 1 billion).[110] These subsidies are, in part, responsible

TABLE 14 - FOSSIL FUEL SUBSIDIES IN ASIA, INCLUDING TRANSPORT FUELS AND POWER PRODUCTION

Country	Average subsidization rate (% consumer price)	Subsidy per capita (USD)
Bangladesh	12	9
China	3	18
India	9	17
Indonesia	15	25
South Korea	0	1
Malaysia	1	3
Pakistan	5	6
Thailand	1	6
Vietnam	1	3

Source: International Energy Agency (2021), "Fossil fuel subsidies database", online: https://www.iea.org/data-and-statistics/data-product/fossil-fuel-subsidies-database, viewed in September 2022.

for *"pegging the domestic coal price at around USD 50-70, way below the international market price, violating the WTO's price control."*[111]

Moreover, *"Indonesia continues to pay more subsidies to oil and gas than what the government gets in return from the sector. This underlines the need to start planning for a just oil and gas sector transition in order to avoid an even bigger problem in the future as the sector becomes increasingly dependent on public money for survival."*[112] Reforming Indonesia's subsidies for coal-fired power could free up IDR 86 trillion (USD 5.8 billion) in government budget for other spending, ideally for subsidizing replacement renewable-based energy.[113]

South Korea is another example of a government continuing to allocate ample public financial support to hoist the fossil fuel industry. In fact, South Korea's subsidies for fossil fuels ranked fourth highest among all G20 nations in 2020, ostensibly because they are a prominent fossil fuel-importing nation and believe it is necessary to keep these costs low domestically. Between 2017 and 2019, the South Korean government provided USD 12.4 billion in public support for fossil fuels, including public finance (USD 6.6 billion), investments in fossil fuel-intensive SOEs (USD 4.3 billion), tax expenditures (USD 1.2 billion) and direct transfers (USD 200 million).[114] Conversely, South Korean subsidies for renewable energy procurement were a more humble USD 2.2 billion in 2018 (the latest figure available).[115]

4.2.4 DECOMMISSIONING AND RETIRING EXISTING FOSSIL FUEL ASSETS

Policies to drive the early retirement or decommissioning of existing fossil fuel-based infrastructure – particularly coal-fired power stations and coal mines – are considered central to an effective just energy transition.[116] "Early retirement" means any time before the expected end of the economic lifetime of the plant or mine, which can still be decades away. Without such early retirement plans, increasing the production of renewable electricity runs the risk of flooding existing "brown" grids with "green" power in a bid to keep up with climbing electricity demands from, for example, population growth, prompting an energy addition rather than an energy transition.[117] In this scenario, fossil fuel-intensive facilities remain operational, continuing to release GHG emissions unabated.

A China specialist stressed that *"the biggest issue we need to be discussing is phasing out coal, not phasing in renewables. We have seen a lot of movement in renewables in China, but not nearly enough on coal."*[118] This is especially pertinent given that the bulk of China's operational coal-fired electricity plants are only about a decade old, which will implicitly require early retirement.[119] With regard to the early retirement of fossil fuel-based electricity plants, another interviewee pointed out that *"in Asia, only Indonesia and the Philippines have announced interest in this".*[120] Another noted that *"India's Prime Minister Modi would only let this happen once you build renewables to replace the retired coal capacity."*[121]

However, the expert informants agree that the complexity and amount of capital needed to lead fossil fuel-fired electricity plants into early retirement have been severely underestimated. This decommissioning process will require mobilizing substantial capital, and *"once the governments or development banks announce it, who will fund it? Thus far there have been some talks by smaller commercial players in Indonesia, but nothing concrete."*[122] Mobilizing finance for decommissioning currently seems unlikely given *"there is no regulatory or financial framework to help heavy industry or financiers transition from coal to renewables. China has its green bond catalogue (its version of a green taxonomy), but transition finance is entirely neglected from it."*[123] Taxonomies are discussed in more detail in section 4.5.3.

Another key concern of policymakers and financiers alike is whether decommissioning a selection of coal-fired power plants will result in a true energy transition when new fossil fuel projects are still in the pipeline. As one informant pointed out, *"why would we pay you a few billion dollars to decommission a few coal plants if you are planning on building another five?"*[124] Several interviewees explained that there are several coal plants in various pipelines across Asia. For instance, through the RUPTL, the Indonesian government has disclosed plans to procure 20 GW of new installed coal-fired power capacity between 2021 and 2030, which will account for 50% of all new procured power.[125] On top of that, state-owned power utilities – particularly in Asia – are notoriously opaque about their business plans: *"investing in these decommissioning plans would be like putting billions of dollars in a black box."*[126]

4.2.5 BANS AND MORATORIA

Bans and moratoria on fossil fuels (a temporary ban, usually implemented with a mid- to long-term timeframe) are considered two of the most effective and logistically and administratively feasible policy instruments to drive an energy transition, as they directly abate fossil fuel energy production.[127] However, this approach seems to be largely neglected in Asia.

The only country to pursue a moratorium is the Philippines. The government's Department of Energy (DoE) announced a moratorium on greenfield coal power projects in 2020, which has thus far successful shelved 10 projects, which together would have added about 6 GW of coal-fired electricity to the Philippine grid. This moratorium could potentially drop the coal share in the country's energy generation mix from 41.7% in 2020 to 14.2% by 2040.[128]

4.3 DEMAND-SIDE ENERGY MARKET POLICIES AND REGULATIONS

This section discusses the key demand-side energy market policies being implemented in Asia and juxtaposes all the supply- and demand-side policies discussed in this section and in section 4.2.

4.3.1 CARBON TAXES

A carbon tax (also known as an emissions tax) is a tax levied on the volume of greenhouse gases (GHGs), measured in carbon dioxide equivalents (CO_2e), which is emitted by an energy consumer, whether end consumers or companies.[129] It is widely assumed that such a tax is a simple, transparent and cost-effective solution to tackling climate change because it changes investment and consumption behaviors.[130] By making carbon-emitting energy more expensive, carbon-free energy (renewables) becomes relatively cheaper.

However, this is notably a demand-side policy and therefore taxes fossil fuel consumers rather than producers, potentially jeopardizing the livelihoods of poorer citizens by increasing electricity and other energy prices (see section 4.7.3).[131] As such, a carbon tax will only be effective and just under four conditions:

- **The purpose of the carbon tax must be to reduce carbon emissions.** Some carbon taxes are motivated by a government seeking to bolster state income due to a recession, for example, in Indonesia. Being motivated to reduce carbon emissions is important to ensure the tax will still be applied after economic conditions improve.
- **The carbon tax must be sufficiently high.**[132] Some estimates suggest that a carbon price of USD 80 per tonne of carbon may not be sufficient to meet the Paris Agreement goals,[133] and others argue that effective carbon taxes should exceed USD 100 per tonne.[134]
- **The tax revenue should be used to accelerate investments in renewable-based alternatives.** Using carbon tax revenues for purposes other than the energy transition will not achieve the expected target.
- **A carbon tax must be combined with measures to reduce the impacts on vulnerable segments of the population.** This includes improving access to affordable and reliable energy for communities that currently depend on fossil fuel.[135]

Several Asian countries have either implemented or are considering implementing a carbon tax. In 2019, Singapore became the first country in Southeast Asia to implement an economy-wide carbon tax,[136] although it was notably set at only USD 3.50 per tonne of CO_2e[137] and is expected to rise to just USD 18 per tonne CO_2e by 2024[138] following an impact assessment.[139] India and Japan have also implemented similar carbon taxes.[140] In Japan, it is set at USD 2.65 per tonne CO_2e, which according to the Japanese government will reduce GHG emissions by 26% by 2030 – although it is unlikely that such a low carbon price would result in meaningful emissions reductions (see section 5.1.4).

A carbon tax is under consideration in Malaysia, Thailand and Vietnam.[141] In Thailand, *"'carbon' is not yet considered a pollutant, so [the government is] developing legislation at the moment to include carbon and other GHGs as pollutants, and price them accordingly."*[142] That is, there is no legal framework to prescribe a carbon tax. In Indonesia, however, the carbon tax under consideration was motivated by the need to generate additional state revenue[143] after tax revenues fell dramatically during the economic crisis caused by the COVID-19 pandemic.[144]

Globally, the only countries that seem to have reputable carbon taxes in place (i.e., surpassing the USD 100 per tonne threshold) are Liechtenstein, Sweden and Switzerland, all of which have carbon taxes just under USD 130 per tonne, and Uruguay, which has an even higher tax rate of USD 137.30 per tonne.[145]

4.3.2 EMISSIONS TRADING SCHEMES, CARBON MARKETS AND CREDITS

Emissions trading schemes (ETS) are often discussed in parallel with carbon taxes because both, in theory, aspire to accomplish roughly the same thing: to limit GHG emissions by putting a price on carbon. However, ETS and carbon markets differ from carbon taxes in that an upper cap is placed on carbon emissions (either across the entire economy or certain sectors) and permits (often called Tradeable Emissions Permits (TEPs) in a certified and regulatory framework) are allocated to companies. Companies can either use their TEPs to emit GHGs in their production processes or trade unused TEPs to other higher-emitting buyers in the market. If prices for TEPs are high, the ETS creates incentives for both sellers and buyers to save energy or switch to renewables.

Thus far, China, Japan and South Korea are the only Asian countries to have adopted and implemented an ETS, although Indonesia, Malaysia, Thailand and Vietnam are considering it.[146] Carbon prices vary widely in existing ETS, with values reaching as high as USD 29 per tonne CO_2e in South Korea and as low as USD 1 per tonne CO_2e in Japan.[147] Notably, *"Such… low carbon price[s] could not generate adequate carbon revenue to incentivize clean energy investment."*[148]

Some ETS cover wide swathes of Asian economies. China has recently and officially approved seven different ETS programs spanning Beijing, Shanghai, Tianjin, Chongqing, Shenzhen, Hubei and Guangdong.[149] These Chinese *"carbon markets have [thus far] covered more than 1,000 energy entities from more than 20 industry sectors, with total emission trade volume reaching 200 million tons of carbon with an estimated monetary value of about USD 7 billion"*.[150] The Chinese ETS have potential to cover closer to 1.2 billion tonnes CO_2e once fully implemented.[151] However, experts agree that China's ETS have priced carbon *"at too low a value for it to be accomplishing what the government wants. It might be relevant in the longer term, but right now it's not."*[152]

It is worth stressing that ETS often use a "free allocation" method to allocate tradeable permits or emissions allowances across the various entities in the sectors covered by the ETS. Of the seven Chinese ETS schemes mentioned here, all use this technique as the predominant method to allocate emissions allowances, while "auctions" were also used in four ETS for market stabilization.[153] This may have major implications for the "just" element of China's prospective energy transition, in comparison to the European Union's ETS. When the EU ETS began in 2005, *"handouts given to only ten of Europe's intensive industrial users of fossil fuels exceed the total EU budget for environment"*, and moreover, *"[m]any European corporations sell or charge their customers for surplus emissions rights that they receive gratis under the EU ETS, ploughing the proceeds back into fossil-fueled business as usual."*[154]

ETS are quite complex and challenging to develop, not least because they involve *"large entities – large buildings, large power plants, large transport companies – which requires a lot of expertise. You cannot rely on small entities because you need a certain amount of volume for ease of implementation."*[155] As a result, *"the starting point should be establishing a reputable carbon price"*[156] that can be used as a platform for implementing ETS in the future.

Unlike ETS, which have a mandatory regulatory framework, voluntary emissions reductions schemes, which use carbon offsetting and carbon crediting mechanisms, are also being pursued in Asia and beyond. Under these types of schemes, companies or organizations can invest in emissions reduction projects (typically in developing economies) and claim the emissions they avoided from doing so, granting them a "credit" that can be used to offset other ostensibly unavoidable emissions elsewhere in their production.[157] This type of voluntary carbon offsetting was first introduced in 1995 in Article 12 of the Kyoto Protocol as the Clean Development Mechanism (CDM).[158] Several ASEAN members (Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam) mobilized USD 470 million under the CDM between 2008 and 2012.[159]

More recently, Thailand piloted a voluntary ETS in 2015, although the scope was limited to just 15 factories, and Indonesia *"developed its own voluntary carbon market 'Nusantara Carbon Scheme'. However, the pace of the carbon market development in the region is very slow compared to East Asia, North America, and Europe, with a wait-and-see approach to Article 6.2 of the Paris Agreement on Climate Change"*[160] (also see section 4.1.4).

4.3.3 SUMMARY OF ENERGY MARKET POLICIES AND REGULATIONS

Table 15 shows which Asian countries have adopted the supply-side and demand-side policies discussed in sections 4.2 and 4.3. Several other energy market policies that have not yet been discussed in detail are also included in the table.

TABLE 15 - OVERVIEW OF ENERGY MARKET POLICIES IN ASIA

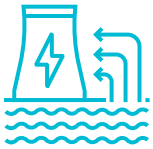
Type	Policy	Summary	Bangladesh	Cambodia	China	India	Indonesia	Japan	Malaysia	Pakistan	Philippines	Singapore	South Korea	Thailand	Vietnam
Supply-side	Bans and moratoria	Permanent or temporary bans on fossil fuel extraction and production									⊗				
Supply-side	Decommissioning existing fossil projects	Policies to drive early retirement of existing fossil fuel-intensive infrastructure					⊗*		⊗*						
Supply-side	Energy production payment	Providing a more attractive rate of return to compensate for higher capital costs of some renewable technologies, related to renewable energy subsidies			⊗	⊗					⊗		⊗	⊗	
Supply-side	FiTs and FiPs	Guaranteed purchase of energy at a specific price			⊗	⊗	⊗	⊗	⊗	⊗	⊗			⊗	⊗
Supply-side	Fuel blending	An obligation for road transport fuel supplies to maintain a specific fraction of environmentally sustainable biofuels in their fuel mix			⊗	⊗	⊗		⊗		⊗		⊗	⊗	⊗
Supply-side	National power procurement plans	National plans (usually developed by a government ministry) that lay out the installed capacity procurement goals for all electricity types	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Supply-side	Subsidies	Direct and indirect support for fossil fuel- and renewable-based power generation	⊗		⊗	⊗	⊗	⊗	⊗	⊗	⊗		⊗	⊗	⊗
Supply-side	Tradeable renewable energy certificates	Certificates awarded for generating 1 unit (generally 1 MWh) of renewable energy that can later be sold on a market for other producers to meet quota requirements (not to be confused with tradeable emissions permits, see section 4.3.2)				⊗		⊗		⊗			⊗		⊗
Demand-side	Carbon tax	Tax levied on CO_2e emissions			⊗	⊗	⊗*	⊗	⊗*			⊗		⊗*	

Type	Policy	Summary	Bangladesh	Cambodia	China	India	Indonesia	Japan	Malaysia	Pakistan	Philippines	Singapore	South Korea	Thailand	Vietnam
Demand-side	ETS	Markets designed to cap and trade emissions through commodified emissions permits			✕			✕	✕*				✕	✕	✕
Demand-side	Net metering/ billing	Using excess power generation by customers to offset future billing cycles				✕			✕	✕	✕	✕	✕	✕	✕
Demand-side	Renewable energy quota	Establishing a minimum quota of renewable-based energy for utilities to provide			✕	✕	✕		✕		✕		✕		✕
Demand-side	Tax credits	Fiscal incentives that award an investor or producer with a tax credit based on the amount of renewable energy produced			✕	✕	✕				✕		✕		✕
Demand-side	Tax incentives	Reducing taxes for various kinds (e.g., sales, energy, value-added) to reduce the cost of renewable energy systems for the installer or generator	✕		✕	✕	✕	✕	✕	✕	✕		✕	✕	✕
Demand-side	Tendering	Procuring renewable energy through a competitive selection in which sellers offer the lowest bids at which they are willing to sell to the grid	✕	✕	✕	✕	✕	✕	✕		✕	✕			✕

Source: Various, but extensively drawing on: Susantono, B., Zhai, Y., Shrestha, R. M. and L. Mo (eds) (2021), Financing Clean Energy in Developing Asia, Manilla: Asian Development Bank, p.37–40

*Policy is under consideration and not yet implemented

4.4 ENERGY INFRASTRUCTURE



This section discusses inadequacies concerning intranational and regional energy infrastructure that currently prevent additional renewable energy capacity from being installed.

This section discusses the inadequacies of intranational and regional energy infrastructure currently preventing additional renewable energy capacity from being installed. This includes limitations to national power grids (see section 4.4.1) and a lack of transboundary energy infrastructure (see section 4.4.2), both of which can limit the growth of renewable energy power installation and consumption. This involves evaluating the interconnectedness of energy supply- and demand-centers at the subnational, national and regional levels, given that renewable energy supply is often abundant in areas far away and disconnected from centers with high energy demand.

The following indicators are analyzed:

- Geographical breakdown of existing renewable energy production centers and areas with high potential for solar PV and wind power generation;
- Review of existing (transboundary) infrastructure (i.e., transmission lines), or lack thereof, connecting renewable energy supply centers to local, national and regional grids supplying high-demand centers.[161]

4.4.1 POWER GRID INADEQUACY AND OBSOLESCENCE

Discrepancies between renewable energy supply centers (i.e., geographical areas where intermittent solar PV and wind capacity are highest) and energy demand centers are another immense challenge to a just energy transition in Asia. In China, for example, 43.7% of national solar PV capacity (based on average annual radiation) is situated in the northwestern provinces of Xinjiang, Gansu, Qinghai, Inner Mongolia and Jiangsu, which are thousands of kilometers away from economic and population centers along the east coast.[162]

A similar issue plagues Indonesia, where ample solar radiation is available mainly in the eastern islands, which are physically disconnected from the island of Java (where Jakarta is located), Indonesia's main energy demand hub.[163] Kalimantan, Sumatra and Sulawesi are also regions with significant biomass production,[164] but challenges across the energy ecosystem prevent power generation from reaching energy consumers. Indonesia's grid is highly fragmented with a variety of renewable energy, inadequate system designs and insufficient operation and maintenance practices.[165]

Vietnam currently imports electricity from Cambodia, China and Laos. However, the transmission grid faces limitations because larger energy projects are installed far from the main demand hubs. Poor infrastructure and an unreliable distribution network also hinder Vietnam from effectively managing supply and demand.

In these cases, constructing one expansive national grid is challenging. It may be *"neither feasible technically nor economically to extend the national grid to remote islands or to route transmission lines through mountainous areas"*, particularly since the relative number of households to be connected is quite low. Grid-scale storage could partially alleviate the intermittency challenge, but the key question then becomes whether these batteries are even remotely affordable for Asian countries.[166]

In many cases, *"Asian state companies or utilities do not have the finance to modernize their grids like the EU. The big bucks go to solar PV and wind power, and grid operators then start to struggle because they are left with an obsolete grid."*[167] This is not necessarily the case in China, however, which *"keep building high voltage, long distance lines all the time."*[168]

According to experts, awareness of the importance of grid investments is just beginning to grow. In many Asian countries, limited grid connections and capacity have left a substantial fraction of renewable energy capacity untapped. For instance, Indonesia is only capitalizing on roughly 7% of its national geothermal power production capacity. Moreover, roughly 150 MW of solar power is installed on Indonesia's grid, whereas the country has an estimated solar power-producing potential of more than 200 GW (see section 4.4.2).[169]

Distributed Renewable Energy Systems (DRES) such as solar panels on rooftops, which are not connected to the national grid, may be one solution to inadequate power grids and provide energy to the so-called "last mile".[170] However, as of 2017, just 16% of solar PV in China was distributed, with the bulk (84%) large utility-scale projects.[171]

Still, Asian countries have made considerable progress on the distributed energy front, with more than 16,000 mini-grid projects installed in the Asia-Pacific region as of 2021, accounting for 85% of global mini grids. These were predominantly installed in Afghanistan (4,980), Myanmar (3,988) and India (2,800).[172] These projects are not exclusively based on renewable energy, but evidence of DRES initiatives are emerging, with the ADB piloting projects in Bangladesh, Bhutan, Nepal, Myanmar and the Philippines.[173] Hurdles to expanding mini-

grid projects typically include *"low demand and low population densities, affordability of the electricity consumed, inapt technical skills, remote location, limited resources, access to financing, and a lack of regulatory and institutional support."*[174]

One expert informant offered another perspective, arguing that *"if we are talking about first priorities for Indonesia, then it shouldn't be to build a massive green grid, but to modify the existing demand."*[175] They argued that there is no reason for large energy-consuming industries (e.g., mineral refineries and battery industries) to be located in the typical energy demand hubs on Java. Rather, *"they can be shifted to operate their business in renewable energy hotspots in the east, since they consume so much energy, this would alleviate the pressure to drastically revamp the grid."*[176]

Notably, Singapore faces an opposite problem, with *"high population density, small size (728 square kilometers), land scarcity and low availability of renewable energy resources,"*[177] which explains its tenacious reliance on fossil fuels to meet 96% of primary energy demands (see 2.1).

4.4.2 TRANSBOUNDARY GRID CONNECTIVITY

Disconnections between renewable energy demand and supply centers are an issue for the 13 countries in this study (see section 4.4.1) and the Asian region as a whole. The question of whether it is economically, financially and technically feasible to connect solar or wind supply hubs in one country to energy demand hubs in another, perhaps through a regional power grid, requires looking at transboundary energy infrastructure.

Transboundary energy infrastructure plays a role in the energy transition, as it affects energy costs and the quality of power generation. A lack of infrastructure can create an imbalance between supply and demand, low-capacity usage and reduce the overall benefits of renewable energy.[178] Naturally, this can have geopolitical consequences, altering the global landscape of energy and power distribution, affecting relations between states, as well as other social, economic and environmental drivers of geopolitical stability.[179]

Energy security within ASEAN requires regional cooperation in renewable energy financing among Member States, which is currently concentrated on the power sector and its infrastructure. The long-term goal of a common ASEAN power grid is still under development.[180] At the regional policy level, multi- and bilateral energy trading agreements for ASEAN are under discussion (e.g., regional power trading), but the grid infrastructure that will allow cross-border trading still needs funding.[181] Within ASEAN, the Greater Mekong Subregion is working on cooperation in the energy sector, specifically on hydropower.[182]

Transboundary energy infrastructure is easier for countries that share a land border. While countries are exploring interconnectivity within the region (e.g., Australia and Myanmar potentially exporting solar power to Singapore), the issue of connecting islands remains.[183] Initiatives such as the ASEAN Catalytic Green Finance Facility has potential to address the lack of access to financing and unlock investment in transboundary energy infrastructure.

However, some developing countries are not in a position to explore regional cooperation because they are still focused on connecting communities to the grid. Approximately 2 million people (2% of the population) in the Philippines still do not have reliable access to electricity (see section 4.7.3).[184] Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) had the lowest electrification rate of 43.10% in 2021. In 2020, power demand was concentrated in Luzon (72% of total consumption in the country), but the share of renewables in the power generation mix is the lowest in the region (at 15%), compared to 48% in Visayas and 26% in Mindanao.[185]

DRES could offer relief, but stakeholders pointed to lengthy administrative processes as a barrier to investment in remote, off-grid renewable energy projects. This includes the review process for renewable energy service contracts, which requires 156 signatures for the application to be approved.[186]

4.5 FINANCIAL SECTOR REGULATIONS

4.5.1 WHY FINANCIAL SECTOR REGULATIONS ARE RELEVANT

The financial sector has a crucial role to play in a just energy transition in Asia. Financial consistency is so central to mitigating the adverse impacts of climate change that it is one of the three central objectives of the Paris Agreement (Article 2.1c).

Our analysis of the types of energy that Asian banks and investors have been investing in over the past six years (see chapter 3), shows that almost all are still predominantly financing fossil fuels and not renewable energy.

To change the status quo, policies adopted by governments and financial regulators that regulate financial institutions are vital to enabling finance for renewable energy and limiting it for fossil fuel energy generation. For instance, by increasing the weighted risk of fossil fuel projects, financial regulators can make it more expensive to finance these projects and, in effect, incentivize

investments in alternative energy sources. Similarly, by mandating full transparency and disclosure of financed scope 1, 2 and 3 emissions, governments and regulators can pressure financial institutions to align with their pledged commitments to the Paris Agreement.

According to a 2017 study by the UN Environment Inquiry and the Development Bank of Singapore, achieving the NDCs would require an investment of USD 3 trillion between 2016 and 2030 in ASEAN countries.[187] While governments can take the lead in catalyzing these investments, the OECD estimates that public financing alone will not be sufficient to achieve ASEAN's climate goals.[188] Against this backdrop, green financing opportunities could create a win-win scenario for the financial sector.[189]

In recent years, almost all financial sector regulators in this report's focus countries are taking steps to encourage banks and investors to give more attention to sustainability considerations in their financing and investment decisions. These initiatives are driven by the IFC's Sustainable Banking and Finance Network[190] and the Network for Greening the Financial System (NGFS), which brings together 95 central banks and financial supervisors.[191]

This section discusses two of the main types of regulatory frameworks being adopted, implemented or explored in Asia. First, bank regulations, which are often developed by a country's central bank or financial sector regulator and limit financing for specific companies, sectors or industries (see section 4.5.2). Second, capital market regulations, which are usually created by a country's Securities Exchange Commission (SEC) or the stock exchange itself, and regulate all listed companies and asset managers within their respective domains (see section 4.5.3).[192]

4.5.2 BANK REGULATIONS

Central banks or financial sector regulators from 11 of this study's 13 countries have adopted regulatory frameworks that require their financial sectors to consider the sustainability implications of their financing activities (or have recently made proposals for doing so). Often, such regulations take the form of "taxonomies" that define which activities and technologies are eligible for finance and which are not. Globally, the first taxonomy of this kind was developed by the European Union, inspiring regulators in other countries. However, the EU decision to classify LNG as a "transition fuel"[193] has weakened its authority as a useful benchmark for other taxonomies.

In Indonesia, the Financial Services Authority (OJK) released Indonesia's Green Taxonomy 1.0 in January 2022 as part of the Sustainable Finance Roadmap Phase II (Phase 1 was released in January 2021). Notably, the taxonomy is a guide rather than a mandatory framework, and uses a traffic light system to categorize investments that are aligned with climate and sustainability goals (green), misaligned (red) and in transition (yellow). This taxonomy includes a total of 919 economic sub-sectors, 422 of which are considered yellow – *"in transition, avoiding significant harm but not yet fully aligned with the taxonomy's green criteria"*.[194] Problematically, this yellow category still includes carbon-intensive and fossil fuel-based sub-sectors that include, but are not limited to, existing fossil fuel infrastructure and the notorious "clean coal" projects. *"It acknowledges the political and economic reality of fossil fuel being deeply embedded in Indonesia's system. This is an acceptable part of the transition, but it lacks clear pathways detailing a credible transition. Without a clear transition pathway, there is a risk that carbon emissions from these "yellow" activities are locked-in for the long term."*[195]

Thailand and Cambodia are the two key outliers. In Thailand, there are no political mandates to disclose emissions or incorporate sustainability criteria in financial activities, although some financial institutions have voluntarily begun to disclose their emissions and have pledged to become net zero, such as Kasikorn Bank (see section 4.6.4).[196] Meanwhile, the National Bank of Cambodia has not issued any green financing policies itself, but has *"provided inputs to ASEAN, as the association is developing the ASEAN Taxonomy for Sustainable Finance… As a member state, Cambodia will follow the basic elements of the Taxonomy."*[197] Moreover, the Securities and Exchange Regulator of Cambodia (SERC) *"encourage[s] private companies to issue green bonds, but it doesn't mean that by law they must only issue green bonds"* (also see section 5.5).[198]

Notably, only one of the regulatory frameworks specifically and directly regulates fossil fuel financing. Bangladesh's Sustainable Finance Policy for Banks and FIs has two exclusion lists, one that prohibits any type of financing for certain sector activities, and another that disqualifies certain sector activities from sustainable finance eligibility. Notably, "upstream fossil fuel extraction and production (including gas, coal and oil)", "New standalone fossil fuel electricity production", "Refining of oil" and "Distribution of transport of fossil fuels" all fall under the latter, and are therefore ineligible for sustainable finance, but are still permitted under normal financial mechanisms.[199] Bangladesh is *"considered a front-runner in the development of sustainable taxonomies, largely driven by its vulnerability to the effects of climate change"*, but even this more progressive taxonomy is still inadequate to curtail future investment in fossil fuels.[200]

Meanwhile, financial regulations in other countries do not prohibit financing of fossil fuels altogether. For example, Bank Negara Malaysia released the

national Climate Change and Principle-based Taxonomy (CCPT) in April 2021 that includes five sets of principles, the fifth of which concerns "prohibited investments" that do not include fossil fuels to any degree.[201] The first principle covers "climate change mitigation", within which renewable energy power procurement plays a prominent role, but by allowing unabated investment in fossil fuel, Malaysia's CCPT is more likely to drive a renewable energy addition than a transition.

Similarly, in China, brown industries are not completely excluded from green finance policies. The Guidelines for Green Development of Outbound Investment and Cooperation (July 2021) jointly issued by the Ministry of Ecology and Environment (MEE) and the Ministry of Commerce (MoC) and the earlier (April 2021) *Green Bond Endorsed Projects Catalogue* (2021 Edition) published by the People's Bank of China (PBoC), National Development and Reform Committee (NDRC) and the China Securities Regulatory Commission (CSRC), exclude high-carbon projects related to fossil fuel-based energy, such as "clean coal technology". However, other green finance policies and regulations, including green credit standards, green industry catalogues, etc., have not been adjusted accordingly. Some projects that met those standards or requirements for green finance do not fully meet the goal of carbon neutrality and net-zero carbon emissions.[202] In the *Opinions on Improving the System, Mechanism and Policy Measures for Energy Green and Low-Carbon Energy Transformation* (January, 2022) issued by the NDRC and the National Energy Administration (NEA), green and low-carbon transformation of fossil fuel-based energy enterprises is listed as one of the key areas supported by the National Green Development Fund and other low-carbon transition funds, and sustainability-linked bonds are promoted to support the green and low-carbon transformation of fossil fuel energy companies.[203]

In June 2022, CBIRC's *Green Finance Guidelines for Banking and Insurance Industry* requires banking and insurance institutions to effectively identify, monitor and prevent environmental, social and governance (ESG) risks in their business activities and pay particular attention to the risks caused by four categories of customers (borrowers) and their main contractors and suppliers, i.e., bank credit customers, customers who apply for ESG risk-related insurance, borrowers of insurance funds in non-financial investment projects and other customers obliged to carry out ESG risk management according to laws or contracts. These same guidelines for the first time mentioned the disclosure of carbon emissions control targets, outcomes and climate change mitigation and adaptation of their own business activities, and laid out disclosure requirements for the carbon accounting of financial institutions' investment and financing activities. The PBoC also issued the *Guidelines on Carbon Accounting for Financial Institutions (Trial)* in 2021, which reference financial institutions' carbon accounting of Scope 3 emissions in their investment and financing business. That same year, PBoC published and began to implement guidance on environmental information disclosure for financial institutions in green finance pilot areas, requiring banking institutions in the pilot areas to disclose scope 1, 2 and 3 emissions.[204]

To further complicate matters, in November 2021, the State Council set up an RMB 200 billion Special Re-loan to Support Clean and Efficient Utilization of Coal, which is used in seven fields: safe, efficient, green and intelligent coal mining; clean and efficient coal processing; clean and efficient utilization of coal power; industrial clean combustion and clean heating; residential clean heating; comprehensive utilization of coal resources; and vigorous promotion of the development and utilization of coalbed methane.[205] Following that, in May 2022, the PBoC added a special re-loan of RMB 100 billion to support the development and use of coal and enhance the capacity of coal reserves in two specific areas:

- **Coal safety production and reserves:** modern coal mine construction, green and efficient technology application, intelligent mine construction, coal mine safety transformation, coal washing, coal reserve capacity building and other projects. Financial institutions are required to prioritize these projects.
- **Coal power supply guarantee for coal power enterprises:** the working capital loans issued by financial institutions to coal power companies for coal purchase are eligible for special re-loan support.[206]

In the Philippines, Bangko Sentral ng Pilipinas (BSP) unveiled two regulatory frameworks in 2020 – Sustainable Finance and Environmental and Social Risk Management Frameworks – under which banks are required to disclose six elements in their annual reporting:

1. Sustainability strategic objectives and risk appetite;
2. Overview of their environmental and social risk management system;
3. Products and services aligned with internationally recognized sustainability standards and practices (including issuance of green, social or sustainability bonds);
4. Breakdown of environmental and social risk exposure of the bank per industry or sector;
5. Information on existing and emerging environmental and social risks and their impacts on the bank; and
6. Other initiatives to promote adherence to internationally recognized sustainability standards and practices.[207]

Notably, explicit mention of fossil fuel investment disclosures are omitted, putting into question the efficacy of the BSP framework.

Some other regulatory frameworks and taxonomies address fossil fuel financing, but in a much more concerning way. South Korea's Green Taxonomy (K-Taxonomy) openly declares LNG a "green" fuel source. *"Gas is now a sustainable investment in South Korea as far as the Korean green taxonomy is concerned… Korea's new guidelines undermine its climate target of cutting 40% of its carbon emissions by 2030… stating that natural gas power plants that produce emissions below 340g of CO_2/kWh will temporarily be classified as "green" from 2030 to 2035."*[208]

Notably, neither policies increasing the risk weighting of fossil fuel-intensive projects and companies, nor regulations encouraging or mandating premature decommissioning and phasing out of existing fossil infrastructure were implemented across any of the studied frameworks. In 2021, the PBoC mentioned the adjustment of green and brown asset risk weights, along with climate risk stress testing and environmental and climate risk analysis, as tools to enhance the capacity of China's financial system to manage climate change risks. It has been widely advised by Chinese policy experts that China lower the risk weight of green assets and increase the risk weight of brown assets in its green finance policy, but this has not happened yet.

4.5.3 CAPITAL MARKET REGULATIONS

Of the 13 countries in the study, 11 are regulating their capital markets vis-à-vis ESG-related issues, either mandating or encouraging asset managers and companies to embed and disclose the relevant ESG implications of their investments, including their GHG emissions and overall alignment with the Paris Agreement. Only six of the countries (India, Indonesia, Malaysia, Singapore, Thailand and Vietnam) require ESG reporting for all listed companies in their stock exchanges.[209]

ESG reporting requirements are typically developed by financial market regulators or stock exchanges. For example, Pakistan's regulator SECP published an ESG Regulatory Roadmap in 2020 that proposes a sustainable ESG roadmap for capital markets. It includes extensive awareness and advocacy sessions to align with all relevant stakeholders and capture the growing interest of institutional investors in ESG issues.[210]

According to the Philippines SEC, the environmental issues to be reported include energy consumption, ecosystem and biodiversity impacts and, very notably, scope 1 and 2 emissions – omitting scope 3, which could account for the vast majority of portfolio emissions of a business or financial institution.[211] Notably, there is no sustainability index in the Philippines to assess the effectiveness of these disclosures.[212]

South Korea's Financial Services Council (FSC) has developed a three-stage plan to improve corporate ESG disclosure. Phase one contains completely voluntary disclosures and lasts through 2025; phase two only mandates ESG disclosure for companies managing assets that surpass KRW 2 trillion and spans 2026–2029; and phase three mandates ESG disclosure for all actors from 2030 onwards.[213] The FSC ostensibly crafted this disclosure program to mitigate the adverse impacts of climate change and, in doing so, has declared its support for the Task Force on Climate-Related Financial Disclosures (TCFD).

In July 2021, the PBoC issued the *Guidelines on Environmental Information Disclosure for Financial Institutions*, which is considered China's first official green finance standard. The Guidelines apply to banks, asset managers, insurance companies, trust companies, futures, securities and other financial institutions, which are encouraged and guided to disclose a wide range of environmental information.[214] In January 2022, the PBoC, the State Administration for Market Regulation (SAMR), CBIRC and the CSRC jointly issued the *14th Five-Year Plan for Financial Standardization*, which vows to establish the ESG evaluation standard system in China.[215]

Finally, Japan's Exchange Group and the Tokyo Stock Exchange released an ESG disclosure handbook in 2020 to encourage environmentally sustainable investment in Japan. It encourages the voluntary adoption of some principles that focus on *"production of CO_2-free hydrogen" and "efforts for creating a hydrogen-based society"*, among others.[216] Notably, these policies seem to omit the social component of ESG and focus exclusively on the environmental dimension, although even these seem insufficient. That is, *"as Japan is very reliant on material and commodity imports… only 70% of scope 1 and 70% of scope 2 emissions are being taken into account", and scope 3 emissions accounting and disclosures are omitted completely, revealing a fundamental "risk measurement gap"*.[217]

4.6 POLICIES AND PRACTICES OF FINANCIAL INSTITUTIONS

This section looks at the policies and practices of the main banks and investors operating in Asia, analyzing why they predominantly choose to invest in, and finance, established energy companies even though these companies have hung onto fossil fuels and do not play an active role in a just energy transition.

4.6.1 COAL FINANCING AND INVESTMENTS IN ASIA

As the FFA 2021 study, *A Future without Coal*[218] showed, from early 2016 to the end of 2020, banks and other financial institutions provided USD 683 billion in loans and underwriting services to companies engaged in coal mining and coal-fired power to the 13 countries in the study, with annual coal credits fluctuating between USD 125 billion and USD 149 billion. Coal-attributable credit flows peaked in 2018 and have been declining ever since.

Most of the loans and underwriting services during this period were provided to coal companies active in China (USD 426 billion), followed by companies engaged in coal in Indonesia (USD 73 billion), Japan (USD 64 billion) and India (USD 55 billion) (see Figure 14).

Financial institutions from 15 countries accounted for 99% of all creditors. Figure 15 shows that the vast majority of loans and underwriting services provided to companies engaged in coal were by financial institutions from China (USD 441 billion), followed by financial institutions from Japan (USD 92 billion) and India (USD 44 billion).

As of June 2021 filings, global investors held USD 70.4 billion in coal-attributable bonds and shares issued by companies active in thermal coal in Asia. Figure 16 shows that 14% (USD 9.8 billion) of these investments were in the form of bonds and 86% (USD 60.5 billion) in shares.

Companies engaged in thermal coal in India received the highest-value investments in their bonds and shares (USD 17.7 billion). Figure 17 shows they were followed by companies active in China (USD 16.7 billion) and Japan (USD 14.1 billion).

Investors from 10 countries accounted for 98% (USD 69.1 billion) of all identified coal-attributable investments in Asia (see Figure 18). Financial institutions from the US held the highest-value coal-attributable bond- and shareholdings (USD 15 billion) followed by financial institutions from Japan (USD 14 billion) and China (USD 11 billion).

In this follow-up report to *A Future Without Coal*, the analysis is complemented by a focus on fossil fuel and renewable energy financing by Asian banks and investors from 2016 to 2022 (see chapter 3). Together, the two analyses produced the following conclusions:

- **Energy financing and investments by Asian banks and investors are still predominantly targeting fossil fuels.** Renewable energy accounts for only 14% of Asian banks' energy financing during the past six years on average, with no discernible upward trend. Of all the outstanding energy investments of Asian investors as of September 2022, only 21% supported renewable energy.
- **Collectively, this means that Asian banks clearly contradict principles 1 ("No financing for new coal**

FIGURE 14 - COAL-ATTRIBUTABLE LOANS AND UNDERWRITING PER DESTINATION COUNTRY (2016–2020, USD BILLIONS)

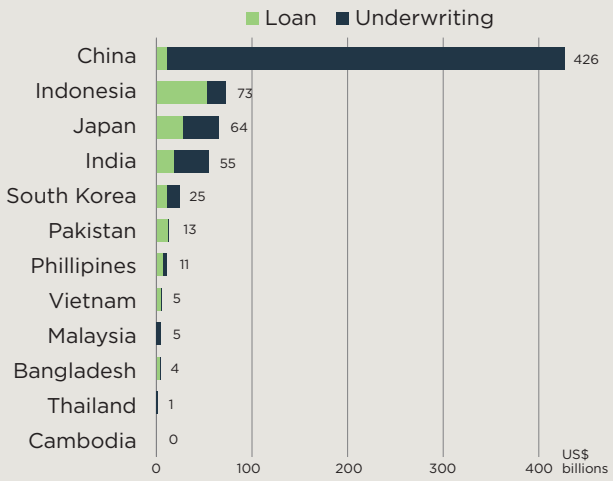


FIGURE 15 - COAL-ATTRIBUTABLE LOANS AND UNDERWRITING PER CREDITOR COUNTRY (2016–2020, USD BILLIONS)

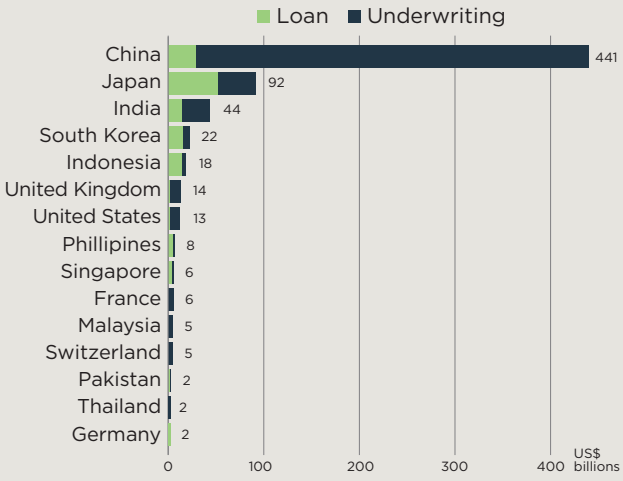


FIGURE 16 - INVESTMENTS BY FINANCE TYPE (JUNE 2021)

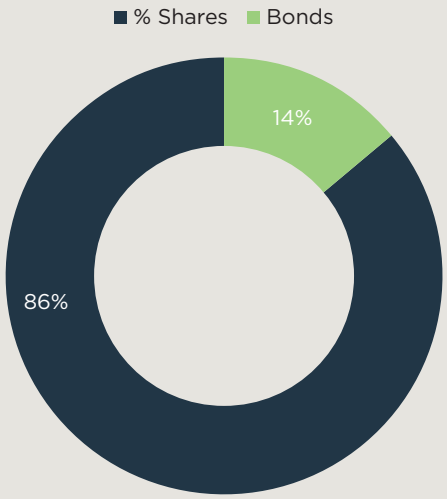


FIGURE 17 - COAL-ATTRIBUTABLE BOND- AND SHAREHOLDINGS BY DESTINATION COUNTRY (JUNE 2021, USD MILLIONS)

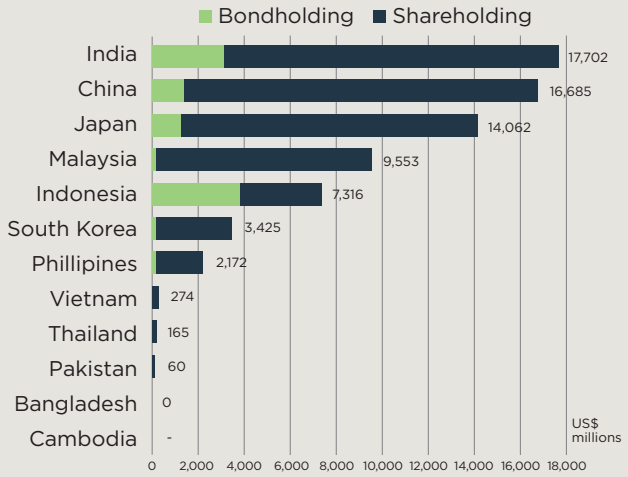
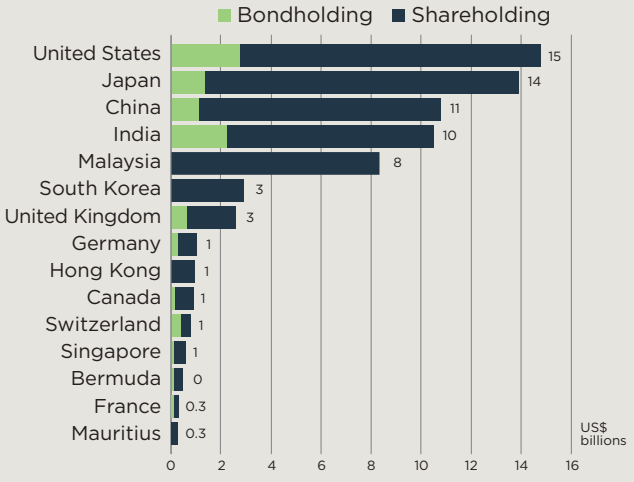


FIGURE 18 - COAL-ATTRIBUTABLE BOND- AND SHAREHOLDINGS BY INVESTOR COUNTRY (JUNE 2021, USD BILLIONS)



projects"), 2 ("A time-bound transition away from other fossil fuels") and 3 ("Active investment in renewable energy generation") required for a just energy transition in Asia.

- **Some Chinese banks, as well as some important investors from China and the Philippines, are transitioning towards renewable energy.**
- **Other financial institutions across Asia, especially in Japan, China and India, are still massively funding fossil fuels.** These financial institutions should urgently develop responsible credit and investment policies aligned with the principles of a just energy transition. Whether they are doing so is explored in the following sub-sections.

4.6.2 FOSSIL FUEL POLICIES

In line with the findings of chapter 3 and section 4.6.1, financial institutions from only three of the 13 selected countries (Japan, Malaysia and the Philippines,) have adopted policies that prohibit coal financing. In the Philippines this includes several financial institutions: Security Bank (which has pledged to phase out coal finance by 2033), RCBC (by 2031), BPI (by 2032) and BDO (no specific date yet). However, a study by the Centre for Energy, Ecology and Development (CEED) found that many still enable financing to flow into coal projects by underwriting or selling bonds issued by coal developers, throwing into question the merit and integrity of their coal phase-out pledges.[219]

In Malaysia, several banks have adopted coal exit policies, like CIMB, which plans to phase out all thermal coal mining and coal-fired power generation from its portfolio by 2040.[220] Similarly, Malaysian bank Maybank has pledged to phase out all financing for new coal mining projects in 2020, despite having issued USD 1.7 billion in loans and underwriting between 2018 and 2020 to generate more than 30 GW of coal-fired electricity.[221] However, given that Maybank's policy focuses *"exclusively on dedicated project financing and not on general corporate financing activities, and... exclude[s] specifically new coal mine deals but not new coal plants ones"*, it has been labelled *"not even the bare minimum."*[222]

Notably, this study did not find reliable information on concrete conditions set by Chinese financial institutions. However, the WWF conducted a survey with seven major Chinese banks (CDB, EXIM Bank, ICBC, BoC, CCB, AIIB) in 2019 on their overseas energy investment policies and practices. When asked whether they had a plan to reduce investment and financing in overseas coal-fired power generation, one bank clearly stated that it has such a plan in place. Three banks responded that since coal-fired power generation projects are always important for the local area, reducing investment depends on the local energy development strategy of the respective country. The other two were not sure whether they would make such plans in the future.[223]

Several reasons likely explain why most Asian banks and investors have refrained from adopting adequate policies to end fossil fuel financing and investment. One reason is that particularly *"developing nations have often been convinced in the past that they must have 'baseload' power to underpin economic development. This is despite the fact that the term 'baseload' is increasingly redundant in developed nations that have installed significant renewable energy capacity.*[224] To guarantee continuity in electricity generation (i.e., "baseload"), developing nations have often been willing to install large fossil fuel-based capacity financed by public finance from developed nations and domestic bank loans. The developers of such projects protect themselves by insisting on "capacity payments" (or "legacy payments") that are made regardless of whether their power generation is needed, and are often protected by long-term and binding contracts signed with national power utilities (see section 4.2.2).[225]

This transfers risks from the power generation developers onto the governments of developing nations and their citizens. *"Capacity payments have become burdensome in nations like Pakistan and Bangladesh"*. They are not only locking financial institutions into a fixation on fossil fuel-intensive energy, but also transferring high energy tariffs onto consumers by making it more costly to generate, transmit and distribute electricity in general (see section 4.4.1).[226]

4.6.3 RENEWABLE ENERGY FINANCING

As shown in chapter 3, Asian banks and investors provided much less financing to renewable energy than to fossil fuels from 2016 to 2022. This is despite some estimates that ASEAN Member States alone will require an additional USD 290 billion (or USD 27 billion annually at 2020 value) in investments to meet the regional goal of increasing the average renewable energy share of national electricity generation to 23% by 2030 (see section 4.2.1).[227]

ASEAN government estimates now forecast that an aggregate USD 13 billion will be spent annually on renewable power to meet the 2025 target, falling roughly USD 14 billion short per year. *"Closing this gap will require more concerted efforts to scale up renewable energy projects."*[228] ASEAN estimates might even be too low, and other Asian countries also have a huge need for investment. China alone is thought to require CNY 1.8 trillion (USD 260 billion) to reach the targets set forth in the Action Plan on Prevention and Control of Air Pollution, by expanding renewable energy generation and other non-energy-related activities.[229] Finance for renewable energy production must increase across Asia by several orders of magnitude in the coming years to align with international climate goals (see section 4.1).

Globally, private finance has been dominating the renewable energy landscape, accounting for 86% (USD 257 billion) of total investments from 2013 to 2018. Most has been allocated for the production of utility-scale solar PV and onshore wind power (roughly 70%+ annually).[230] About 17% of these investments in renewable energy have been funneled specifically to "developing" countries in Asia, with China leading the mobilization of renewable energy finance.[231]

However, it should be stressed that there *"have been relatively limited financial flows into the establishment of small-scale distributed energy systems"* as investments have focused mainly on grid/utility-scale projects.[232] In fact, off-grid renewable power procurement attracted a humble USD 460 million in this period, accounting for only 1% of overall energy investments.[233] Given issues with connectivity and obsolescence across Asian power grids, this may present a massive opportunity for future investment (see section 4.4.1).

In Indonesia, private capital involvement in low-carbon finance is somewhat less but still substantial, with some 30% of all power sector investments between 2016 and 2019 coming from private actors.[234] At the regional level, investments in solar PV and wind projects have started to gain traction due to declining costs. *"Cambodia saw a remarkable increase in its investment with a leap to $568 million in 2019, from almost nothing the previous year (due to financing of a photovoltaic [PV] facility of 135 MW)"*.[235] Other countries experienced declines in renewable energy investment between 2018 and 2019, although 2019 investments were not unsubstantial, including in Thailand (USD 229 million), Philippines (USD 100 million), Indonesia (USD 359 million), Malaysia (USD 250 million) and Vietnam (USD 2.6 billion).[236]

The ADB estimates that annual investment of at least USD 321 billion — and USD 4.8 trillion from 2016 to 2030 — is needed in the energy sector alone for developing countries in Asia to achieve the power mix set out in their NDCs.[237] While these are enormous amounts, the experts interviewed mainly agreed that the availability of financial capital for renewable energy production is not a barrier to a just energy transition in Asia.[238] Rather, the biggest issue is a lack of bankable renewable energy projects due to unattractive legal and regulatory frameworks (see section 4.2.2). Under present conditions it seems difficult to mobilize such amounts of private capital for green and low-carbon sectors, and since *"private capital tends to be risk averse and profit-driven, they are often reluctant to enter into environmental protection and low-carbon sectors for which potential returns are modest and perceived risks are high"*.[239]

Another challenge of mobilizing capital for renewable power procurement may be scale. As one expert informant noted, *"commercial rooftop and utility scale investments are not a problem to procure because mature financial players will step in, but it becomes a challenge for smaller scale projects because they often rely on new developers who want to build a 10 MW facility but have no portfolio experience."*[240] Given the disconnectedness of many Southeast Asian grids due to physical constraints (see section 4.4.1), there is a high need for smaller, decentralized and more financially risky projects to meet the principles of a just energy transition (see section 5.4.1).

The maturity of financial markets also plays a role, however, as it is argued that "most of the financing…to scale up low-carbon energy systems will be sourced from the private sector. In developed economies like… Japan…and the Republic of Korea, private sector supplies roughly two-thirds of capital mobilization through debt and equity channels."[241]

To play an enabling role in the energy transition, banks should change how they perform credit risk assessments for loans. This is because conventional risks, such as market risks, are higher for renewable energy projects. Environmental costs are also often not reflected in loan pricing and climate policies are typically an afterthought in banks' lending practices.[242]

Some estimates suggest that under the current business-as-usual scenario, the average share of renewable energy in the Asian energy mix would only increase from 15% to 17% by 2025, falling substantially short of national climate objectives (see section 4.1). Clearly, meeting this goal will require financial institutions to revamp their energy investment policies. The supply of bankable, de-risked renewable energy projects in Asia also needs to be amplified. The BSP reportedly collects PHP 2 billion (USD 35.2 million) in penalty fees every year from commercial banks that fail to comply with the sustainability-related conditions of its Strategy Map for 2020–2023 (see section 4.5.2), noting that *"banks would rather pay penalties than finance 'nonbankable' projects."*[243]

4.6.4 NET-ZERO COMMITMENTS

While national pledges by Asian governments to reach net-zero emissions have increased in recent years (see section 4.1.1), the same cannot be said for financial institutions. Only six financial institutions from the 13 countries in this study (Bangladesh, Indonesia, Japan, Malaysia, Singapore and South Korea) have declared clear net-zero commitments. For instance, South Korea's Shinhan Financial Group established a net-zero by 2044 target in October 2020, boasting they were the first East Asian bank to do so.[244] Other South Korean banks have since made net-zero pledges of their own and joined the Net-Zero Banking Alliance (NZBA), including Hana Financial Group, Industrial Bank of Korea, JB Financial Group, KB Financial Group and NongHyup Financial Group (see section 5.2).[245]

In Bangladesh, City Bank joined the NZBA in April 2022 and pledged to achieve net-zero portfolio emissions by 2050.[246] CIMB Niaga (Malaysian bank CIMB's Indonesian subsidiary) declared it would reach net-zero operational GHGs (scope 1 and 2) by 2030, and overall net-zero emissions by 2050.[247]

Net Zero Pakistan is a collaboration of private and public entities that has formed to achieve net-zero emissions by 2050, although it is unclear whether any banks had joined the alliance as of August 2022.[248] Meanwhile, Japan's largest banks (Sumitomo Mitsui, Mizuho and MUFG) have begun backing "zero carbon infrastructure", but no net-zero pledges were detected.[249]

No net-zero plans were disclosed by banks from the other Asian countries. In fact, not only have the three largest Philippine banks failed to set such targets (as of August 2022), but two (BDO Unibank and Bank of Philippine Islands) had their sustainability policies rated D on an A to F scale, meaning that *"banks acknowledge climate risks, but risk management processes and financing policies are weak".*[250]

Sixteen Asian banks are signatories to the NZBA, representing five countries in this study (Bangladesh, Japan, Malaysia, Singapore and South Korea).[251] None of the main Chinese financial institutions has joined the Glasgow Financial Alliance for Net Zero (GFANZ), the umbrella organization encompassing the NZBA and some other financial sector alliances. The only exception is HKEX, which is a member of the Net Zero Financial Service Providers Alliance (NZFSPA). However, commitments to contributing to national "dual carbon" goals are commonly made by Chinese financial institutions.[252]

The main issues with most net-zero pledges are that virtually all of them are long term, often using the year 2050 as an end goal, and rely on non-existent carbon capture and storage (CCS) technologies. This is described as *"licens[ing] a recklessly cavalier 'burn now, pay later' approach which has seen carbon emissions continue to soar."*[253]

As one expert informant explains, *"we should focus on 2030 and intermediary goals, and not look at things like CCS that will be deployed after 2030. So, the question becomes: how much decarbonization can we achieve before 2030?"*[254] With this in mind, it is important to note that none of the Asian banks quoted above has made any financed emissions commitments to be achieved by 2030. This seriously undermines the credibility of their long-term net-zero pledges.

4.7 SOCIAL POLICIES TO SUPPORT A JUST ENERGY TRANSITION

This section discusses the lack of social policies supporting a just energy transition in Asia. Transitioning away from coal and other fossil fuels towards renewable energy is crucial to limit global warming to the Paris Agreement target of 1.5°C.

However, simply replacing fossil fuels with renewable energy does not erase the environmental and social problems associated with the global consumption of energy. The transition itself also carries the risk of adverse impacts on workers, natural ecosystems and vulnerable communities.

Advocates for a just energy transition emphasize that addressing the environmental and human rights impacts of the energy transition is not just an opportunity for justice in a low-carbon future, but an absolute necessity. An expert informant from India stressed that the just transition is not just about energy. Rather, it requires a complete overhaul of the socio-economic system and consumption patterns. If we fail to take a holistic approach with justice at the center of a societal transition, then *"we will make the same mistakes as we did with fossil fuels".*[255]

The social and environmental problems associated with the present energy system, as well as the additional risks associated with a transition from fossil fuels to renewable energy, were explored at length in the 2021 Fair Finance Asia report, *A Future Without Coal*.[256] The report outlined nine principles that together define a just energy transition in Asia. This section will explore the policies linked to the last six principles:

1. Long-term planning and strategies to mitigate the adverse environmental and social impacts of renewables;
2. Respect for land rights and Free, Prior and Informed Consent (FPIC), and clear policies for community participation, gender sensitivity and consultation with CSOs in large energy projects;
3. Protection of the rights of workers and mainstreaming of Human Rights Due Diligence (HRDD) during the energy transition;
4. Safeguarding the health, livelihoods, culture and heritage of communities impacted by the continued use of fossil fuels;
5. Active and meaningful engagement and participation of women in the energy transition; and
6. Investments in access to electricity for all.

The following sub-sections will discuss policies in the 13 focus countries that could help to realize a just energy transition for workers (section 4.7.1), consumers (section 4.7.2), gender and vulnerable groups (section 4.7.3) and local communities and the environment (section 4.7.4).

4.7.1 LABOR POLICIES

A just energy transition requires looking at the winners and losers of a transition from fossil fuels to renewable energy, particularly in terms of affected sectors and livelihoods lost.[257] It is important to note that very few of the countries in this study currently have policies to support direct, indirect and induced fossil fuel workers during the energy transition process.[258] Some countries, like Pakistan[259] and Bangladesh,[260] do not have a significant coal sector, hence jobs lost during the transition will not be a major issue. Reforms to slow the growth of coal are needed rather than retraining and finding new jobs for coal workers.[261]

In countries with a significant coal mining sector, a phasing out will create problems for coal workers. For instance, coal-related employment in China has been declining as the country veers towards a more service-based economy. The country's Ministry of Finance has established a fund that has been used, in part, to provide a basic subsidy for resettling displaced workers.

Jharkhand, the state with the largest coal reserves in India, directly employs 300,000 people, supports another million workers indirectly and millions more work as illegal miners. About 10% of total employment in the state can be attributed to the coal sector. An energy transition without social safety nets could create coal ghost towns with significant job losses and falling local and state government revenues.[262]

The Japanese government has faced challenges with re-employment placements for displaced workers in coal mining areas. Transitioning to a different industry has often meant that workers need to convert their skills and relocate, creating reservations among the labor force.[263] Indonesia employs 1.69 million people in the mining and quarry industry, with coal accounting for 14% of this figure.[264] While Indonesian trade unions have lobbied for reforms, only a few ministries have participated in discussions so far, and there is still a long way to go before a tripartite structure for just transition can be institutionalized.[265]

The growing renewable energy sector could provide new job opportunities to these displaced workers. However, to realize this potential, an umbrella policy is needed that fosters skills training and guides coal workers towards green jobs and green industries. Some of the countries in this study have already put such a policy in place, but there is a lack of actionable strategies for displacement in the energy sector. For example, the Philippines Green Jobs Act of 2016 offers incentives for green job creation, including tax deductions for skills training, research and development for green jobs and tax-free imports of capital equipment that would be used directly and exclusively to promote green jobs. However, it lacks detail on the specific programs and policies that would support workers directly affected by a fossil fuel phase out.[266] Discussions on this topic are underway within the G20 since Indonesia is the 2022 chair, but no concrete plan has yet been developed to support workers.[267, 268]

BOX 2 - WORKER DISPLACEMENT IN SOUTH KOREA

The energy transition in South Korea implies job losses for workers employed in the fossil fuel and nuclear sectors. While initial displacements through 2030 are expected to be small, there will be a spike from 2031 to 2035 – the deadline for shutting down the manufacturing of traditional vehicles. Up to 14,500 workers will be displaced annually as fewer workers are needed to manufacture electric vehicles than vehicles with internal combustion engines.[269]

In response, the South Korean government initiated the K-New Deal in 2020. The policy includes social safety nets for the transition to a greener economy, setting aside USD 3.9 billion to create 659,000 jobs in the infrastructure, low-carbon and decentralized energy and green industry sectors. While this policy looks good on paper, green jobs in South Korea are currently not attractive to workers due to the short-term nature of contracts. It is also not clear how workers will be reskilled and supported in the transition. The government, together with the private sector, has yet to create an enabling environment that fosters long-term and sustainable green jobs.[270]

Recognizing the need for labor associations to step in, the Korean Me'al Workers' Union of the Korean Confederation of Trade Unions recently launched the Committee for Democratic and Just Industrial Transition. The committee has asserted the need for just transition mechanisms to be co-created by the government, private sector management representatives and labor organizations. Campaigns for a just transition have been launched by the trade unions, particularly those representing workers in the energy and railway sectors.[271]

4.7.2 CONSUMERS AND OTHER FOSSIL-FUEL DEPENDENT GROUPS

A just energy transition must also consider the demand side of energy and develop policies that support consumers and other groups that rely on fossil fuel.[272] Consumers have a limited understanding of the energy ecosystem, including the long-term benefits of subsidy rationalization. Lack of coordination in communicating market reforms in the energy sector causes discontent among consumers.[273] Most of the countries in this study currently do not have policies that address the negative impacts on fossil fuel consumers. These impacts are not necessarily well understood, and regulations do not necessarily provide an effective way to mitigate the impacts.[274]

Consumers around the world are paying the price for their country's overreliance on fossil fuel imports. The global energy crisis caused by the war in Ukraine has made fossil fuel prices volatile and introduced major economic pressure. Either electricity subsidies will need to increase or the extra energy costs will be passed on to consumers. Pakistan has occasionally been unable to purchase LNG as their suppliers have instead opted to sell their cargoes elsewhere at a higher price. Bangladesh has had to stop buying spot LNG cargoes as the price is too high, and industries are being asked to reduce working hours to lessen demand for electricity. This is not ideal for development.[275]

An ILO pilot in the Philippines recognized the need to compensate low-income households that spend a significantly higher proportion of their income on energy and energy-intensive goods and services.[276]

4.7.3 GENDER AND VULNERABLE GROUPS

A fossil fuel phase out also requires addressing the unequal impacts on women and vulnerable groups.[277] Most renewable energy projects that have been implemented with gender-transformative actions and incorporate the needs of the most vulnerable and disadvantaged have not been initiated by government; rather, by official development assistance funders, multilateral organizations and CSOs.[278] However, many tend to be small or pilot projects, and would need to be institutionalized by government in order to scale or be replicated.

A whole-of-government approach is needed to mainstream the gender impacts of just energy transition policies. Foreign assistance can often be the catalyst. For example, support from the Global Environment Facility, Green Climate Fund and IUCN led Pakistan's Ministry of Climate Change to launch a Climate Change Gender Action Plan to ensure women and men are represented equally and women have the ability to influence decisions on climate change.[279] Similar actions could be taken in roadmaps for the energy transition.

Consideration of the gender impacts of the energy transition process is perhaps a reflection of how gender equity is prioritized in a country in general. Interviews with experts revealed that policies and activities in China tend to be gender blind.[280] This contrasts with Thailand, where the gender impacts related to the energy transition are not much of a concern as the country has high levels of gender equality and openness.[281] Conversely, Thailand currently has no policy that specifically accounts for the negative impacts of a fossil fuel phase out on disadvantaged and marginalized communities.[282]

In predominantly male-dominated societies, household decisions about cooking fuel technology often do not take women's needs into account. Even though

women would benefit immensely from switching to cleaner cooking fuels, their influence over this household decision needs to be better understood.[283] In the Philippines, fuel gathering is historically a task for women in the family. Better availability of cooking fuel would likely mean that women would not have to spend so much time gathering fuelwood and could then use this time for economically productive activities.

The electrification of remote areas where Indigenous peoples and disadvantaged communities live should ensure 24-hour access to electricity, not just the typical daily ration of six to eight hours. Currently, the only way this can be achieved is through diesel generators, which are not cost-effective to purchase and transport and release emissions that contribute to climate change. The just energy transition should consider these last-mile communities[284] and reach those who do not currently have electricity.[285]

In Bangladesh, the National Action Plan for Clean Cooking includes reforms that use government funds to finance women-led businesses. Bangladesh is lobbying for additional financing options from international donors.[286]

4.7.4 SOCIO-ECOLOGICAL IMPACTS OF RENEWABLE ENERGY

While renewable energy projects are more climate-friendly than fossil fuels, there should still be consideration for the socio-ecological impacts of renewable energy production, such as water or land use and pollution by (rare) minerals mining.[287, 288] The expert interviews and literature review conducted for this study revealed a number of socio-ecological impacts related to renewable energy technologies, as shown in Table 16.

Renewable and other energy projects have become complicated because many governments require environmental and social factors to be identified before issuing permits. Projects that are financially viable may be rejected because of their environmental impact.[307] However, these assessments are often conducted to comply with government regulations and are not monitored once implementation begins. Projects may pass environmental compliance checks on paper, but in reality create problems.[308]

Renewable energy projects need to mitigate environmental risks and minimize and compensate affected communities for negative impacts. Receiving a social license to operate is key to a successful renewable energy project but can be difficult to obtain.[309]

4.8 KEY MESSAGES

- Although 10 of the 13 countries in this study have announced net-zero goals for 2050 or beyond and 12 countries have updated their NDCs, their commitments are still not sufficiently aligned with international targets to limit global temperature rise to 1.5°C. This is mainly because their plans will not lead to a sizable reduction of GHG emissions before 2030 and, for most countries, will actually increase. This contrasts with the 45% reduction of global GHG emissions by 2030 needed to stay on track for a 1.5°C temperature rise.

TABLE 16 - SOCIO-ECOLOGICAL IMPACTS OF RENEWABLE ENERGY TECHNOLOGIES

Solar	Wind	Biofuels	Hydro
Land clearing[289]	Land clearing[290]	Technology may be unproven and risky[291]	Displacement and resettlement[292]
Conflicts with agricultural land[293]	Politics and sea disputes for offshore projects[294]	Fear of contaminants from burning	Most allegations of human rights abuses[296]
	Obstructed landscape views[295]		
Large volumes of water used for cleaning collectors[297]	Conflict over land and violation of Indigenous rights and FIPC[298]	Loss of livelihoods or access to ecosystem services due to land conversion[299]	Ensuring that it is indeed clean energy[300] and GHG emissions through decay
Forced labor in production of solar panels[301]	Deforestation for timber used in windmills[302]	Deforestation and conflicts with agricultural land	Biodiversity degradation
Displacement of communities[303]		Effect on food prices and food security[304]	
Solar trash wave from early replacement of panels[305]			
Aesthetic perception of solar farms due to land use, visibility, degree of integration and glare[306]			

Source: Authors' compilation from interviews and literature

- Most Asian countries have opted for a mix of demand-side policies (carbon taxes and carbon trading schemes) and supply-side policies (procurement plans, subsidies and PPAs) to meet their climate goals. These policies are not meeting principles 1 ("No financing for new coal projects"), 2 ("A time-bound transition away from other fossil fuels") and 3 ("Active investment in renewable energy generation") of a just energy transition because of the following obstacles:
  - All countries are still planning to add new fossil fuel-based power plants to their existing capacity and many are even planning to build new coal-fired power plants.
  - There is a widespread belief among Asian governments that a larger share of renewable energy will lead to higher electricity prices and a less reliable electricity supply.
  - Fossil fuel subsidies in nine Asian countries are difficult to abolish because of the vested interests in the fossil fuel sector (especially in countries with a large coal mining industry such as China, India and Indonesia) and because politicians fear losing popular support.
  - National electricity companies (including Indonesia, Thailand and Vietnam) control access to the grid and can almost unilaterally determine power procurement plans. As a consequence, no country in Asia, apart from India and the Philippines, offers attractive conditions to independent power producers to develop renewable energy projects.
  - Carbon taxes being implemented or considered in seven Asian countries are much too low to have a meaningful impact, and the carbon trading schemes being introduced in six countries are not well developed and have priced carbon too low.
- Archipelagic countries such as Indonesia and the Philippines, and the countries in the Mekong region, struggle with underdeveloped national and cross-border power grids. This makes it difficult to produce renewable energy in regions with favorable climatic conditions and then transport it to the main energy-consuming areas of the country or region. Conversely, Asian countries have not developed industry policies that (re)locate energy-intensive industries to areas where renewable energy can be produced in abundance.
- Asian financial institutions could have an important role in supporting a just energy transition, but the number of financial institutions that have committed to stop financing coal and/or develop concrete net-zero commitments is still very small.
- Financial regulators across Asia have adopted regulations to stimulate the financial sector to consider social and environmental factors in their financing and investment decisions, and to promote green credits and green investments in climate-friendly projects. These regulations have been supported by a recent surge of taxonomies in various Asian countries and at the ASEAN level that specify which technologies and activities should be financed and which should not. However, most of these taxonomies fall short of labelling investments in coal as unsustainable and do not indicate when or how other fossil fuel investments should be phased out.
- Given the shortcomings of the energy and financial sector policies of all the countries in this study, the coming years will see renewable energy additions across Asia (in different volumes per country), but not an energy transition. With these renewable energy additions, principles 1 to 3 of the just energy transition are not being met since policies and actions are not at all sufficient to simultaneously reduce the GHG emissions of fossil fuels.
- Government policies in all 13 countries also fall short of meeting principles 4 to 9 of the just energy transition for the following reasons:
  - Especially in countries with significant coal mining sectors (such as China, India, Indonesia, Japan and South Korea) labor policies are needed that give more attention to skills training and guide coal miners towards green jobs and green industries.
  - With the rising global energy prices caused by the war in Ukraine, fossil fuel subsidies in many Asian countries have been increasing recently. Pressure to reduce or abolish these subsidies is growing, both for budgetary reasons and to create better conditions for renewable energy projects. However, alternative policies that compensate consumers and other groups that rely on fossil fuel still need to be developed.
  - Consideration of the impacts of the energy transition process on women and vulnerable groups is mostly limited to international donors and CSOs, while government policies are largely absent in Asia. DRES, such as solar panels on rooftops that are not connected to the national grid, offer possibilities to improve access to energy for all as part of the energy transition, but there has been little promotion of these solutions.
  - Preventing and mitigating the socio-ecological impacts of renewable energy production, such as water use, land rights, food security and pollution, do not receive sufficient attention in the energy policies of the 13 countries.

5

ACCELERATING THE JUST ENERGY TRANSITION IN ASIA

This chapter analyzes the actions being taken, or that could be taken, by stakeholders involved in (the financing of) renewable energy in Asia, from policy and regulatory reform to the role of energy companies, international donors and grassroots organizations.

5.1 CLIMATE AND ENERGY SECTOR POLICIES

This section looks at climate and energy sector policy reforms that could create a more stimulating environment for renewable energy investments. Energy sector policies need to be aligned with the goals of climate change policies, such as phasing out fossil fuel subsidies, introducing carbon emissions schemes and strengthening FiT mechanisms. This section discusses which policy and regulatory reforms could be introduced at regional, national and sub-national levels in Asia, and highlights examples of encouraging policy initiatives.

The 13 countries featured in this report are increasingly adopting policy measures to fulfil their climate commitments, such as updating their NDCs and other pledges stated in the Paris Agreement. The development of the renewable energy sector in Asia can be attributed to the policies and incentives laid out by governments, businesses and various organizations.[310] Governments have been taking measures to address the challenges of the energy transition, such as imposing carbon taxes (Indonesia, Japan and Singapore), instituting mechanisms such as feed-in tariffs (FiTs) (all countries except Bangladesh, Cambodia and Singapore) and an emissions trading scheme (ETS) (China, Japan and South Korea) (see section 4.3.3).

5.1.1 COAL-FIRED PROJECT CANCELLATIONS

The world made some progress at COP26 when more than 40 countries agreed to phase out their use of coal power, while 23 countries signed the COP26 Coal to Clean Power Transition Agreement, a commitment to halt construction and issuance of permits for new coal power plants.[311] However, two of the largest coal producers, China and India, were absent from the agreement.[312] The most recent commitments include an agreement to phase out coal power from 190 countries,[313] while 34 countries and five public finance institutions have committed to ending new direct public support for international fossil fuel extraction by the end of 2022. This could free up an estimated USD 24 billion a year that could be redirected into the clean energy sector.[314, 315]

To successfully shift to net zero and invest in climate adaptation and resilience, especially in more vulnerable communities, the UK COP26 presidency, through the Glasgow Climate Pact, has committed developed countries to invest USD 100 billion every year in climate finance.[316] However, as stated in their report, all these international commitments will only make sense *"if every country delivers on what they have pledged."*[317]

Growing recognition that coal-fired power is an undesirable source of electricity has prompted countries in Asia to introduce policies that reduce the use of coal or at least mitigate the worst impacts (see Table 17). As a result, 13 countries in Asia have cancelled 1,319 GW coal-fired power plant projects between 2010 and 2020. Indonesia, Pakistan, the Philippines, Singapore and South Korea have all introduced policies to terminate new coal-fired power plant projects. In some countries, improving the efficiency of coal-fired power plants by adopting CCS technology has become a policy focus, particularly in China, Japan and South Korea. A close look at the status of coal power plants in 2021 shows how far the world is from reaching its objective of carbon neutrality unless drastic steps are taken immediately.[318] In fact, for Asia to meet its commitment to carbon neutrality, no new coal mines should be constructed.[319]

In general, these policy directions are not sufficient to satisfy the Paris Agreement commitment to limit global warming to well below 2°C, and preferably to 1.5°C. This is because the policy of terminating new coal-fired power projects generally does not affect projects already approved or under construction. Since these coal-fired plants will operate for 35 to 40 years, their carbon emissions will continue well beyond 2050. Although early retirement could be imposed to ensure these power plants are no longer operational after 2050, power companies will likely demand high compensation because they have calculated their return on investment (ROI) based on the full life cycle of the power plants.

TABLE 17 - UPDATED POLICIES IN SELECTED COUNTRIES IN ASIA, 2022

Country	Terminating new coal-fired power plants	Stimulating efficient technology (CCS)
Bangladesh	No, but canceled 10 projects	No
Cambodia	No	No
China	No	Yes
India	No	No
Indonesia	Yes, from 2023	No, but will start a pilot project in Gundih
Japan	No	Yes
Malaysia	No, but all projects are canceled	No
Pakistan	Yes	No
Philippines	Yes	No
Singapore	Yes	No
South Korea	Yes	Yes
Thailand	No	Yes
Vietnam	No	No

Sources: See the sources mentioned in the following country sections.

While some say it is too early to make a conclusive assessment of CCS, this technology continues to be central to current decarbonization strategies, which can benefit from further political and economic cost-benefit analysis. At the outset, China, Japan and South Korea can take the lead in applying CCS technology at the regional level by sharing what they have learned. Such initiatives should also be funded in Southeast Asia where several CCS projects are in early development stages.[320]

Despite the limited success of CCS, significant investments continue to be made in this policy approach, diverting potential financial resources away from more commercially viable clean technology solutions, such as renewables. South Korea has announced plans to invest USD 89.5 million each year to develop CCS technology, with the aim to gradually lower the cost of processing from USD 63.5 per tonne of carbon to USD 18 per tonne by 2050.[321] In Japan, Mitsubishi Heavy Industries has been creating small carbon-capture plants aimed at lowering the cost of carbon removal from USD 63.5 per tonne of carbon to USD 27.2 by 2035.[322] In China, the China National Offshore Oil Corporation (CNOOC) launched its first offshore CCS project in the South China Sea, which aims to store more than 1.46 million tonnes of carbon. Likewise, Sinopec has begun building several CCS projects in the eastern Shandong province which will inject the captured carbon into 73 oil wells.[323]

These investments not only demonstrate the limited commercial viability of CCS, but also bank on it being paired with fossil fuel technology, which can extend the life cycle of carbon-intensive industries that should instead be designed to sunset. Besides, most CCS operations require significant funding that only more economically developed countries can afford. Deploying CCS at a large scale still requires complementary measures, such as adjusting fossil fuel prices and greater penalties and/or taxes for emissions.[324]

5.1.2 FOSSIL FUEL SUBSIDY REFORM

While there have been laudable commitments from the 13 countries, these are not enough without substantial reforms and total removal of fossil fuel subsidies. Subsidies can have several negative repercussions, such as creating market distortions by artificially lowering the price of fossil fuels and promoting overconsumption, creating negative externalities, failing to alleviate inequity and not representing the best use of public finances.[325] Still, countries continue to subsidize fossil fuel because they artificially reduce the costs of production and use (see section 4.2.3).[326] Commitments to reduce GHG emissions therefore seem contradictory. Despite China's efforts in other aspects of the energy transition, the country continues to subsidize a significant amount of fossil fuels, which may continue up to 2026 because it is a cheaper option and the coal industry employs about six million people.[327]

Eliminating these subsidies could free up significant capital for public investment in renewable energy projects.[328] For instance, it is estimated that subsidy reforms by the Indonesian government could unlock almost USD 6 billion in public finance that could be reallocated from coal-fired power and fossil-based transport to solar PV and wind power development projects.[329] However, this would require overcoming immense political and social barriers, which may prove insurmountable (see section 4.2.3).

All Indonesia specialists agreed that reforming Indonesia's fossil fuel subsidy policies is the most crucial piece in solving the country's just transition puzzle. However, this is much more complicated than it might seem. As one informant stressed, *"for politicians, talking about electricity prices and fossil fuel subsidies is political suicide. There are talks of removing these brown subsidies since the president announced that the fiscal budget is not sustainable like this anymore, but politicians and policymakers will only ever even entertain this idea in their second political term, when they don't run the risk of losing out on their re-election. We have an election coming up in 2024, so it is very unlikely that anything gets done before then on this front"*,[330] with other informants corroborating this claim.[331]

Affordable electricity prices (see also section 4.7.3) are one of the top concerns of most Indonesians, and there is a firm belief that removing fossil fuel subsidies will cause electricity bills to skyrocket to unaffordable levels throughout the country, particularly in Java, which accounts for most of the country's electricity demand and the bulk of which is provided by PLN through coal-fired power.[332] One informant noted there have been talks of *"reallocating brown subsidies as a cash payment directly to poor people"* – a universal income of sorts to indirectly maintain affordable electricity prices. Although these are ostensibly *"very serious talks"*, such a policy has yet to be implemented.[333]

5.1.3 IMPROVE FEED-IN TARIFF (FiT) MECHANISMS

Ten of the 13 countries in this study implement FiT mechanisms, with Bangladesh, Cambodia and Singapore the only ones without it (see section 4.2.2). In ASEAN, Thailand was the first to introduce FiTs in 2007, followed by Indonesia in 2008 for geothermal power, Vietnam for small-hydropower, and Malaysia and the Philippines in 2011.[334] The FiTs in these countries has been readjusted numerous times to account for both technological developments and cost reductions.[335]

The introduction of FiTs have increased solar and wind power in several Asian countries as it attracted investments from various sectors. Since 2010, USD 8.3 billion in investments in solar power projects have been made, a sign that the solar power niche is expanding in the region.[336] Vietnam, for instance, has made remarkable progress in renewable energy investments. The introduction of the Phase 2 FiT project in 2020 created a boom in rooftop solar PV installations, with more than 8.5 GW peak rooftop solar capacity added between June and December 2020.[337] Moreover, Vietnam's banks have provided up to USD 3.6 billion in loans to renewable energy projects.[338]

The Philippines, which began using FiTs in 2012, is a good example of how policy design and conducive political and economic conditions can support successful FiT mechanisms. The country has a market-friendly regulatory architecture and an economy that is less reliant on fossil fuel exports.[339] Moreover, power producers in the Philippines are independent, which means there is a less complex mechanism for the renewable energy sector compared to state-owned energy companies in Indonesia.[340]

5.1.4 INTEGRATING NATIONAL NET-ZERO COMMITMENTS IN NATIONAL STRATEGIES

The 13 countries have made progress in adding climate and energy policies to their development plans, whether by creating and strengthening a separate department for renewable energy (Bangladesh, India, Malaysia, Thailand) or through stronger renewable energy laws and policies (China, Indonesia, Pakistan, Philippines), country strategies/roadmaps (Bangladesh, Cambodia, Japan, Vietnam), specific programs (India, Philippines), research and development (Singapore) or membership in regional/international groups and initiatives (Bangladesh, Cambodia, Vietnam, Philippines), such as the V20 Group. Following Indonesia's appointment to the presidency of the G20 in 2022, the country officially announced energy transition as one of its top priorities.[341]

Singapore, which is 96% dependent on LNG for meeting primary energy demands (see section 2.2), is *"currently exploring and deploying innovative renewable energy solutions. These include floating solar farms, solar panels on building facades, mobile grids, solar+ and more."*[342] This could substantially diversify the tenaciously fossil fuel-dependent electricity grid.

In India, the creation of the renewable energy department in 1992, renamed the Ministry of New and Renewable Energy (MNRE) in 2006, supports renewable energy development by offering soft loans, counter guarantees and securitization of future cash flows.[343] The institutionalization of these departments and programs is critical in advancing the energy transition. Research shows that countries with higher-quality institutions are better at managing the energy transition because institutions have the capacity to encourage innovation and efficient allocation of resources.[344]

In 2015, the International Labour Organization (ILO) published the Guidelines for a *Just Transition towards Environmentally Sustainable Economies and Societies for All*, which emphasizes the importance of policy coherence and a whole-of-government approach at both local and regional levels.[345]

TABLE 18 - GOVERNMENT AGENCIES DEDICATED TO RENEWABLE ENERGY, BY COUNTRY

Country	Department
Bangladesh	Sustainable and Renewable Energy Development Authority (SREDA)[346]
Cambodia	Department of Renewable Energy, Ministry of Mines and Energy[347]
China	New and Renewable Energy Department, National Energy Administration[348]
India	Ministry of New and Renewable Energy (MNRE)[349]
Indonesia	New Renewable Energy and Energy Conservation[350]
Lao PDR	Institute of Renewable Energy Promotion, Ministry of Energy and Mines[351]
Malaysia	Sustainable Energy Development Authority (SEDA)[352]
Philippines	National Renewable Energy Program (NREP)[353]
Thailand	Department of Alternative Energy Development and Efficiency[354]
Vietnam	Electricity and Renewable Energy Authority, Ministry of Industry and Trade[355]

The experiences of China and Vietnam demonstrate how government intervention and political will are crucial factors in the development of renewable energy. The China model could be useful for countries where SOEs dominate the renewable energy sector,[356] while the Vietnam model (see Box 3) can be useful for other countries in the ASEAN, particularly Cambodia, Indonesia, Laos and Myanmar[357] where energy sectors are at a crossroads and single-buyer wholesale electricity market structures and heavy use of the PPA model exist.[358] Some countries like India have already been investing in facilitating the creation of local value chains through dedicated government policies offered by the Ministry of New and Renewable Energy (MNRE), such as the production-linked incentive scheme encouraging manufacturing across sectors (e.g., solar PV, automobiles, textile, medical devices and electronics).[359]

BOX 3 - VIETNAM'S RENEWABLE ENERGY EXPERIENCE

Vietnam has emerged as a regional leader in solar and wind electricity adoption in the ASEAN. In 2019, it overtook Thailand as the country with the largest installed solar and wind capacity.[360] The Vietnam experience can serve as a good practice for other countries in the region. Solar and wind energy have emerged as increasingly viable options for capacity expansion because of their rapid cost reductions and the relatively short construction time for new power plants, especially for solar power.[361] Vietnam is an example of how stakeholders (government, industry and the public) can work together toward a greener growth model.[362] The government emphasized the need to prioritize solar and wind amid debates that they were intermittent energy sources,[363] and the country has initiated incentive instruments such as:

- Tax and lease exemptions – solar and wind developers are exempt from corporate income tax for the first four years of operation. Income tax is then reduced by 50% for the following nine years and by 10% until the 15th year of operation.
- Use of economic instruments such as FiTs – this has had a positive response from business and enabled the rapid development of the renewable energy industry (especially in solar). Key elements of FiTs, including rates and eligibility windows, are assessed.

The Vietnam experience also shows how strong government commitment is vital to a successful renewable energy program. In 2017, the Prime Ministerial Decision 11/2017/QD-TTg stated that solar power projects that began operating before 30 June 2019 could sell their electricity to state-owned Vietnam Electricity and its subsidiaries at a FiT of USD 93.5/MWh for 20 years.[364] In 2020, Decision 13/2020/QD-TTg was again issued by the government to support reduced FiTs of USD 83.8/MWh for new rooftop solar projects, USD 70.9/MWh for new ground-mounted solar PV and USD 76.9/MWh for new floating solar projects that began commercial operations by 31 December 2020.[365] The government's commitment to energy availability became the most important motivation for Vietnam's solar and wind policies.[366]

Carbon pricing systems have been gaining in global popularity in recent years, with 64 carbon pricing initiatives (31 ETS and 33 carbon tax) worldwide as of August 2021.[367] In the past, such a scheme had only been implemented by more developed countries in Asia, particularly upper-middle-income and high-income countries. Currently, five of the 13 countries in this study price carbon either through taxation (see section 4.3.1) or an ETS (see section 4.3.2).

Carbon pricing could be a powerful tool for lowering emissions. Not only could it correct the externalities that more accurately reflect the current cost of pollution driving climate change, it can also be an effective way to raise revenue to channel towards decarbonization efforts. Indonesia, Japan and Singapore issue carbon taxes, while China, Japan and South Korea implement ETS.[368] Carbon and other environmental taxes are generally put in place to change the behavior of taxpayers and encourage them to switch to more environmentally friendly energy sources.[369] While there is broad consensus on the effectiveness of a carbon tax to mitigate climate change, it has proven difficult to implement.[370]

Part of the challenge appears to be a belief that a carbon tax would be regressive and disproportionately hurt the poorest.[371] However, to genuinely drive change, the carbon tax needs to ensure that the polluter pays principle is upheld as much as possible. This would not only avoid pass-through costs to those who are disproportionately affected, but prices would also be set at a level that makes it more cost-effective for taxpayers to redirect funding and resources towards greener solutions.[372] Carbon prices in Asia, however, are still far from curbing emissions. The consensus among the scientific community is that carbon prices and carbon tax rates are currently far too low and need to be significantly increased if the world is to reach net-zero emissions by 2050.[373]

Carbon prices and taxes that are at lower levels are estimated to not have a meaningful impact.[374] Carbon prices in China and South Korea are very low and it is anticipated to not act as a deterrent for businesses.[375] Taxes in Japan and Singapore have also been set at very low levels.[376] While carbon pricing is being implemented in developed countries in Asia, mechanisms are needed to enable developing countries to also participate in this scheme even though energy transitions may have enormous macroeconomic impacts that they cannot yet accommodate. In Japan, for instance, the world has witnessed the vulnerability of such schemes during crises (see Box 4). Japan's business sector has opposed taking on the economic strain

related to reducing GHG emissions, brought on by the economic pressures of the COVID-19 pandemic and recent surges in energy prices due to the Russia-Ukraine war.[377]

BOX 4 - LESSONS FROM JAPAN'S CARBON PRICING

Japan was the first country in Asia to implement a carbon tax in October 2012 as part of the overall tax reform policy. The tax aims to reduce 80% of Japan's GHG emissions by 2050.[378] Aside from this, the country also has an emissions trading system (ETS), and subsidiary programmes known as the Joint Crediting Mechanism (JCM), J-Credit, non-fossil fuel energy certificates and voluntary credits.[379] The revenue generated from the carbon tax system is directed to supplement other renewable energy projects and to enhance energy-saving measures.[380]

While Japan aims to reduce its carbon emissions by 26% by 2030, it also has one of the lowest carbon tax rates amongst OECD and G20 countries.[381] Japan's Ministry of Environment says the low environmental taxation rate is due to concerns related to reduced international competitiveness, subsequent price effect, and potential negative economic impacts.[382] One policy suggestion is that the Japanese government can address these by combining a higher carbon tax rate with policies that improve disposable income for low-income households and retired citizens in Japan.[383] Japan's carbon tax policy falls short because of its low carbon tax rate, and low effective carbon rates in industrial and electricity sectors.[384] There is also a domestic resistance to potential carbon price improvement and reduced coal dependence.[385]

Japan also has a subsidy based voluntary emissions trading scheme known as 'Advanced technologies promotion Subsidy Scheme with Emission Reduction Targets' (ASSET). In this scheme, interested companies can set their own emission reduction targets with the expectation of using carbon emission reduction technologies. The Japanese government then provides them with necessary subsidies. While the ASSET promotes green technologies in the industrial sector, it fails to modify industry behaviour since businesses are still allowed to purchase emission reduction credits from other parties.[386]

One lesson from Japan's carbon pricing scheme is that such early efforts in renewable energy targets should be supplemented with other government measures. For instance, fossil fuels still accounted for 88% of Japan's energy mix in 2021 (see section 2.2) and fossil fuels are still imported from abroad to satisfy more than 96% of current energy consumption needs.[387] Instead of moving away from fossil fuels, the country envisions coal as a big part of its energy mix in the future.[388] Moreover, the ruling Liberal Democratic Party and its coalition partner, Komeito, have decided not to include the introduction of a carbon tax in their tax reform package for fiscal 2022.[389]

Unlike Japan's carbon tax, which has been stalled by the pandemic due to the government's restrictive policies, Singapore's carbon tax is promising for the planet despite a relatively slow and unambitious start. Singapore has recently announced a fivefold increase in its carbon tax to SGD 25 (USD 18.60) per tonne in 2024 to achieve its net-zero emissions target by 2050.[390] It also plans to progressively increase the carbon tax to SGD 45 in 2026 and 2027, and SGD 50 to SGD 80 by 2030.[391] Singapore's current carbon tax is only SGD 5 per tonne – very low compared to other countries such as Sweden, which has the highest rate globally at around USD 130.[392]

Indonesia has recently introduced a carbon tax system, becoming the third country in Asia to pass such a scheme. The country's carbon tax is set at a minimum of USD 2.11 per tonne of CO_2 contained in, or emitted through, goods and services.[393]

The Philippines is also eyeing such a tax scheme. In particular, the country is studying Indonesia's experiences with carbon tax implementation.[394] While the Philippines does not have an explicit carbon tax, it collects energy taxes that include excise taxes on fuels and electricity consumption.[395] It is also one of the measures included in the current administration's Medium-Term Fiscal Framework, which aims to improve tax administration while promoting sustainable development.[396]

Vietnam has passed a revised law and environmental protection that establishes an ETS, which was originally set to start in January 2022 but has been deferred until 2025.[397] This carbon market strategy aims to address several goals that will help the country achieve its updated NDC, such as reducing GHG emissions and encouraging greener and cleaner innovation technologies.[398] It will also make the country more attractive to foreign direct investment and make its exports more competitive, especially to markets like the EU.[399]

5.2 FINANCIAL SECTOR POLICIES

This section looks at policies and regulations for the financial sector that could stimulate more renewable energy investments and financing, building on the limitations of the policies identified in sections 4.5 and 4.6. Energy sector policies need to be aligned with the goals of climate change policies by requiring that climate change risks are assessed in due diligence processes and have an important influence on financing and investment decisions. The section discusses the policy and regulatory reforms that could be introduced at regional, national and sub-national levels in Asia, and highlights examples of encouraging policy initiatives.

5.2.1 FINANCIAL SECTOR REGULATION INITIATIVES

In Malaysia, only one bank has signed the net-zero pledge with NZBA, but the financial sector has been at the forefront of adopting the net-zero model at the national level through the establishment of the Joint Committee on Climate Change (JC3), co-led by the Central Bank and Securities Commission. The goal of the JC3 is to build the climate risk resilience of the financial sector through capacity building, identifying challenges and opportunities for a transition to a low-carbon economy and facilitating inter-sectoral collaboration among stakeholders.

The Philippines also provides a unique example. The central bank, the BSP, has adopted the Sustainable Central Banking Program as part of the BSP Strategy Map for 2020–2023, which provides the milestones, plans and strategies for adopting sustainability principles in their key operations and functions.[400] The BSP has employed and considered the regulatory incentives to nudge banks to extend green loans or finance sustainable investments. Among the prospective tools are preferential rediscount rates or the provision of higher loan values. The BSP has also proposed that sustainable finance be recognized as one of the allowable forms of compliance with the required credit to the agriculture sector in the proposed bills seeking to amend the Agri-Agra Law. However, there are suspicions that even this would not be enough to attract sufficient financial capital to renewable energy projects given the dearth of "bankable projects" (see section 4.6.3), hinting that a revamping of energy market policies, regulations and legislation will be a vital accompaniment to these financial sector regulations.

Despite these efforts, there are clear opportunities to improve financial sector regulations. Perhaps most importantly, by establishing clear and explicit exclusion policies for financing new coal production and consumption projects. These were almost entirely absent from section 4.5.2, suggesting that Asian banking sectors will continue to support and proliferate coal production across the continent indefinitely, which is simply not compatible with an energy transition of any kind. A logical next step is to add oil and LNG projects to this exclusion list. Only with such policies can true energy transitions take hold in Asia and beyond.

5.2.2 CAPITAL MARKET INITIATIVES

Other Asian countries have pushed forward plans and regulations to encourage their capital markets to adopt the net-zero business model. Vietnam is a leading example. To build the capacity of financial institutions to participate in the green-bond market, the Vietnam Ministry of Finance, through its Green Growth Action Plan, has highlighted *"green capital market development and green financial products to mobilize investment resources for green projects and environmental protection"*. While the Government of Vietnam has a keen interest in green financial products, especially green bonds, institutional capacity building and green finance literacy for relevant government agencies is critical and urgently needed. The regulatory and institutional framework needs to be strengthened to enable and facilitate the effective issuance of green financial products, especially on high-quality international platforms.[401]

For capital markets to drive renewable investments, green bonds are paramount. They are a fixed-income instrument designed to raise capital for specific projects that are, according to a regulatory framework and green taxonomy (see section 4.5), environmentally sustainable. Green bonds *"can help attract institutional investors and channel considerable additional private capital in the renewable energy sector to contribute to filling the significant outstanding investment gap"*, although this is only feasible and effective with a clear taxonomy aligned with international climate policies and objectives.[402] The Bank of Thailand is beginning to make considerable strides towards such a taxonomy, for instance.[403]

The ASEAN green bond market is still in a nascent stage of development, but is a promising an innovative mechanism for attracting renewable energy financing to the ASEAN region. Singapore and Malaysia spearheaded the region's green bond markets in 2017, later accompanied by Thailand, Indonesia and the Philippines.[404]

By 2019, USD 13.4 billion in green bonds had been issued in ASEAN markets, although it must be noted that roughly 1% has directly financed renewable energy specifically (the bulk of ASEAN green bonds have thus far been used for green building and infrastructure projects). Since then, ADB has invested an additional USD 410 million in green bonds, which will ostensibly support renewable energy procurement in Indonesia, the Philippines and Vietnam.[405]

Actors issuing green bonds vary across the region. In Malaysia and Singapore, the private sector is mainly responsible for issuing them, whereas in Indonesia, 99% of all green bonds are issued by the government. In all cases, however, green bonds are typically incentivized through grand schemes or tax incentives.[406]

In China, the domestic green bond issuance in 2021 exceeded RMB 600 billion, a year-on-year increase of 180%, and the balance reached RMB 1.1 trillion.[407] According to data from Dagong Global Credit Rating, in the first half of 2022, a total of 263 green bonds were issued in China's domestic market, a year-on-year increase of 31.50%, and the issuance scale was RMB 412.068 billion, a year-on-year increase of 68.02 percent.[408]

The BSP has been reviewing the strategic allocation of investments towards those that support ESG principles. The BSP has invested USD 550 million in the Green Bond Fund managed by the Bank for International Settlements (BIS) and has considered investing additional funds in the Asian Green Bond Fund launched by the BIS in 2022. Private banks, including BPI, RCBC, BDO Unibank and China Banking Group, have issued green and sustainability bonds to fund and finance green assets.[409]

Despite these somewhat positive steps, particularly in the realm of green bond issuance, there is ample room for improvement in regulating Asian capital markets to support (just) energy transitions across the continent. These include, but are not limited to:

- **Correcting sustainable finance taxonomies for ambiguous language** (see section 4.5.2). This continues to enable fossil fuel financing of any kind without clear conditions to eventually phase out fossil fuel projects.
- **Expanding existing taxonomies to include not simply "green" financing frameworks, but also "transition" financing frameworks.** Notably, how the financial sector should approach investing in "brown" assets with the ultimate goal of decommissioning these assets and prompting a fossil fuel *phase* out rather than merely a renewable energy *phase* in (see sections 4.2.4 and 5.6.4). This is arguably the most important task for Asian financial regulators to grapple with, but given their economies' reliance on, and vested interests in, the fossil fuel sector (see e.g., sections 2.2 and 4.6.1), this seems the most unlikely policy to be adopted and therefore merits additional focus and external pressure.

5.2.3 ASIAN FINANCIAL SECTOR AND UN PRINCIPLES FOR RESPONSIBLE INVESTMENT

The Principles for Responsible Investment (PRI) were initiated in 2005 by the United Nations together with 20 leading investors from the world's largest investment institutions in 12 countries and the support of 70 experts from the investment industry, intergovernmental organizations and civil society. The PRI aims to achieve a sustainable global financial system by *"[e]ncouraging adoption of the principles and collaboration on their implementation; by fostering good governance, integrity and accountability; and by addressing obstacles to a sustainable financial system that lie within market practices, structures and regulation"*[410] Its main objectives are to explore the investment implications of ESG factors and support signatories to incorporate these factors in their decisions.

The six Principles for Responsible Investment are:

1. To incorporate ESG issues into investment analysis and decision-making processes;
2. To be active owners and incorporate ESG issues into the ownership policies and practices;
3. To seek appropriate disclosure on ESG issues by the entities in which ones invest;
4. To promote acceptance and implementation of the Principles within the investment industry;
5. To work together to enhance the effectiveness in implementing the Principles; and
6. Each to report on the activities and progress towards implementing the Principles.[411]

As of October 2022, there were 5,202 signatories, including 3,964 (76%) investment managers, 713 (14%) asset owners and 525 (10%) financial services providers. The assets under management add up to USD 29.2 trillion. Among the signatories, 464 (9%) Asian financial entities have adopted the PRI (see Table 19).[412] Japan (118) and China (114) have the most signatories, followed by Singapore (67) and South Korea (24). Among the 13 countries in this study, financial entities from Bangladesh, Cambodia and the Philippines have yet to sign the PRI.

5.3 SOCIAL POLICIES

The energy transition is about people.[413] SDG 7 of the 2030 Agenda for Sustainable Development highlights the importance of ensuring universal energy access that leaves no one behind. To harness the unprecedented opportunities of renewable energy, some countries have already initiated, institutionalized and implemented a set of social policies to accelerate the energy transition. This study outlines five broad areas of improvement in social policies: improved access to information (see section 5.3.1); social protection and people-centered policies (see section 5.3.2); context-specific social policies (see section 5.3.3); skills development and capacity building (see section 5.3.4); and gender mainstreaming (see section 5.3.5).

TABLE 19 - ASIAN MEMBERS OF UN PRINCIPLES FOR RESPONSIBLE INVESTMENT

Country	Signatories	Investment nanagers	Asset owners	Service providers
Bangladesh	-	-	-	-
Cambodia	-	-	-	-
China	114	83	4	27
India	27	21	2	4
Indonesia	4	2	1	1
Japan	118	81	25	12
Malaysia	14	11	3	-
Pakistan	1	-	-	1
Philippines	-	-	-	-
Singapore	67	59	1	7
South Korea	24	18	1	5
Thailand	3	1	1	1
Vietnam	3	3	-	-
Rest of Asia	89	78	3	8
Asia	**464**	**357 (77%)**	**41 (9%)**	**66 (14%)**
Worldwide	**5,202**	**3,964 (76%)**	**713 (14%)**	**525 (10%)**

Sources: UN Principles for Responsible Investment (n.d.), A full list of PRI signatories, online: https://www.unpri.org/signatories/signatory-resources/signatory-directory, viewed in October 2022.

5.3.1 IMPROVED ACCESS TO INFORMATION

A vital but often forgotten phase of the energy transition is improved access to information. This was mentioned several times in the interviews conducted for this study, but was not explicitly or substantially found in policy documents. Climate and energy information, particularly about renewable energy, is generally insufficient. Promoting consumer participation (e.g., awareness of climate change and carbon footprints, individual responsibility for action, incentives for consumer behavior change) is important,[414] especially because millennial and Gen Z consumers – the future of the planet – are more socially aware of the products they buy. In most countries, information about climate and energy policies, such as FiTs and carbon taxes, are still not widely known. In such a scenario, reducing the direct emissions of consumers is slow to develop. Renewables fared better than conventional energy during the COVID-19 pandemic,[415] which can be considered a great leap as more people become more aware of climate change as an existential threat. However, one report, *The Carbon Majors*,[416] found that 71% of all global GHG emissions since 1988 can be traced to just 100 fossil fuel producers[417] and that consumer behavior does not play a major role.

Having coherent communication between government and other stakeholders has an impact on the effectiveness of a policy. A study of Vietnam's renewable energy experience identifies access to information as an important driver of the country's success with renewable energy.[418] For one, an informed public may demand clean air from the government and businesses. The study points out that advanced monitoring technologies have helped to increase public awareness of air pollution since they can now instantly check pollution levels in real time due to the pervasiveness of smartphone apps.[419] This has contributed to growing resistance to new coal power projects at the provincial level.[420] By involving the public in the energy transition process, it is important to communicate the impacts and benefits. As such, better data is needed to design and implement sustainable electrification programs and track their progress.[421]

5.3.2 NEED FOR SOCIAL PROTECTION AND PEOPLE-CENTERED POLICIES

People-centered policy design is necessary to accelerate the energy transition.[422] It is important that the needs and aspirations of communities, particularly those most vulnerable to climate change, are at the center of transition efforts. Decision-makers in both the public and private sectors should view them as co-creators of energy systems that meet their needs and align with their practices.[423] Research has shown that community-driven initiatives are most effective in the energy transition.[424] Land grabbing, marginalization and systematic discrimination have often exacerbated the loss of livelihoods, identities and cultures of many local communities, especially of Indigenous peoples, forcing many into poverty.[425] Because of previous experiences with policy transitions that took place without their participation or consent, some communities have a high level of distrust of governments and businesses.[426]

To achieve a swift and just energy transition, it is important to make listening and social dialogue essential parts of communication strategies. One informant said that it is important to engage the community in the early stage of a project, not only to consult them but also to inform them of the possible effects of the transition. It is also important to confirm that their voices are heard and there is a commitment from other stakeholders.[427] In India, there has been an opportunity to focus on developing a thriving domestic renewable energy sector and employment opportunities in part because stakeholders such as coal companies, unions and regions have worked together to reduce the share of coal in the energy mix.[428] Consultations are necessary to prevent the negative consequences of the transition.

Emerging and developing economies are disproportionately affected by the spiraling problems brought on by climate change. Low-income populations are especially vulnerable because of their reliance on goods and services from natural resources, which makes them highly exposed to the negative effects of ecosystem degradation.[429] Some case studies from the 13 countries have shown that to achieve the co-benefits of a just energy transition, political will is needed from all stakeholders[430] to deploy new social policies that supplement energy and climate policies. It is also necessary to ensure that those with less adaptive capacity for climate change and energy transition are protected. From a macroeconomic perspective, deficiencies in government budgets and poor policy designs are hindrances to public and private investments in clean energy projects. It is therefore important to set up a dedicated just transition fund.[431] For instance, China has guaranteed nearly RMB 150 billion (USD 23 billion) to cover layoffs in the coal and steel sectors.[432] The country also set up a Clean Development Mechanism Fund in 2007 as part of the National Climate Change Strategy.[433]

South Korea's New Green Deal aims to create 340,000 jobs within two years to support production of KRW 49 trillion and to reduce social costs by KRW 40 trillion. Additionally, fossil fuel subsidies could be reallocated to social services or other necessary subsidies to advance the renewable energy sector.[434]

5.3.3 CONTEXT-SPECIFIC SOCIAL POLICIES

Asian countries have diverse economic, geographic and political contexts, which creates different opportunities and constraints for a just energy transition. Most countries included in this study, such as the Philippines, Japan, Bangladesh, China, Indonesia, India, Vietnam and Pakistan (in order of risk), are considered the most climate-vulnerable countries in the world, according to a 2019 study by the Institute for Economics and Peace.[435] Countries also have different local conditions in terms of supply of materials and workforce. These have a direct impact on the renewable energy value chain and, therefore, vulnerability to disruptions such as the COVID-19 pandemic and the Russia-Ukraine war.[436] Policies and programs need to be designed in line with the specific conditions of countries, including their stage of development in the transition, economic sectors, and types and sizes of enterprises.[437]

Fortunately, there have been efforts by several local entities to increase their renewable energy supply. For instance, China has implemented the Photovoltaic Poverty Alleviation project (PPAP) as a targeted poverty alleviation project that could provide an example for developing countries (see Box 4).[438] In Ilocos Norte, Philippines, many local communities have taken the lead as a low-carbon energy center and have already obtained half of their electricity from renewable sources.[439] The Indonesian government has developed a new LPG subsidy scheme using a smart card system as part of its fossil fuel subsidy reform in 2016. This has integrated the energy subsidy with the social protection system to better target subsidies for the poorest households.[440] Energy industries in Indonesia are often geographically concentrated in just a few regions where they play an important part in the economic and social system of the communities.[441] For example, in Kalimantan, Indonesia, where the impact of the coal industry on society is significant and where a tailored approach is needed to help the community adjust to, and benefit from, the clean energy transition.[442]

BOX 5 - CHINA'S PHOTOVOLTAIC POVERTY ALLEVIATION PROJECT (PPAP)

The PPAP is one of 10 targeted poverty alleviation initiatives launched by the Chinese government in 2013. The project subsidizes the energy consumption of residents in rural areas with the aim of improving their income and reducing carbon emissions. Supportive government policies have contributed to the project, and it has had the strongest impact in poorer regions of the country, particularly the eastern portion. Although it targets the poorest in China's most rural areas, it is still not widely applied in some rural areas due to high costs. Four different modes of PPAP have been formed so far: household level, village level, joint-village level and centralized PPAP. While the village and joint-village level have been deemed effective as a poverty alleviation strategy, the household level PPAP mainly suffers from poor quality of solar PV modules.[443]

5.3.4 SKILLS DEVELOPMENT AND CAPACITY BUILDING

Jobs are an important part of the energy transition.[444] In 2020, jobs in the renewable energy sector grew to 12 million.[445, 446] If the world follows IRENA's 1.5°C pathway, employment in the renewable energy sector can grow to about 43 million jobs over the next three decades.[447] In addition, energy efficiency jobs, such as those related to improving the efficiency of cities, buildings and transport systems, could add to the growing number of renewable jobs in the future.[448]

Building the future workforce by balancing skills (demand and supply) is therefore important to such an energy scenario, requiring close coordination among industry, government and educational and training institutions.[449] Labor market policies for a swift and just transition are essential to help create decent jobs that respect workers' rights and recognize equal opportunities for women, youth and minorities.[450] To prepare for this future demand, workers need to build skills, reskill and reorient and recertify their skills.[451] These are necessary to facilitate the transition from fossil fuels to renewable energy since green jobs usually require a different and higher-level skill set.[452] Depending on the country context, multiple pathways may be available for (re) skilling the workforce through higher education, apprenticeship schemes, vocational training and on-the-job training.[453]

The interviews conducted for this study revealed the wide skill gaps in many Asian countries. Basic and tertiary education needs to be revisited. The curricula of both vocational and higher education institutions need to be adapted to meet the emerging skills and competencies necessary for the transition to renewable energy.[454] Standardized curricula and accreditation of training programs are necessary to ensure that the future workforce is equipped with critical competencies for the energy transition.[455] Countries such as India and China have been including renewable energy in their curricula; India ranks fifth overall with 104 courses identified while China has 48 courses.[456] However, most of the countries in this study have more work to do to incorporate renewable energy and energy efficiency into curricula.

National social policies are also important to transforming the workforce into a green-ready pathway. In India, the government, together with industry partners, has established the National Skill Development Corporation (NSDC) to skill 150 million people for the renewable energy sector.[457] The India experience proves that partnerships between industry and employers, educational institutions, governments and labor unions are critical in increasing access to high-quality education and training required for a just energy transition.[458]

5.3.5 GENDER MAINSTREAMING

A gender transformative approach needs to be integrated in national energy transition plans because gender inequality poses a threat to the growth of the renewable energy sector. Restructuring the energy sector affects women in various ways. On the one hand, it can facilitate access to energy, which can free up time for women who otherwise may spend an average of 100 hours a year collecting fuelwood. It can create access to public services, which may open new opportunities for part-time work and income-generating activities.

On the other hand, mine closures and job losses in the energy sector can have a negative impact on women, creating intra-household tensions, forcing male household members to migrate in search of work and adding to their burden of domestic responsibilities.[459]

The renewable energy sector offers an enabling environment for women compared to the fossil fuel industry.[460] IRENA's survey confirmed that women represent a higher share of the workforce in the renewable energy sector compared to conventional energy.[461] However, interviews demonstrated that gender is not yet a consideration of many energy companies. The gender dimensions of renewable energy are seldom captured in national economic statistics.[462] Countries like the Philippines have a long history of women's participation in the civic space and have launched an energy gender toolkit (i.e., Department of Energy Gender Toolkit 2016). However, only a few points on renewable energy are included in the toolkit. In Vietnam, the provincial Women's Union, provincial People's Party and other government departments have developed action plans for renewable energy and entrepreneurship.[463] The Vietnam Women's Union has created the National Women's Startup Programme as a direct signal for women to increase their participation in the renewable energy sector.[464] In Indonesia, 500 "wonder women" underwent social entrepreneurship training by selling clean energy technologies to more than 250,000 people. Around 20% became empowered within their families as they took on a greater role in decision-making while half perceived an improvement in their status.[465]

Women's representation is important in any field, whether it is policymaking, planning and budgeting, as engineers or as workers. Women are likely to bring new perspectives, are more likely to act collaboratively and may contribute to greater fairness in their workplace.[466] The ideal framework

for a just and inclusive energy transition is one that encourages greater participation of women in the energy workforce by promoting their roles in various spheres. Building their skills to participate effectively in the just energy transition is necessary for women to have access to decent work and economic participation. There is also a need to eliminate the barriers preventing women from entering the sector by ensuring there are no glass ceilings. These are important because women face a series of barriers that make them less likely than men to take up a career in renewable energy.[467] Gender inequality and imbalance in the workplace imbalances can be addressed through gender targets and quotas.[468] A gender audit is one way that countries can ensure that the energy transition is just by including women in all stages of the transition.

5.4 FINANCIAL INSTITUTION INITIATIVES

This section focuses on initiatives by banks and investors active in the Asian energy sector and identifies opportunities to catalyze, scale up and accelerate just transitions across Asia. Unlocking finance is critical to enabling such transitions. Estimates suggest that USD 45 billion must be invested annually to make sufficient progress on universal access to reliable and affordable energy services by 2030. As such, *"[n]ew financing approaches… and tools… are therefore needed to ensure improved access to capital and to reach the scale of investment needed to achieve"* this goal.[469] The section begins by discussing the broader commitments and intentions of financial institutions (see section 5.4.1), then delves into promising efforts by the private sector in debt finance (see section 5.4.2) and equity finance (see section 5.4.3).

Some examples of energy initiatives by bushinesses in ASEAN have been covered in Appendix 3. This is to provide some progressive examples to the reader to demonstrate relatively positive Asian business initiatives.

5.4.1 NET ZERO COMMITMENTS AND POLICIES

The financial sectors in the 13 countries in this study are, to some degree, following a path to sustainable finance. More than two-thirds have a national net-zero commitment, joining forces with the industry-led, UN-convened Glasgow Financial Alliance for Net Zero (GFANZ). GFANZ was established in April 2021 by the UN Special Envoy on Climate Action and Finance together with the UNFCCC Race to Zero campaign and the UN Special Envoy for Climate Ambition and Solutions, *"[b]ringing together independent, sector-specific alliances to tackle net-zero transition challenges and connects the financial community to the Race to Zero campaign, climate scientists and experts, and civil society."*

GFANZ members represent more than 500 firms from more than 45 countries in seven sector-specific alliances. These alliances include:[470]

- Net-Zero Assets Managers initiative (NZAM);
- Net-Zero Asset Owner Alliance (NZAOA);
- Net-Zero Banking Alliance (NZBA);
- Net Zero Financial Service Providers Alliance (NZFSPA);
- Net-Zero Insurance Alliance (NZIA);
- Net Zero Investment Consultants Initiative (NZICI); and
- Paris Aligned Asset Owners (PAAO).

Across these alliances are 42 signatories from seven Asian countries: Bangladesh, China, Hong Kong, Japan, Malaysia, Singapore and South Korea.

As of May 2022, 16 asset management firms in five Asian countries have pledged to the NZAM to adopt the Net-Zero Investment Framework (see Table 20).[471]

TABLE 20 - ASIAN MEMBERS OF THE NET-ZERO ASSETS MANAGERS INITIATIVE (NZAM)

Country	Signatory
China	Bin Yuan Capital
Hong Kong	Brawn Capital
	Kerogen Capital
	Polymer Capital Management
Japan	Asset Management One
	Mitsubishi UFJ Asset Management (UK) Ltd.
	Mitsubishi UFJ
	Kokusai Asset Management
	Mitsubishi UFJ Trust & Banking Corp
	MU Investments; Nikko Asset Management Co., Ltd.
	Nissay AM
	Nomura Asset Management
	Sumitomo Mitsui Trust Asset Management
Singapore	Arisaig
	Maitri Asset Management
South Korea	Shinhan Asset Management Co., Ltd.

Sources: The Glasgow Financial Alliance for Net Zero (2021), "The Glasgow Financial Alliance for Net Zero: Our progress and plan towards a net-zero global economy", online: https://assets.bbhub.io/company/sites/6 3/2021/11/GFANZ-Progress-Report.pdf, viewed in October 2022.

TABLE 21 - ASIAN MEMBERS OF THE NET-ZERO BANKING ALLIANCE

Country	Signatory	Date signed
Bangladesh	IDLC Finance Limited	April 2021
	The City Bank Limited	March 2022
Japan	Mitsubishi UFJ Financial Group, Inc	June 2021
	Mizuho Financial Group, Inc.	October 2021
	Nomura Holdings, Inc.	September 2021
	Sumitomo Mitsui Financial Group, Inc.	October 2021
	Sumitomo Mitsui Trust Holdings, Inc.	October 2021
Malaysia	CIMB Bank Berhad	September 2021
Singapore	DBS Bank Ltd.	October 2021
South Korea	Hana Financial Group	May 2022
	Industrial Bank of Korea (IBK)	September 2021
	JB Financial Group	August 2021
	KB Financial Group Inc.	April 2021
	NongHyup Financial Group	May 2022
	Shinhan Financial Group	April 2021
	Woori Financial Group	October 2022

Sources: UNEP Finance Initiative (n.d.), "Net-Zero Banking Alliance", online: https://www.unepfi.org/net-zero-banking/members/, viewed in October 2022.

Among 76 signatories from 18 countries, Japan is the only Asian country that is represented in the membership of the Net-Zero Asset Owner Alliance (NZAOA), with five insurance companies:[472]

- Dai-ichi Life Insurance;
- Meiji Yasuda Life Insurance Company;
- Nippon Life Insurance Company;
- SOMPO Holdings; and
- Sumitomo Life Insurance.

16 banks from 5 Asian countries have taken steps ahead, joining force with the Net-Zero Banking Alliance (NZBA), see Table 21). Banks from Japan (5) and South Korea (7) are leading other Asian countries in adopting the net-zero business models, followed by Bangladesh, Malaysia, and Singapore.[473]

Only 23 signatories from 11 countries have joined the Net Zero Financial Service Providers Alliance (NZFSPA), with HKEX of Hong Kong and SGX of Singapore the only signatories from Asia.[474] Of the 29 members, only three Asian insurance firms have pledged to the Net-Zero Insurance Alliance (NZIA):[475]

- Shinhan Life (South Korea);
- Sompo Holdings (Japan); and
- Tokio Marine Holdings (Japan).

The Net Zero Investment Consultants Initiative (NZICI)[476] and the Paris Aligned Asset Owners (PAAO) have no members from Asia.[477]

This is somewhat notable given the prominent role that Japanese and South Korean financial institutions have played, and continue to play, in driving fossil fuel production around the globe. However, it should be stressed that these net-zero declarations cannot be taken at face value and must be scrutinized to ensure they are not empty ploys intended to delay a fossil fuel phase out. That is, these net-zero aspirations must be assessed according to the extent to which financial institutions plan to disclose their scope 1, 2 and 3 emissions and substantially diminish them (particularly scope 3) by 2030 (and not into the distant future, if at all – see section 4.6.4). Joining the GFANZ is admittedly a commendable first step for these financial institutions, but it is not close to meriting praise for the reasons outlined above.

5.4.2 PRIVATE DEBT FINANCE

As discussed in section 4.5.1, the cautious approach towards debt finance for renewable projects may be due to the risks associated with financing smaller renewable energy projects in Asia. Not only are renewable energy projects *"not really big ticket, multi-billion dollar items, like fossil fuel projects are"*,[478] but they are also considered much higher risk than other traditional forms of power production. This is due to both a lack of familiarity with renewable energy and unfavorable policies and regulations to sell renewable power to an existing grid.[479] In Indonesia, energy service companies *"are generally inexperienced and need greater awareness of energy efficiency measures, including the availability of finance. The Government of Indonesia could play a key role in fixing some of these issues by working closely with the [energy service companies] to create a market for energy efficiency"*.[480] However, there is currently a dearth of bankable renewable projects in the region. That is, *"ASEAN's need for investors is not matched by the number of bankable projects in clean energy. Clean energy financing faces several institutional and regulatory gaps, which have attributed to the investment hurdles in ASEAN"*. These include both technical and regulatory limitations on the region's power market and grid transmission (see section 4.2.2).[481] This difficulty in raising domestic capital *"eventually leads to a high interest rate on short-term loans, which only further deters renewables investors, developers, and IPPs"*,[482] rendering them even higher risk and making it even more difficult to raise capital for such projects – a self-perpetuating cycle. Together this indicates that although renewable energy is gaining some traction in the region, it is not even close to meeting its full potential.

Still, domestic capital is being raised in Asia for renewable energy projects. Several private banks from the Philippines have been providing green loans and other tools to accelerate the development of green infrastructure and large-scale renewable energy:

- *"ING Bank issued a green loan of approximately $37.4 million loan for developing 50 MW portfolio of rooftop solar projects in Singapore".*[483]
- DBP has launched the Solar Merchant Power Plant (SMPP) Financing Program to provide funding for solar power developers that intend to sell electricity through the Wholesale Electricity Spot Market.
- RCBC has launched the "green time deposit" with proceeds used for the bank's green asset portfolio, such as renewable energy, pollution prevention and control, energy efficiency, sustainable water management and clean transportation. The bank has also committed 70% of the loan projects to solar farm projects, while the rest will be for wind, geothermal and hydropower projects.

It is important to scrutinize financial deals such as these to surmise how banks navigated the challenges to financing renewable power in Asia (see, for example, sections 4.4.1, 4.6.3, and 5.4.1). Although this is beyond the scope of this research, it merits further study.

5.4.3 PRIVATE EQUITY FINANCE

In July 2020, the Chinese National Green Development Fund Co., Ltd., jointly established by the Ministry of Finance, the MEE and Shanghai Municipal Government, was inaugurated and began operations. China Development Bank, Bank of China, China Construction Bank, Industrial and Commercial Bank of China and Agricultural Bank of China each invested RMB 8 billion to hold 9.0395% of the shares and Bank of Communications invested RMB 7.5 billion to hold 8.4746% of the shares, to establish the National Green Development Fund, the only national fund in the field of environmental protection in China. The total size of the fund is RMB 88.5 billion, RMB 10 billion of which is contributed by the central government. According to public information, the fund focuses on green development fields such as environmental protection and pollution prevention, ecological restoration and land greening, energy and resource conservation, green transportation and clean energy.[484]

5.5 PUBLIC FINANCE AND DEVELOPMENT BANKS

This section discusses the roles that multilateral development banks (MDBs) and international development organizations can play in accelerating a just energy transition in Asia. It begins by presenting a general overview of PFI finance for clean power across Asia (see section 5.5.1), and then discusses multilateral initiatives to allocate capital for transition finance, i.e., investing in and subsequently decommissioning brown, fossil fuel-intensive assets (see section 5.5.4).

5.5.1 DIRECT FINANCING FOR RENEWABLE ENERGY GENERATION

Public finance has played a considerably smaller role than private finance in mobilizing renewable energy procurement in Asia, accounting for just 14% of such investments between 2013 and 2018.[485] Still, PFIs, especially development finance institutions (DFIs), have played a prominent role in driving renewable energy production over the last decade in Asia (especially in ASEAN Member States), primarily in the early phases of renewable energy procurement.

"DFIs financed over $9 billion in clean energy in ASEAN region over 2011–2020. The top three investors comprise the World Bank, the Asian Development Bank (ADB), and Japan Bank for International Cooperation as each bank has invested over $1 billion during 2009–2016".[486]

Debt finance (i.e. commercial loans) accounts for as much as 73% of renewable energy finance by development banks. For instance, *"ADB committed $17.6 million loan for the installation of 47.5 MW of floating solar PV power generation panels in Vietnam.* This type of finance also (though less frequently) includes "soft" or concessional loans, denoting loans with more favorable conditions for the borrower (e.g., lower interest rates, longer time frames). Concession loans *"amounted to about USD 611 million from 2009–2016 in ASEAN".*[487]

The bulk (70%) of these funds have been allocated for geothermal and hydropower projects. For instance, *"the World Bank... committed USD 640 million for the Pumped Storage Technical Assistance Project in Indonesia".*[488] Moreover, *"[e]nergy efficiency projects are also increasingly financed. ADB has mobilized more than $400 million to energy efficiency and conservation projects in the ASEAN region by providing grants and technical assistance to the governments of Indonesia, the Philippines, Thailand, and Vietnam."*[489]

However, plummeting wind and solar PV costs globally suggest that this trend may be changing. For example, *"ADB financed $7.64 million for a 100 megawatt (MW) National Solar Park in Cambodia".*[490] Notably, some of this finance took the form of grants, including two USD 67 million grants by the World Bank for remote solar PV power procurement in the Philippines, a USD 16.3 million grant by the United Kingdom to Indonesia's Low Carbon Development Initiative, a USD 3 million grant issued to Cambodia's National Solar Park project by the Strategic Climate Fund[491] and a grant of an undisclosed amount by the World Bank for solar power production in Myanmar.[492]

As already noted, the ADB has played a prominent role in driving public financial support for Asian renewable energy, primarily through its Clean Energy Program. Averaging roughly USD 1 billion in annual clean energy investments between 2005 and 2019 (USD 25 billion to date), ADB has pledged to increase these contributions to a cumulative USD 80 billion through 2030.[493] The vast majority (92%) of this finance was in the form of loans while significantly smaller portions were allocated as grants (3%), equity (3%) and guarantees (2%).[494] Loans issued by the ADB can take various forms, including *"London interbank offered rate (LIBOR)-based loans, local currency loan product, concessional… loans, results-based lending (RBL), and multitranche financing facility."*[495] Meanwhile, grants are only *"offered to the poorest borrowing countries of ADB. Samples of projects under the grant components of investments are pilot-testing new technologies and business models; deploying less polluting, more efficient, and innovative technologies; and providing technical assistance."*[496]

The ADB has also driven clean energy equity investment in Asia, predominantly through its Green Bond Program, which launched in 2015 and accrued USD 7.6 billion in investments between its launch and 2020. In this program, *"the two initial considerations before investing in green bonds are the involvement of a company or project in renewable energy and energy efficiency projects, and their creditworthiness as with any other loans"*. As of 2019, roughly 29% of all green bond investments were allocated to renewable energy and energy efficiency projects with the bulk (68%) funneled to the transport sector.[497]

5.5.2 CAPACITY BUILDING AND GRID DEVELOPMENT

The roles of DFIs have evolved somewhat in the region over the years. Today, they are mainly responsible for, among other things, capacity building, offering technical support and conducting feasibility studies. For instance, the *"ASEAN–German Energy Programme (AGEP), which was jointly implemented by the ASEAN Centre for Energy (ACE) and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), aims to improve regional coordination for the promotion of renewable energy and energy efficiency toward sustainable energy for all… [and] is being implemented in regional contexts in all ASEAN Member States."*[498]

Notably, the bulk of ADB's clean energy and climate mitigation investments have been allocated to projects in China (21%) and India (24%) while 60% has been allocated to South Asia (36%) and Southeast Asia (24%), including Indonesia (8%), Bangladesh (7%), Pakistan (6%), Thailand (5%) and Vietnam (4%), among others. ADB notes that a *"multisector approach in clean energy investments could mitigate the risks and leverage the benefit s for ADB's [developing member countries], and will more likely result in a progressive, inclusive, resilient, and sustainable growth."*[499]

An example of such projects is the Sustainable Energy Access in Eastern Indonesia Electricity Grid Development Program. This was approved in 2017 and consisted of a USD 600 million loan issued to support and enhance grid connections to *"residential, commercial, and industrial customers in the Eastern Indonesian provinces in Sulawesi and Nusa Tenggara."*[500] Notably, *"[d]isbursement of the $600 million hinges on the achievement of disbursement-linked indicators"*, which include, but are not limited to, the number of installed distribution transformer units, total number of customers attended, annual electricity sales and the implementation of pilot smart grid projects.[501]

Meanwhile, the Green Financing Platform (GFP) project in China project saw the ADB allocate USD 500 million through *"four complementary financial products: (i) credit guarantees to enable commercial financing from banks and financial institutions, (ii) debt financing through entrusted loans, (iii) financial leasing for purchasing energy-efficient industrial equipment and other goods to obviate the need for large capital for SMEs and energy service companies (ESCOs), and (iv) equity investments in qualified early-stage technology companies."*[502] As of December 2020, more than USD 300 million had been approved under the GFP for 39 eligible projects, which leveraged more than USD 1 billion in green investments in the country.[503]

5.5.3 BLENDED FINANCE AND MOBILIZING PRIVATE FINANCE

Although they may have had limited financial influence, DFI involvement in these projects are crucial to *"reduce risks, overcome initial barriers, attract private investors and bring new markets to maturity."*[504] MDBs in particular have played influential roles, notably the ADB, World Bank and AIIB, which have *"started low carbon technology funds, which provide financing and risk guarantees, so that if a loan goes bad, a bank like ADB takes care of it."*[505] Therefore, *"[p]ublic finance should be used strategically with the purpose of crowding in additional private capital, particularly in more difficult sectors and regions."*[506]

Blending private and public finance is therefore an incredibly useful way to mobilize and attract private capital by de-risking projects. As one informant noted, *"some domestic banks will bank*

local players, but once the ADB steps in this will mobilize substantially more funds",[507] suggesting that bilateral and multilateral development banks may play a vital role in driving energy transitions across Asia.

BOX 6 - ASEAN CATALYTIC GREEN FINANCE FACILITY (ACGF)

An initiative managed by the ADB, the ACGF is an ASEAN Infrastructure Fund initiative supporting governments in Southeast Asia to prepare and finance infrastructure projects that promote environmental sustainability and contribute to climate change goals. The ACGF supports green infrastructure development in energy, transport, water, urban and multisector projects. Examples of green infrastructure include, but are not limited to, renewable energy, energy efficiency, sustainable transport systems, green cities and sustainable water supply and sanitation.

The ACGF provides project preparation and financing support as well as capacity building to strengthen the regulatory environment and build the institutional capacity of ASEAN governments to scale up green infrastructure investments.

Eligible energy projects include those that target a reduction of GHG emissions or the sequestration of emissions, such as:

- Solar or wind power projects;
- Support for electric vehicles, including charging infrastructure; and
- Development of a transmission line to integrate renewable energy in the grid.[508]

For example, *"USAID's regional Private Financing Advisory Network-Asia (USAID PFAN-Asia) program assists the private sector and governments to attract clean energy investments across Asia, including seven of the ASEAN countries. Since 2013, the program has helped obtain more than $500 million for a total of 38 clean energy projects in renewable energy as well as energy efficiency."*[509]

Furthermore, the ADB has helped mobilize blended public-private finance for the Tolo Wind project (72MW) in South Sulawesi, the One 21 Solar (21MW) project in Sulawesi, the Three-7 Solar (21MW) project in West Nusa Tenggara and the Rantau Dedap Geothermal project (90MW) in South Sumatra.[510] Indonesia's Tropical Landscapes Finance Facility (TLFF) and the Credit Guarantee Investment Facility have also sought to enhance *"renewable energy capacity and electricity access for marginalized, off-grid communities"* through a blended mechanism.[511]

5.5.4 TRANSITION FINANCE

One key initiative that merits special attention is the Energy Transition Mechanism (ETM), through which the ADB has entered into a partnership with the Indonesian government (and the governments of the Philippines and Vietnam) to free up capital to decommission either 50% of Indonesia's existing coal assets or retire at least 10 coal-fired power plants by 2032–2037. This partnership was announced by ADB's president, Indonesia's finance minister, and the Philippine's finance secretary during the 26th Conference of the Parties (COP26) in November 2021.[512]

The ETM is *"the first of its kind in Asia and the Pacific"*,[513] notably because the ETM would be classified as transition finance rather than climate finance (although there is not yet a universally accepted definition or taxonomy – see section 4.5)[514] since the purpose is to invest in and subsequently phase out dirty brown assets. As was discussed in section 4.2.4, these types of investments pose a slew of challenges, ranging from financial risk to perceived greenwashing. However, experts agree that *"once the ETM gets going, it has the potential to attract mass investments from philanthropies along with governments and banks"*.[515] In fact, during the announcement, Japan's finance ministry committed USD 25 million to the initiative, the ETM's first seed money.[516] The ADB claims that the *"ETM has the potential to become the largest carbon reduction program in the world,"*[517] and *"if the ETM does kick off, that is going to be one of the biggest shows of commitment by developed countries to developing counterparts."*[518]

"ETM is a transformative, blended-finance approach that seeks to retire existing coal-fired power plants on an accelerated schedule and replace them with clean power capacity".[519] In doing so, it will be composed of two multi-billion dollar funds, one dedicated to coal decommissioning and the other to clean energy procurements.[520] It could take various forms: *"if the investors become the new equity holder of the brown asset, then the investor is themselves responsible for the decommissioning of the asset."* Conversely, the ETM could finance existing holders to execute the decommissioning.[521] Critically, however, *"this should not be seen as a standalone model; it must be seen in a more holistic way and combined with other instruments to promote renewable power procurement."*[522]

Not only do transition mechanisms like the ETM offer some of the most effective approaches to substantially phase out reliance on fossil fuels and catalyze a true energy transition,[523] but they are also seemingly welcomed by investors with fossil fuel assets currently on their balance sheets. *"[O]wners of fossil assets, especially private ones, are getting more and more worried about the stranded asset*

risk. If they can see an early exit, they are willing to take it. If the money is available today, they would be interested, even if it comes at a discount."[524]

However, a series of issues are impeding such a mechanism from evolving. First, despite the existence of numerous "green taxonomies" (see section 4.5.3), no such taxonomy exists for transition finance. As a result, *"we cannot be sure whether the new money going into coal phaseouts is not subject to greenwashing. A lack of standards and verification methods is one of the biggest barriers for an early coal (and fossil) phase out."*[525] Some experts are also concerned that the ETM may have a political inclination, noting that their *"biggest worry is that the USA sees ETMs as a way to balance out China's books – that they think, 'ok, let's pump a few billion dollars into Indonesia to control the South China sea."*[526]

Still, there is a great deal of appetite for transition finance. *"GFANZ members really want to play a role in meeting gaps in finance, and many countries are open to it, like Indonesia, Philippines... but they are picking up a lot of heat from NGOs because you are technically financing coal. Once we can convince everyone that we have a credible definition for transition finance, then it will bring in philanthropic capital and these projects become much more bankable."*[527]

Other transition finance initiatives are also beginning to surface to promote the phase-out of fossil fuel in Asia. Under a program developed by the United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP), a prospective climate debt swap is being pursued to leave Sri Lankan fossil fuels underground. The proposed plan *"could see Sri Lankan government sovereign debt refinanced into a climate bond with several KPIs attached to decarbonize and reduce CO_2 emissions. G7 debt holders are ready to start negotiating sovereign bonds into something that has more actionable targets."*[528] Other experts agree that structuring debt relief for low- and middle-income Asian countries could be a starting point to finance the energy transition. The focus of this strategy should be debt from foreign private creditors, especially bond holders. Legislation therefore needs to change in countries where creditors are headquartered (particularly the US and the UK).[529]

Other bilateral support has been provided to Asian countries although at a smaller, but still significant, scale. Indonesia has received support from a variety of sources, including USD 32.7 billion committed by the UAE government, and an undisclosed amount from the Climate Investment Fund's (CIF) Accelerating Coal Transition program, *"a USD 2.5 billion multilateral funding facility by CIF to facilitate a just transition from coal to renewables in developing countries"*.[530] Moving forward, these public and multi- and bilateral funds could be used to overcome the challenges of mobilizing domestic private capital for renewable power procurement in Asia (see section 5.44).

It is worth mentioning that within the realm of transition finance, the Green Climate Fund (GCF) has been established, a multilateral effort that has so far raised more than $11 billion to finance 209 projects globally focusing on climate mitigation and adaptation efforts.[531] Although this initiative clearly holds promise and value for promoting energy transitions, it should be stressed that the GCF was not mentioned by any primary or secondary source of data in this report, suggesting that its prospects are being overlooked in the Asian context.

5.6 INTERNATIONAL CSOs AND PHILANTHROPIC FOUNDATIONS

Non-state actors whose scope of work is international are critical to accelerating the financing of renewable energy in Asia. They have the capacity to unite the most vulnerable sectors and areas in the region to uphold climate justice. International civil society and philanthropic organizations can promote greater equity in power relations among people, their national governments and various global institutions.[532]

There are evidence-based studies that suggest international civil society has an important role in climate advocacy and public awareness campaigns,[533, 534] climate change mitigation at the local level,[535] environmental governance,[536, 537] and international law-making and diplomacy, as well as the implementation and monitoring of crucial global issues related to climate change.[538] Together, civil society holds national governments and regional[539] and international organizations accountable in their efforts to integrate climate change in their development planning and policymaking processes.[540]

While unending crises (e.g., COVID-19, Russia-Ukraine war) send governments off course in their climate plans, philanthropy can advance the coal phase out and energy transition.[541] More importantly, these international entities provide an international dimension to the energy transition and demonstrate that the climate emergency is not just one country's problem but the world's. The multiple roles of international civil society and philanthropic organizations in the energy transition can be grouped into three broad categories:

- Facilitating collaboration and interconnectedness;
- Providing additional sources of funding; and
- Provide research, training, and capacity building.

5.6.1 FACILITATING COLLABORATION AND INTERCONNECTEDNESS

Through the vast reach of their networks, international civil society offers a multilevel understanding of the just energy transition by connecting international and domestic efforts. They assist countries in accelerating the energy transition and, at the same time, facilitate the

exchange of best practices. These organizations are also experienced actors in communicating and working on the issues of marginalized groups, and can offer a sharp understanding of local, national and global conditions, as well as suggest necessary legislative and political frameworks to achieve a just energy transition.[542] They create opportunities for collaborative discussions among stakeholders, including industry, government and academia. They also bring matters to the attention of the international community as they engage in processes leading up to global agreements.[543] This role is particularly important in countries without a strong civil society, such as in authoritarian and communist regimes.[544] Several countries in the region have states that tend to be quite strong and civil society closely controlled or relatively weak and fragmented.[545]

International civil society can also facilitate global interventions. Because of their international character, these organizations can bring global issues to the local level and local issues to global arenas. Their partnerships with local organizations can help to identify and effectively address the climate vulnerabilities of communities, while their international network can facilitate access to funding and capacity building. The global scope of their work also enables them to recognize the differences and similarities among the local communities they work with. An informant from an international renewable energy organization said that they make it a practice to consider local contexts, such as the importance of the sense of community and strong ties, which language to use in engagements and the interconnection of their lives with the natural resources around them.[546] They also have experience in consulting and involving local communities, such as Indigenous groups, in decision-making.[547]

The impacts of energy transitions may be local, but the international context is very relevant for just transitions.[548] This means that the global scope of these organizations may provide a more sophisticated and conceptual understanding of the people and planet because of the wider range of expertise and funds they are able to tap into.[549] International civil society also contributes to formation of global public opinion, which may contribute to drafting appropriate regulatory and institutional frameworks for developing global, regional, and local climate change adaptation plans.[550] For instance, civil society participation plays an effective role in environmental governance, which can determine the regional energy transition.[551] Moreover, pressure from international institutions has historically helped countries with policy weaknesses. The international community, in general, has the ability to shape global public opinion and may repudiate violators for their unwillingness to conform to the normative standards of the international system.

5.6.2 PROVIDE ADDITIONAL SOURCES OF FUNDING

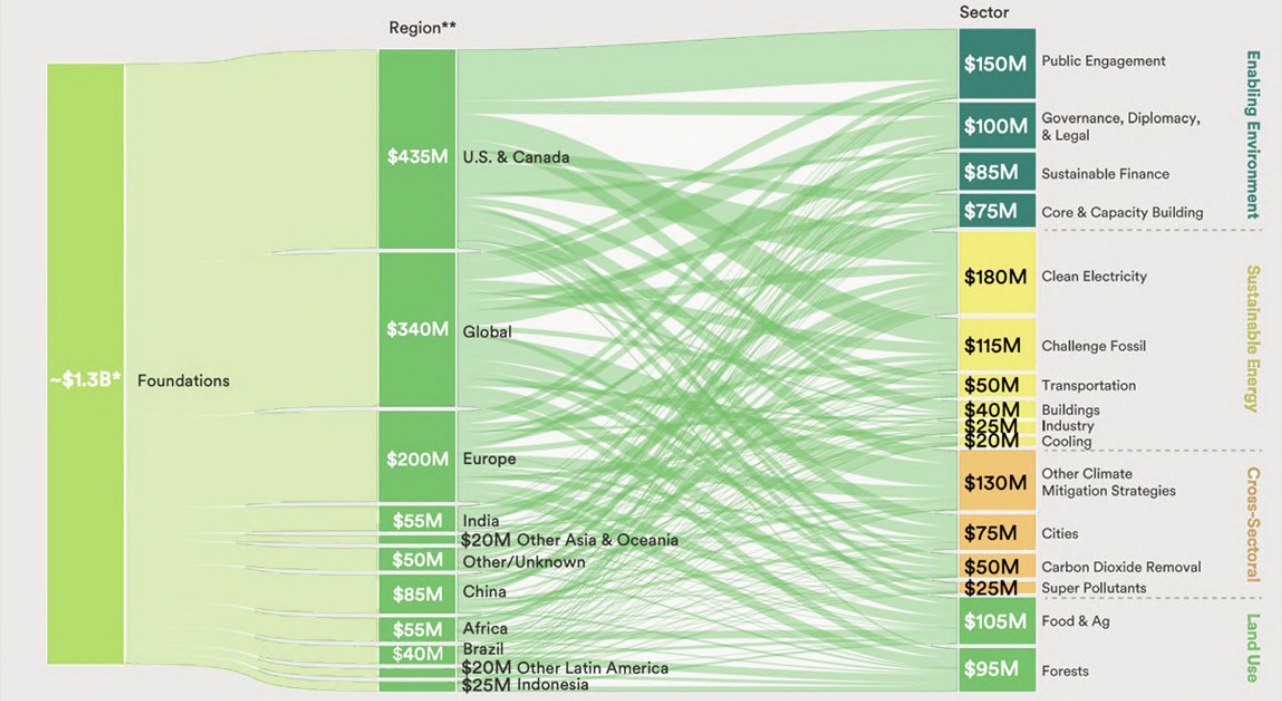
Over the past decades there have been initiatives to improve the competitive advantage of corporations by promoting ESG as part of their CSR strategy.[552] Through the principle of climate justice, philanthropic organizations can help nations navigate obstacles to transformational change in the energy sector.[553] While most philanthropic organizations do not have the massive funding needed to finance the shift to clean energy, they can move more quickly than governments.[554] Unlike the latter, they can constantly recalibrate and integrate learning into their strategies and adjust responsively.[555]

McKinsey estimates that USD 9.2 trillion in capital spending is needed per year on average between 2021 and 2050 for the net-zero transition.[556] This means that an annual increase of USD 3.5 trillion is needed, or half of global corporate profits, a quarter of total tax revenue and 7% of household spending in 2020.[557] As such, developing countries with less capital funding will likely spend more on physical assets relative to their GDP. In developing countries in sub-Saharan Africa, Asia and Latin America, spending would take a larger share of GDP (10%).[558] Philanthropic funding can therefore ease this burden.

In recent years, a growing number of new pledges to climate organizations have created new momentum for climate philanthropy.[559] Investors are increasingly limiting their exposure to assets not aligned with global climate actions and channeling their funds to green assets.[560] Yet, funding still does not reflect the urgency of the climate emergency.[561] Total philanthropic giving by foundations and individuals in 2020 was USD 750 billion, but less than 2% (USD 6 to 10 billion) went to climate change mitigation.[562] Although foundational giving to climate change mitigation has risen (from USD 900 million in 2015 to at least USD 1.9 billion in 2020), this increase is not enough to keep global warming below 1.5°C.[563] Moreover, within organized philanthropy, energy is largely relegated to environmental funders.[564] As such, there is still a great need to view energy as inseparable from the wide array of issues that contemporary philanthropy funds, such as health, education, gender and poverty.[565]

Philanthropic organizations are critical in remaking the global economic system for a carbon-neutral future.[566] Philanthropic capital has multiple points of entry, such as grants that can help with project preparation, technical assistance, concessional investments and market rate investments.[567] They can be used to invest money in clean energy projects by de-risking investments to attract more financial resources from development banks and private sectors that do not want to take risks in developing countries.[568, 569, 570] Moreover, philanthropic organizations can work directly with local communities to assist them in their strategies to retire coal plants early while considering how workers will manage the loss of jobs and take risks in investing in pilot projects.[571]

FIGURE 19 - LINKAGE BETWEEN FUNDING SOURCES AND ECONOMIC SECTORS



Source: Desanlis, H., E. Matsumae, H. Roeyer, A. Yazaki, M. Ahmad, and S. M. (2021, October), Funding trends 2021: Climate change mitigation philanthropy, ClimateWorks Global Intelligence.

*2020 total known foundation giving for climate change mitigation has risen to at least $1.9 billion, from less than $0.9 billion in 2015. The number is this graph represent average annual amounts, 2015-2020.

**Founding by region is based on geography of intervention, not the geography of the funder or recipient. If a U.S.-based grantee receives funding from a U.S.-based funder for work in Brazil, this would be counted toward "Brazil".

In most cases, philanthropic organizations partner with international governmental organizations, such as in the case of Energy Transition Partnership (ETP)[572] and the Southeast Asia Clean Energy Facility (SEACEF).[573] In the draft structure of the ETM, philanthropy is clearly identified as one of the key drivers of the Southeast Asia SEA ETM Partnership Platform.[574]

- The ETP is a five-year, multi-donor partnership of governmental and philanthropic donor partners to support the sustainable energy transition in Southeast Asia in line with the Paris Agreement. Its initial focus is on Indonesia, the Philippines and Vietnam to help the region achieve the Sustainable Development Goals (SDGs). The ETP allocated a total of USD 50 million for its first year, with an additional USD 100 million for the coming five years.[575]
- The Southeast Asia Clean Energy Facility (SEACEF) is managed by Singapore-based Clime Capital, with an initial investment of $10 million and a focus on getting new projects underway in Indonesia, the Philippines and Vietnam.[576]
- ETM is a scalable, collaborative initiative developed in partnership with developing member countries (DMCs) that will use a market-based approach to accelerate the transition from fossil fuels to clean energy. Public and private investments from governments, multilateral banks, private sector investors, philanthropic organizations and long-term investors will finance country-specific ETM funds to retire coal power assets on an earlier schedule than if they remained with their current owners (see section 5.5.4).

The Rockefeller Foundation, Ikea Foundation and Bezos Earth Fund announced a $1 billion investment that will be spent for three years in sub-Saharan Africa and South Asia to sustainably empower hundreds of millions of people and boost access to renewable energy.[577, 578] The Global Energy Alliance for People and Planet, which also includes eight multilateral and development finance institutions, will start with $10 billion for innovative technologies that support renewable energy globally.[579]

Likewise, Bloomberg Philanthropies announced it would invest USD 242 million in efforts to accelerate the clean energy transition in developing countries in Africa, Latin America and Asia, including Bangladesh, Pakistan and Vietnam.[580]

5.6.3 CONSULTANCY, TRAINING, AND CAPACITY BUILDING

International civil society and philanthropic organizations help create an enabling environment for a just energy transition. They also act as a bridge between different stakeholders to build the capacity of local NGOs. They can facilitate collaboration between research institutions abroad and the local population, giving voice to the most vulnerable groups. The training that international CSOs provide also encourages greater transparency among businesses and governments on energy use, procurement policies and regulations. They provide training on how civil society can participate across the energy value chain, from scenario development to environmental assessment and even grid planning.[581] International civil society can serve as accountability partners to promote greater equity in power relations between the state and the population, at both national and local levels.[582] This can be accomplished through accountability processes that ensure greater and better interaction, not only with the population but with other government entities.[583]

5.7 CIVIL SOCIETY AND GRASSROOTS ORGANIZATIONS

This section describes the role of CSOs and grassroots organizations in just energy transition initiatives in Asia. It presents an aggregated analysis of online survey responses of CSO representatives in select Asian countries and supplements the narrative with findings from relevant literature and reports. Responses suggest that CSOs have broadened their roles from advocacy and awareness raising to complementing government and private sector initiatives with research and evidence, building the capacity of communities and piloting and monitoring projects. To maximize the positive contribution of CSOs and expand the civic space for participation in transition policies, an enabling, inclusive and politically tolerant environment must be protected, supported and expanded.

The inclusion of CSOs in this report is justified by their increasing presence and diverse roles in local policymaking and community-level implementation of renewable energy projects. CSOs are generally capable of harnessing local knowledge and networks,[584] and as such play a complementary role[585] to government and private sectors in properly situating sustainable energy plans and mobilizing community support for infrastructure projects. This role becomes more important as policy and investment trends move towards more renewable energy technologies, which naturally lend themselves to a local and decentralized[586] energy system. In many cases, it is virtually only through CSOs that marginalized and vulnerable groups can effectively participate in public consultations, planning and implementation processes. Deficient consultative processes in dominant energy investment and policy decisions are well documented,[587] often resulting in failed projects and stranded assets due to the absence of collective buy-in and social acceptance of local communities in these projects.[588] Centralized and top-down approaches in energy and climate policies – a legacy of fossil fuel-based energy systems – are beginning to be seen as unsustainable.[589] Therefore, genuine engagements with CSOs not only have ethical merits, but also make business and economic sense.

Still, CSOs have experienced significant challenges in recent years that undermine their ability to effectively organize and operate. For example, waves of authoritarianism in parts of the world are threatening democratic values[590] and enabling environments essential for CSOs to participate in energy transitions. Reported acts of reprisal against activists and grassroots representatives have been on the rise, shrinking the already constrained civic space that is still reeling from the impacts of COVID-19 pandemic.[591] Lockdowns and containment measures have severely stunted the activities of CSOs in terms of operational delays, funding shortages, coordination and engagement challenges, downsizing, inaccessibility to technological platforms and barriers to attendance in public deliberations and climate negotiations.[592]

Analysis of survey responses suggests that CSOs are progressively shifting from their traditionally perceived role as activists and lobbyists that apply bottom-up pressure on current regimes through mass mobilizations.[593] Today, newer roles for CSOs include co-designing[594] and engaging in energy transition policies from planning to implementation and monitoring.[595] Traditional roles of CSOs are still important, however, as they seek to identify local issues and bring low-priority[596] social and environmental dimensions into focus in energy investment decisions.[597] For example, respondents have identified land grabbing, inequities, pollution from bad mining practices, health and environmental impacts from waste, labor displacement and gender discrimination as major environmental and social issues in their respective countries' energy investment policies.

While renewables are generally acknowledged as the sustainable alternative to fossil fuel sources, opposition to cleaner energy options can also originate from civil society.[598] Pushback on transition proposals is particularly strong in countries and regions with large fossil fuel

industries and a wide consumer base for conventional energy sources. Reasons for opposition are more economic in nature, such as missing out on income opportunities from coal reserves and unjust electrification of vehicles.[599] Respondents from the CSO survey also emphasized rights-based issues, frequently citing land grabbing as a barrier to renewable energy deployment in their countries. Studies and literature are also replete with cases of projects with no free, prior, and informed consent among affected communities,[600] an issue often associated with land-intensive solar farms and large-scale hydro plants. However, informants have also noted a recent positive development that FPIC is a standard requirement in energy project financing.[601] Triggered by the current energy crisis and Russia's invasion of Ukraine, energy security concerns among consumer rights groups[602] are likewise sending the signal that coal procurement will remain part of governments' policy tool.

Many CSOs have also had to operate in an environment where governments and private sector entities have political and economic vested interests in fossil fuel-based industries. Aside from concerns about oversupply in resource-rich countries, fossil fuels continue to be attractive due to the perceived high and quick financial returns to asset holders despite the social and environmental costs to communities. Given the foothold of political elites, their economic interests in fossil fuel, and political instability in some countries, many CSOs fear not only a shrinking space for civic participation in national energy plans and policies, but also policy reversals that unwind the positive impacts of CSO-led projects.

In this environment, the normative appeal of CSO participation in energy policies is accentuated,[603] namely as a means for citizen expression of agency and shared values, such as energy democracy, environmental stewardship, international solidarity, social justice, good governance and inclusivity.[604] Driven by these values and social needs, CSOs seek to increase public awareness on alternative solutions[605] and generate mass mobilization for just transition initiatives, as noted in some survey responses. However, potential supporters and CSO respondents have cited the waning appeal of protests, social movements and demonstrations, and criticism of their tendency to operate merely as talking shops[606] rather than a results-driven and action-oriented organization.[607] Many CSOs therefore have been stuck in awareness raising and fail to implement actions, citing financial and human resource constraints.

Nevertheless, newer types of CSOs have emerged and are having material impacts at the policy and project levels. At the formulation stage, CSOs represent civil society's inputs in social dialogues and policy negotiations, often in equal footing as governments and private sector agents.[608] At the project level, the process of community consultations in infrastructure projects are set as a standard to secure an affected community's social license to operate,[609] which is notably a critical factor in a project's success.[610] Grassroots organizations act as shareholders in some of these renewable energy projects,[611] promoting community ownership[612] and autonomy over their development processes.[613] CSOs may also be leveraged in monitoring and evaluation, given their proximity to project location and impacts.[614] Many CSOs also assume the role of watchdogs[615] and enforcers of accountability mechanisms[616] in sustainable energy projects and government transition policies, such as the Coal Divestment Scorecard,[617] Accountability Framework Initiative[618] and the Global Energy Monitor,[619] among others.[620]

CSOs have also become valuable information and knowledge partners in energy and climate actions. Several survey responses pointed to the generation of research, facts and evidence as integral in CSOs' repertoire of actions to support transition policies and inform their lobbying and public awareness campaigns. Cases of such research efforts by CSOs successfully reaching actual policy deliberations (e.g., in tariff setting,[621] PPAs[622] and energy plans[623]) are documented. In addition, CSOs act as facilitators, trainers and educators in capacity building programs for governments[624] and sustainability practices for local communities (e.g., recycling, home energy conservation, etc.).[625] CSOs are also known sources of creativity and niche technology projects (e.g., community renewable energy projects[626] and transition towns[627]) whose experimentations[628] generated unique lessons and transferrable principles (see Box 7).

BOX 7 - INDIGENOUS-LED RENEWABLE ENERGY PROJECT IN THE PHILIPPINES

Indigenous peoples are a unique demographic in the energy dialogue. They comprise 19% of the world's extreme poor while representing only 6% of the global population.[629] Their culture, livelihoods, physical and spiritual well-being share deep ties with the land and natural resources on which they live and depend. However, since they often lack formal recognition over their lands and resources, they are prone to displacement due to infrastructure development, including renewable energy. Several barriers are also known to hinder their access to basic services, markets, justice and political and decision-making processes. These inhibit them from accessing solutions and infrastructure to protect them from natural disasters and the impacts of climate change. These facts alone warrant their voice in energy transition and climate change policies.

Land rights invariably come into focus given that Indigenous territories have characteristics favorable to renewable energy projects. Large hydro dams, in particular, are known to cause widespread displacement of Indigenous peoples, often without the consultation and consent of the communities that have prior rights to their lands and resources. For example, the World Commission on Dams revealed that large dams have displaced 40 to 80 million people from their homes and lands, which has contributed to economic hardship, community disintegration and an increase in mental and physical health problems.[630] These poorly planned projects have resulted in conflicts, rights violations and destroyed livelihoods. In some cases, these energy projects are not built to benefit the host community, but to supply energy for industrial activity, urban areas and other infrastructure projects.[631]

Nevertheless, the last two decades have shown growing international recognition of the rights of Indigenous peoples.[632] In the private sector, sustainability and safeguard standards that respect Indigenous peoples' rights are recognized as a sound business principle and good practice. The Hydropower Sustainability Council, for example, recently updated its Hydropower Sustainability Tools, which are used by assessors and insurers, to include Free, Prior, and Informed Consent (FPIC) as a requirement of good practices for hydropower projects.[633] This certification standard adopts the guidance enshrined in international instruments and human rights law, such as carrying out "good faith" consultations through Indigenous peoples' own representative institutions. This implies that consultations should be transparent and free from coercion, and that companies must remain active in remediation, restitution and compensation in cases of rights violations.

At the community level, several promising Indigenous-led approaches to renewable energy production are documented in Asia.[634] These initiatives often produce beneficial results to the community, mainly due to the community's ownership and autonomy over their development goals. One such case is the Community-Based Renewable Energy Systems (CBRES) led by Sibol ng Agham at Teknolohiya (SIBAT), which is a network of local NGOs in the Cordillera region of the Philippines. Like most CSOs, SIBAT started in advocacy work by resisting dams from being built in the northern Philippines. The tribal community recognized the importance of hydropower, but can only allow it at a scale that would not displace them. This dialogue sparked an insight to start community-based micro-hydro power projects in 1994. Tuned to the needs of the community, SIBAT reached out to funding agencies for support. A team of local experts was assembled to design and build micro-hydro components. The project cycle, from collective construction to maintenance, heavily involved people from the communities. Women played a pivotal role in enforcing policies, managing micro-hydro organizations and maintaining waterways and hillsides. On SIBAT's side, inputs to the technical design, advisory and supervision of post-instalment phases were provided to local communities.

Even without strong policy support, the communities, through SIBAT's facilitative role, were able to build 27 micro-hydro systems in rural off-grid areas. Communities benefited from increased energy access, less dependence on wood for lighting and the easing of women's work burden through the use of water-powered rice pounders.[635] After years of improvement, micro-hydro projects fully deliver the required energy per household and per community.[636] In addition, these energy systems are financed through contributions from the local community, effectively making them co-owners with stakes in the sustainability of the projects. Also noteworthy has been the project's ability to harness and support Indigenous peoples' vast expertise and skills in watershed protection. The traditional forest protection practice *lapat*, which originated in Indigenous communities, was strengthened due to a deep understanding of the need to protect the water source to enable electricity generation.
This case highlights the crucial linkages of sustainable energy, poverty reduction, food security, livelihood generation, climate action and conflict prevention. Community-based renewable energy systems provide sustainable means to achieve net-zero objectives without contradicting international laws and standards on human rights. As the case suggests, renewable energy deployment requires a deep understanding of Indigenous peoples' rights, thoughtful attention to their sustainable energy needs and facilitative action to actualize communities' visions of their own development agenda.

It is evident that civil society's participation in energy transition policies remains meaningful in ensuring the sustainability of renewable energy projects and plans to decrease dependency on fossil fuels. The ability to bring in multidimensional perspectives to policies, safeguard the livelihoods, cultural and ecological integrity of communities and leverage their expertise and local knowledge, are characteristic of effective CSO participation in energy transitions. However, the lack of scale, siloed advocacy and a tendency for inaction, all undermine civil society-led efforts due to funding, operational and staff constraints that were exacerbated by the COVID-19 pandemic. There are also fears that the global energy crisis could derail the momentum of net-zero commitments.[637] This political and economic landscape calls for stronger, not lesser, civil society involvement, especially now that local and decentralized renewable energy systems are likely to remain part of countries' array of solutions to the climate crisis.

5.8 KEY MESSAGES

- **Principle 1:** No financing for new coal projects for electricity generation and phasing out existing coal-based power generation:
  - Several countries (Indonesia, Pakistan, the Philippines, Singapore and South Korea) have introduced policies to terminate new coal-fired power plant projects, although often after a number of years.
  - Banks in upper-middle-income and high-income countries (Japan, Malaysia, Singapore and South Korea) are leading the adoption of net-zero business models, along with banks in Bangladesh (a lower-middle-income country).
- **Principle 2:** Development of a time-bound transition away from other fossil fuels for electricity generation:
  - Removing fossil fuel subsidies has been found to be very difficult in countries with high fossil fuel subsidies and large populations (China, India, Indonesia) as the removal may be very costly to consumers and, in some cases, have resulted in public protests.
  - Governments have been taking measures to discourage the use of fossil fuels, such as carbon taxes (Indonesia, Japan and Singapore) and ETS (China, Japan, South Korea).
- **Principle 3:** Active investment in renewable energy generation:
  - China and the ASEAN region are leaders in capital market initiatives to increase investments in renewable energy. Singapore and Malaysia spearheaded the ASEAN region's green bond markets in 2017, followed by Thailand, Indonesia and the Philippines.
  - Ten of the 13 countries in this study implement FiT mechanisms. Bangladesh, Cambodia and Singapore are the only three countries without it. India and the Philippines have the most successful FiT mechanisms to stimulate renewable energy projects.
  - The introduction of FiT in several Asian countries has resulted in an increase in solar and wind power as it attracted investments from various sectors. Since 2010, USD 8.3 billion worth of investments in solar power projects have been made, an indication of the growing role of solar power in the region.
- **Principle 4:** Long-term planning and strategies to mitigate the adverse environmental and social impacts of renewables:
  - Fossil fuel subsidy reform could free up substantial capital to subsidize renewable energy generation and access to energy, potentially through a direct cash transfer or universal income. Such programs are being explored and are under consideration in Indonesia, Malaysia and Thailand.
  - To accelerate the just energy transition, it would help to set up a separate department for renewable energy (Bangladesh, India, Malaysia, Thailand), strengthen renewable energy laws and policies (China, Indonesia, Pakistan, Philippines), develop a country strategy/roadmap (Bangladesh, Cambodia, Japan, Vietnam), create specific programs (India, Philippines), invest in research and development (Singapore) and become a member of regional/international groups and initiatives (Bangladesh, Cambodia, Vietnam, Philippines), such as the V20 Group.
  - Creating departments and specific programs, such as in Bangladesh, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Philippines, Thailand and Vietnam, may help to advance a just energy transition and develop strategies to mitigate the adverse environmental and social impacts of renewables.
  - High-income countries such as Singapore that face various barriers to securing renewable energy sources have found ways to navigate the energy transition through research in science and technology (e.g., floating solar farms).
- **Principle 5:** Respect for land rights and Free, Prior and Informed Consent (FPIC), and clear policies for community participation, gender sensitivity and consultation with CSOs in large energy projects:
  - In countries with decentralized systems of governance, such as China, Indonesia and the Philippines, local communities, especially those far from the capital, are more

compelled to initiate locally grown renewable energy projects. This has increased the supply of renewable energy in their respective areas and empowered local communities by improving their income with subsidy reforms and saving money that would be spent on fuels.

- **Principle 6:** Protection of the rights of workers and mainstreaming of Human Rights Due Diligence (HRDD) during the energy transition:
  - To prepare the future workforce, countries with the largest populations, such as India and China, are leaders in including renewable energy in educational curricula. India ranks fifth overall with 104 courses identified, while China has 48 courses. The Indian government, together with industry partners, has established the National Skill Development Corporation (NSDC) to build the skills of 150 million people to work in the renewable energy sector.
  - Countries such as China, the Philippines and South Korea and did fairly well in terms of safeguarding jobs through the Clean Development Mechanism Fund (China), Green Jobs Act of 2016 (Philippines) and the New Green Deal (South Korea). These initiatives provide social protections for those who will lose their jobs because of the energy transition, as well as incentives for green job creation.
- **Principle 7:** Safeguarding the health, livelihoods, culture and heritage of communities impacted by the continued use of fossil fuels:
  - In many cases it is only through CSOs that marginalized and vulnerable sectors can effectively participate in public consultations and the planning and implementation processes of the energy transition. One best practice is the Community-Based Renewable Energy Systems (CBRES) led by Sibol ng Agham at Teknolohiya (SIBAT) in the Philippines. After a series of local dialogues and consultation with communities on hydropower, the organization reached out to funding agencies. This demonstrates that Indigenous communities recognize the importance of hydropower and other renewable energy sources but can only allow it at a scale that would not displace them.
- **Principle 8:** Active and meaningful engagement and participation of women in the energy transition:
  - In Southeast Asia, where there is a relatively long history and tradition of women's empowerment compared to other Asian regions, action plans promoting women's participation in the just energy transition was initiated early on. Examples of these countries are Indonesia (500 Wonder Women), the Philippines (Energy Gender Toolkit) and Vietnam (Women's Union initiatives).
- **Principle 9:** Investments in access to electricity for all
  - Government backing and support is critical for increasing the installed capacity of electricity grids, as in the cases of China, India, Pakistan, South Korea and various ASEAN countries.
  - Decentralized, locally initiated renewable energy projects have increased in the past decades (China, Indonesia, Philippines) and have, in fact, outperformed centralized energy systems.
  - Archipelagic countries in Asia (Indonesia and Philippines) face the challenge of connecting smaller, "last-mile" islands to their national grids. This scenario requires a decentralized approach to ensure affordable and reliable energy access for all.

6

RECOMMENDATIONS

This chapter provides recommendations for climate and energy policymakers, financial regulators, private banks, investors and MDBs to set financial flows on a pathway to a just energy transition in Asia. The recommendations are grouped around the nine principles of a just energy transition in Asia (see section 1.1.1).

6.1 NO FINANCING FOR NEW COAL PROJECTS FOR ELECTRICITY GENERATION AND PHASING OUT EXISTING COAL-BASED POWER GENERATION

Most Asian countries are highly dependent on coal-fired power generation and several countries are still planning to expand their coal-fired power capacity. Breaking through this dependency is the main priority of a just energy transition, as coal is the most CO_2-intensive fossil fuel and a 1.5°C scenario requires a significant reduction of global GHG emissions by 2030.

We offer the following recommendations to end financing of new coal projects for electricity generation and to phase out existing coal-based power generation:

- Asian governments should follow the example of Indonesia, Pakistan, the Philippines, Singapore and South Korea by terminating the development of new coal-fired power projects. This should be complemented by a cancelation of coal projects already in the pipeline and a detailed phase-out plan for existing coal-based power generation.
- The power and influence of vested interests promoting coal, such as coal mining companies and national electricity companies, over government policies in various Asian countries should be drastically reduced.
- All Asian financial institutions should follow the example of some of the banks from Bangladesh, Japan, Malaysia, Singapore and South Korea, by developing a credible pathway to net-zero (financed) emissions in 2050. These pathways should include an immediate ban on the financing of coal and ambitious intermediate five-year goals, starting in 2025.
- Financial regulators in China and ASEAN Member States should continue the development of standardized and mandatory taxonomies of both green and brown activities, clearly excluding all coal-related activities from financing and investments. Financial regulators in other Asian countries should do the same.
- Energy companies, financial institutions and governments need to develop an active strategy for decommissioning coal-fired power plants. This would include options to breach existing PPAs signed with coal-fired power producers and explore financing mechanisms (possibly in collaboration with the Energy Transition Mechanism (ETM) and the UN ESCAP program), to cover the costs of decommissioning.

6.2 DEVELOP A TIME-BOUND TRANSITION AWAY FROM OTHER FOSSIL FUELS FOR ELECTRICITY GENERATION

While a phase-out of coal is the highest priority, coal-fired power plants should not be replaced by electricity plants that use other fossil fuels, such as LNG. The electricity sector is not the only sector that should play a big role in a just energy transition. Large energy-consuming sectors such as transport, construction, steel, chemicals and other heavy industries, also need to transition away from fossil fuels. This requires concerted efforts by governments and all stakeholders involved.

We offer the following recommendations to encourage a time-bound transition away from other fossil fuels for electricity generation and in other fossil fuel-dependent sectors:

- Governments should develop, inclusively with relevant stakeholders, a national scenario to speed up the transition from fossil fuels to renewable energy and reduce GHG emissions. These plans should include clear 1.5°C pathways for all economic sectors that play a significant role in emitting GHG gases, with concrete intermediate targets.
- A mix of demand-side and supply-side policy measures is needed to achieve the goals of national just energy transition plans. In this policy mix, emission trading schemes (ETS) should not have highest priority. Governments should focus more on introducing a high carbon tax.
- Fossil fuel subsidy reforms are also crucial because they could free up substantial capital to subsidize renewable energy generation and access to energy. Subsidies could be replaced with a direct cash transfer or universal income, as is under consideration in Indonesia, Malaysia and Thailand.
- Financial regulators should support national just energy transition plans with standardized and mandatory taxonomies of what constitutes “green” and “brown” activities in each relevant sector. These categories should be revised regularly to ensure the taxonomy remains in line with 1.5°C pathways and the concrete intermediate targets for all economic sectors with significant GHG emissions.
- Financial regulators could integrate the taxonomy in its prudential regulatory framework by prohibiting “brown” activities and linking high risk weightings for credits to “yellow” activities.
- Financial institutions should make a commitment to, and develop a policy to be aligned with a 1.5°C scenario, and take a leading role in a just energy transition in Asia by requiring corporate transition plans (aligned with the Paris Agreement and with national just energy transition plans) from all companies they finance or invest in.
- Energy companies should close, not sell, fossil fuel infrastructure and engage in responsible disengagement as part of a just transition. Energy companies should work together with financial institutions and governments to develop an active strategy for decommissioning fossil fuel assets. This would include exploring financing mechanisms (possibly in collaboration with the ETM and UN ESCAP) to cover the costs of decommissioning.

6.3 ACTIVE INVESTMENT IN RENEWABLE ENERGY GENERATION

In a region where energy demand is growing, and where energy is needed to offer electricity access to all and uplift vulnerable groups from poverty, strong growth is needed in the production of renewable energy.

We offer the following recommendations to encourage active investment in renewable energy generation:

- Governments should develop, together with other stakeholders, a national scenario to accelerate the transition from fossil fuels to renewable energy while countering (perceived) risks such as less grid stability, higher electricity prices and negative social consequences.
- Public and private investments are needed to further develop electricity grids and energy storage facilities. This would make it possible to develop renewable energy projects at locations with the best geographic conditions, and to deal with the intermittency challenges of solar and wind energy.
- Force national electricity companies to be more transparent about the cost structure of electricity transportation and to offer attractive conditions to renewable energy developers to gain access to the grid. Develop a clear legal and regulatory environment that promotes renewable energy. Establish transparent energy and electricity market auctions for renewable energy power procurement, such as in India and the Philippines, including transparent PPAs and favorable FiTs.
- Create more favorable market conditions for renewable energy by abolishing fossil fuel subsidies and introducing a significant carbon tax.
- Provide capacity building for smaller renewable energy projects developed by IPPs, in addition to communities and CSOs, and encourage context-specific initiatives by providing them opportunities to create projects based on local conditions.
- Financial regulators should support national just energy transition plans with standardized and mandatory taxonomies of green and brown activities in relevant sectors. China and the ASEAN region are already moving in this direction. Such policies could promote green bond issuances by local banks and investors and raise funding to be earmarked for financing the portfolios of (smaller) renewable energy projects. Bringing projects together in a portfolio would help to decrease the financial risks and, therefore, the interest rates of individual projects.
- Financial institutions should take a proactive (rather than the current reactive) approach to financing renewable energy projects. For example, by offering technical assistance to project developers to make projects bankable, and by creating a (collective) insurance mechanism to cover the potential losses of renewable energy projects and bring down interest rates. This insurance mechanism could be filled by assigning a fixed percentage of the bank's annual profit to this mechanism. This would clearly show the commitment of the bank's shareholders to making an active contribution to the just energy transition.

6.4 LONG-TERM PLANNING AND STRATEGIES TO MITIGATE THE ADVERSE ENVIRONMENTAL AND SOCIAL IMPACTS OF RENEWABLES

To achieve a just energy transition, it is not enough to simply replace fossil fuels with renewable energy. Land or water areas are needed to locate renewable energy projects, and these projects can have other social and environmental impacts. Governments and other stakeholders should therefore engage in long-term planning, including strategies to mitigate the adverse environmental and social impacts of renewables.

We offer the following recommendations:

- Governments should develop, together with other stakeholders, a national strategy to accelerate the transition from fossil fuels to renewable energy. This should be embedded in a careful planning process designed to prevent and mitigate the adverse environmental and social impacts of renewables.
- Focus renewable energy development on high-potential, low-risk country sites to simplify siting and permitting and avoid issues at the planning stages. Clearly define siting requirements for renewable generation and transmission, prohibiting development in sensitive areas.
- Explore strategic land use options and technologies for less land-intensive deployment of renewable energy, such as offshore wind projects and solar energy projects combined with agriculture.
- Creating departments and specific programs, such as in Bangladesh, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Philippines, Thailand and Vietnam, may help to advance a just energy transition and to develop strategies to mitigate the adverse environmental and social impacts of renewables.
- Adopt strategic environmental and social assessments as a systematic tool to determine the sustainability performance of renewable energy development projects.
- Embed consultation processes in local and national development planning processes. Regular social dialogue should take place to foster accountability in the development process and be standardized in due diligence processes and disclosure requirements for both renewable and non-renewable energy projects.

- Enhance consumer participation by improving access to information on energy and climate policies. This will be necessary to change people's behavior. Such campaign strategies can be done in collaboration with schools, NGOs, grassroots organizations and religious groups. Energy philanthropists, MDBs and other private investors could play a major role in funding such initiatives.
- Protect the civic space for participation in transition policies, particularly allowing CSOs to maintain their autonomy and independence in the process. Acts of reprisal should be prohibited and sanctioned, and a tolerant political culture should be maintained. Laws and regulations that impede or hinder the operations of civil society should be repealed and amended.
- Provide programmatic grants and funding opportunities to CSOs that seek to tie their activities to outcomes and deliverables that foster institutional capacity building, results and action, as well as evidence-based policy deliberations. These grants and funding should be extended to grassroots organizations operating in areas relevant to energy transition policies, such as agriculture and transport. This would help to increase the ambitions of actors that contribute to climate mitigation and the achievement of net zero targets.
- Make research funding available to schools and universities, local communities and organizations, and small- and medium-scale businesses that want to participate in the just energy transition. Funding should be available not just for the development of renewable energy technologies, but also for research on the transformation of people's behavior, which is equally important in the transition.

6.5 RESPECT FOR LAND RIGHTS AND FREE, PRIOR AND INFORMED CONSENT (FPIC), AND CLEAR POLICIES FOR COMMUNITY PARTICIPATION, GENDER SENSITIVITY AND CONSULTATION WITH CSOs IN LARGE ENERGY PROJECTS

Due to its land use intensity, renewable energy projects must seek FPIC from communities. Historical lessons from fossil fuel-based systems indicate that lack of community participation frequently results in financial fallout and social conflict. As a result, there is a compelling business and economic case for developers and financiers to respect land rights and FPIC, as well as strong reasons for national and local governments to balance economic gains with environmental and social concerns.

It should not be assumed that communities will consent to renewable energy projects because they have environmental benefits. Land should be acquired in a just manner, compensation must be adequate and the adverse impacts on communities and the environment should be minimized. The use of local practices in environmental and biodiversity conservation, as well as women's participation, are key features of several successful cases of distributed renewable energy systems. Therefore, communities should no longer be seen as standing in the way of energy development, but as co-creators and active owners of successful energy transitions. Local CSOs and grassroots organizations can help the community define and communicate their desired development visions and solutions by acting as facilitators.

We offer the following recommendations to ensure a rights-based approach to the just energy transition:

- Focus renewable energy development on high-potential, low-risk country sites to simplify siting and permitting and avoid issues at the planning stages.
- Clearly define siting requirements for renewable generation and transmission, prohibiting development in sensitive areas.
- Explore strategic land use options and technologies for less land-intensive deployment of renewable energy, such as offshore wind projects and solar energy projects combined with agriculture.
- Increase local government capacity in strategic and effective siting regulations for renewable energy generation and transmission by tapping into international expertise and technical assistance.
- Strengthen and ensure the full, meaningful and effective participation of affected communities throughout the entire project, including project planning, implementation, management and monitoring and evaluation.
- Expand capacity building, technical assistance and intercommunity exchange of practices to empower affected communities to meaningfully engage with developers during project planning.
- Resettlement plans and safeguard policies must be adequate and consistent with the cultural preferences and lifestyles of relocated communities. The dignity and human rights of those physically displaced must be respected, and issues must be dealt with in a fair and equitable manner. Communities' standards of living must also be improved with the goal of long-term self-sufficiency.
- Ensure that mutually agreed legal grievance, mediation and settlement mechanisms are in place for affected communities to seek redress and hold developers accountable for any human and land rights violations.
- Support affected groups in developing a community protocol that defines the community's desired FPIC consultation process and serves as a de facto engagement framework in accordance with the community's specific context, customary laws, lifestyles and practices.

- Successfully recruit local residents, particularly those living near or working at investment sites, to be involved in the monitoring and surveillance of renewable energy project implementation and operations.
- Develop Gender Action Plans to ensure that the gendered implications and costs of energy transitions are adequately accounted for in national policies, such as promoting minimum targets for the number of decent jobs and entrepreneurial opportunities created for women in green and emerging industries; gender quotas for reskilled, trained and mentored workers and entrepreneurs; and increased participation of women in policy forums and discussions.
- Identify and recruit government agencies, NGOs and women's groups to participate in assessing the gender implications of renewable energy projects.
- Conduct regular evaluations to review implementation progress and challenges related to gender equality issues.
- Set a minimum participation target for women in community-organized policy planning and CSO-mediated project consultations.
- Formulate and lead on-the-ground research studies on the links between gender and energy and the gender implications of local renewable energy development, for use in negotiations with industry proponents and government consultations.
- Preserve civic space for participation in transition policies, particularly by allowing CSOs to maintain autonomy and independence in their activities, prohibiting and sanctioning acts of retaliation, and fostering a politically tolerant culture.
- Engage local governments, community representatives and leaders as co-creators in the collection of baseline data on the characteristics of the area, resource situation, socio-economic status and other relevant facts through participatory rural appraisal. This community-verified baseline data will aid in setting goals and measuring changes brought about by the energy project at the implementation and operational stages.

6.6 PROTECTION OF THE RIGHTS OF WORKERS AND MAINSTREAMING OF HUMAN RIGHTS DUE DILIGENCE (HRDD) DURING THE ENERGY TRANSITION

Workers in the fossil fuel industry and their communities will be impacted by the transition to a lower carbon economy. Shifting from fossil fuels to renewable energy should consider the rights and needs of those affected and should guarantee that the benefits are distributed as fairly as possible.

We offer the following recommendations to protect the rights of workers and mainstream HRDD for a just energy transition:

- Embed consultation processes in local and national development planning processes. Regular social dialogue should take place to foster accountability in the development process and be standardized in due diligence processes and disclosure requirements for both renewable and non-renewable energy projects.
- Following the examples of China and India, Asian governments and energy companies should encourage the mobility and training of people, including holding special recruitment activities for workers to be resettled, providing vocational guidance, employment services and vocational training for workers to be transitioned to other sectors.
- Focus on developing economic employment-generating activities in regions highly dependent on fossil fuel activities, following examples from China, the Philippines and South Korea.
- Generate decent jobs that respect workers' rights and recognize equal opportunities for women, youth and minorities, through higher education, apprenticeship schemes and on-the-job training.
- Companies should consult and provide information on their enterprise-wide plans for transition. Transparency is critical when developing a framework for a just transition with employees and unions.
- Enhance participation by improving access to information on national energy and climate policies. This is necessary to change people's behavior. Such campaign strategies can be done in collaboration with schools, NGOs, grassroots organizations and religious groups.
- Financial institutions should embed HRDD in their decision-making processes for funding the energy transition programs and plans of both governments and companies.

6.7 SAFEGUARDING THE HEALTH, LIVELIHOODS, CULTURE AND HERITAGE OF COMMUNITIES IMPACTED BY THE CONTINUED USE OF FOSSIL FUELS

The environmental impacts of the just energy transition are strongly linked to the health and livelihoods of communities in the vicinity of electricity plants, as well as the mines that produce the minerals used for renewable energy technologies. The right to energy and electricity is always in congruence with the rights of nature and safeguarding the health and well-being of communities. Any energy development must consider environmental, health and social damages to ecosystems and communities, recognize vulnerabilities and create protective mechanisms to ensure minimal impacts.

We offer the following recommendations to safeguard the health, livelihoods and heritage of communities impacted by the continued use of fossil fuels:

- Create policies that require environmental and social impact analyses for energy project applications. Permits should only be given if applicants can provide and fund alternative solutions to minimize impacts on health, livelihoods and communities.
- Develop clear, standardized and universal taxonomies for what constitutes "green" and "brown" investments, taking the health, livelihoods, culture and heritage of communities into account.
- Implement nature-based solutions that lower the risk of a new renewable energy projects and provide environmental, social and economic benefits to communities. This can give energy companies a social license to operate.
- Invest in research capacity to develop and accelerate, together with stakeholders, the transition to renewable energy while countering (perceived) risks, such as less grid stability, higher electricity prices and negative social consequences.
- Investors and financiers should use sustainability-linked loans and bonds to finance energy projects, with interest rates tied to ESG-related KPIs.
- Provide capacity building for smaller renewable energy projects developed by IPPs, in addition to communities and CSOs, and encourage context-specific initiatives by providing them opportunities to create projects based on local conditions, following examples in the Philippines.

6.8 ACTIVE AND MEANINGFUL ENGAGEMENT AND PARTICIPATION OF WOMEN IN THE ENERGY TRANSITION

For the energy transition to be just, it must include women in the process. A gender lens is therefore necessary in all stages and aspects of the just energy transition. This study has shown there is a long way to go for women to fully, actively and meaningfully engage and participate in the energy transition. Although projects relating to sustainable energy have a greater chance of success if women are involved in decision-making, many stakeholders have yet to recognize this. All stakeholders should promote, support and implement renewable energy projects with gender-transformative actions and consideration of the most vulnerable and disadvantaged groups.

We offer the following recommendations to advance the participation of women in a just energy transition:

- Ensure that national climate and energy policies are sensitive to women's rights, particularly in the most vulnerable sectors and communities.
- Build the skills of women in the renewable energy sector, both through vocational training and higher education, and create decent jobs that respect women's rights and will provide them equal opportunities as their male counterparts, following examples from Indonesia, the Philippines and Vietnam.
- Initiate reforms to use government funds to finance women-led businesses, and lobby for additional financing options from international donors.
- Promote a whole-of-government approach to mainstreaming gender in the energy transition through gender audits.
- Increase gender diversity and ensure a gender-balanced hiring strategy in energy companies where women are given equal opportunities as men.
- Foster a culture in which energy companies create gender-responsive working conditions for women that cultivate their best potential.
- Commission organizations (think tanks, academic institutions, CSOs) to conduct studies on the gendered risks of energy transitions across Asia and how women can increase participation in the energy transition.
- Financiers and investors should develop a set of gender-responsive approaches to the energy transition and ensure their efforts are consistent, credible and transparent.
- Ensure that financed projects encourage transparent and inclusive planning, implementation and monitoring processes.

6.9 INVESTMENTS IN ACCESS TO ELECTRICITY FOR ALL

Access to electricity for all is an important principle of the just energy transition that leaves no one behind. Although it has improved in the past two decades, millions of people still do not have access to electricity. Energy access is critical in achieving not only SDG 7 but also the other SDGs.

Renewable energy presents an opportunity to transform lives by ensuring access to affordable, reliable, sustainable and modern energy for all, especially for vulnerable consumers to be connected and protected. In doing so, institutions should create a more stimulating environment for renewable energy investments.

We offer the following recommendations to advance access to electricity for all in a just energy transition:

- Create dedicated government departments or specific programs for the development and planning of renewable energy, such as in Bangladesh, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Philippines, Thailand and Vietnam,

and explore other means for private participation in the energy sector and learn from the best practices of countries that have introduced them, such as the Philippines.

- Ensure that all communities, particularly the most marginalized and vulnerable, have access to energy by expanding the electricity grid. This requires government backing and support, as has been shown in China, Pakistan, various ASEAN countries, South Korea and India.
- Ensure that small-scale and distributed renewable energy solutions receive the same fiscal and policy benefits as their large-scale counterparts, such as capital equipment rebates and/or grants, duty-free importation, consumer credits and microfinance, rental models and the development of smaller, lower-cost systems.
- Limit lengthy administrative processes for energy companies and financiers, which serve as a barrier to investment in remote, off-grid renewable energy projects.
- Support local communities, especially those far from the capital, to initiate local renewable energy projects, as in China, Indonesia and the Philippines.
- Create new mechanisms, rather than fossil fuel subsidies, to compensate low-income households that spend a significantly higher proportion of their income on energy, and subsidize access to renewable energy where necessary.
- Identify scalable and replicable practices from energy companies that have successfully adapted mechanisms to address the challenges of connectivity in archipelagic countries and developed infrastructure that ensures community access to grids.
- Banks and investors should explore how to finance infrastructure that connects geographically disconnected communities to the grid and transboundary energy infrastructure for countries that share a land border.

APPENDIX 1

ANONYMIZED INTERVIEWEE LIST

Code	Country/Region of Expertise	Date
Interview 1	Southeast Asia	16/08/2022
Interview 2	Southeast Asia	20/08/2022
Interview 3	Southeast Asia	16/08/2022
Interview 4	Southeast Asia	18/08/2022
Interview 5	Thailand	16/08/2022
Interview 6	Thailand	22/08/2022
Interview 7	Thailand	20/08/2022
Interview 8	South Asia	29/08/2022
Interview 9	Philippines	09/08/2022
Interview 10	Southeast Asia	16/08/2022
Interview 11	Southeast Asia	16/08/2022
Interview 12	Thailand, Lao PDR, Vietnam, Cambodia, Indonesia, Philippines	17/08/2022
Interview 13	Vietnam, Colombia, Indonesia, Philippines, Mexico	19/08/2022
Interview 14	Asia Pacific region	19/08/2022
Interview 15	South Asia, Pakistan	11/08/2022
Interview 16	Global, Thailand, Indonesia, Bhutan, Nepal, Tajikistan	16/08/2022
Interview 17	Global, Thailand, Indonesia, Bhutan, Nepal, Tajikistan	16/08/2022
Interview 18	Malaysia	09/08/2022
Interview 19	Malaysia	09/08/2022
Interview 20	Vietnam	10/08/2022
Interview 21	Philippines	10/08/2022
Interview 22	Cambodia	10/08/2022
Interview 23	Indonesia	15/08/2022
Interview 24	Indonesia, Southeast Asia	18/08/2022
Interview 25	Indonesia	15/08/2022
Interview 26	China	12/08/2022
Interview 27	India, South Asia	13/08/2022
Interview 28	India, Indonesia	11/08/2022
Interview 29	China	19/08/2022
Interview 30	Asia, Global	17/08/2022
Interview 31	Indonesia, India, Asia	18/08/2022

APPENDIX 2

INTERVIEW QUESTIONS

For different types of interviewees, different interview questions were formulated, as shown in the overview below:

- **International Government Organizations, Research Groups and Think Thanks**
  1. What political and economic challenges have impeded (access to finance for) renewable energy projects and companies in Asia?
  2. What characteristics continue to make fossil-based energy projects and companies feasible/ attractive to finance in Asia?
  3. How, if at all, do conditions and constraints for financing renewable energy projects vary within Asia?
  3. Which social and environmental risks related to different forms of energy are overlooked or seldom accounted for in (Asian) climate, energy and finance policies?
  4. What are Asian governments, financiers and energy companies already doing, or what could they do more, to stimulate (the financing of) renewable energy, including but not limited to: policy interventions, incentives, and levers?

- **Local CSOs, Think Tanks and Research Institutes**
  1. What are the various social and environmental risks with deploying a new renewable energy project in XXX?
  2. How does gender influence the above social and environmental risks accompanying renewable energy projects?
  3. To what extent are [XXX country] climate, energy and finance policies taking into account the social and/or environmental risks identified above?
  4. What political and economic challenges have impeded (access to finance for) renewable energy projects and companies in country XXX?
  5. What characteristics continue to make fossil-based energy projects and companies feasible/ attractive to finance in country XXX?
  6. What are the governments of XXX, financiers and energy companies already doing, or what could they do more, to stimulate (the financing of) renewable energy?
  7. What is the role of [CSOs / think tank / academic institutions] in your country's transition to a lower carbon future? How can [CSOs / think tanks / academic institutions] help enable the shift to a better energy system that is as fair and just as possible?
  8. What current actions are being taken by your CSO to work with key energy actors to integrate social justice into energy transition policies, institutional arrangements, support mechanisms and financing to ensure that no one gets left behind?

- **MDBs, Other Public and Private Financiers**
  1. Please describe your organization's current activities pertaining to financing and investments on just energy transition within the different countries and at the regional level (ASEAN, East Asia, South Asia)
  2. What are the key considerations taken when financing a new energy project or an energy company in Asia, and how are these influenced by government policies?
  3. What kinds of energy projects are in your organization's inclusion/exclusion list? What have been the short-term and long-term implications for the financial institution?
  4. What has impeded renewable energy projects and companies in Asia from receiving finance?
  5. For which reasons are fossil-based energy projects and companies in Asia still favorable for acquiring investment over renewable alternatives?
  6. Which types of renewable energy projects and companies in Asia are more attractive to finance over others, and why?
  7. What steps could be taken by financiers like you, by governments and by energy companies, to make (the allocation of financial capital for) renewable energy projects and companies in Asia more attractive?
  8. How does your financial institution ensure that ESG safeguards are in place for energy related projects? How do you track and monitor this to prevent greenwashing?
  9. What role does the financial sector play in ensuring a just energy transition that promotes a shift to a better energy system that is as fair and just as possible?

- **Energy Producers**
  1. What are the main technical and legal constraints for developing a new renewable energy project?
  2. What are the main financial and/or economic constraints to developing a new renewable energy project?

3. What are the main environmental and social constraints to developing a new renewable energy project, and how do you provide safeguards against these negative socio-ecological impacts from manifesting in local communities?
4. How financially/ economically/ technically/ environmentally/ socially feasible are renewable energy projects in Asia, compared to non-renewable alternatives like coal-fired power?
5. What steps are already being taken by companies like yours, governments and financiers, to make (the allocation of financial capital for) renewable energy projects and companies in Asia more attractive?
6. What steps are renewable energy producers currently taking to ensure that the energy products and services that you provide to consumers is inclusive and equitable to all sectors of society?

APPENDIX 3

ENERGY COMPANY INITIATIVES

Chapter 4 identified various financial, legislative, regulatory, technical and economic challenges to producing additional renewable-based power for Asian power grids, ranging from solar and wind intermittency and feasibility and economic constraints to physically connecting renewable energy supply areas with demand centers, to a regulatory environment that favor fossil fuel-based electricity over renewable alternatives. This section discusses some key initiatives that energy companies (including SOEs and IPPs) are taking (or could be taking) to overcome these hurdles and accelerate the deployment of renewable energy in Asia.

1. DRES IN MALALISON, THE PHILIPPINES

As noted in section 4.4.1, archipelagic regions in Asia face the challenge of connecting smaller, "last-mile" islands to a national grid, despite the solar or wind power potential of these islands.[638] However, several initiatives are being piloted to install mini-grids, or DRES, to promote reliable energy access in these regions.

One example is a pilot program financed by the ADB in collaboration with the Antique Electric Cooperative (ANTECO), the smallest and only electrical provider on Malalison island. Malalison is roughly 55 hectares and is located in Antique Province in the Philippines, roughly a 20-minute boat journey from the mainland. Previously, the island relied on a single 25 kW diesel generator, which would provide the island with power from 18:00 to 22:00 every day. Moreover, typhoons and other extreme weather conditions at times destabilized this generator, threatening the already limited energy availability on Malalison.[639]

This selection of the pilot was made *"to supply the current and future needs of approximately 800 people or 200 households, and commercial establishments catering to local tourism on the island."*[640] Moreover, this hybridized system, solar PV provides the bulk of the power (base load) while the diesel generator is used to meet peak loads at times when solar generation is insufficient. Overall, this approach is *"expected to: (i) provide reliable round-the-clock power supply using environment-friendly local resources, (ii) allow inclusive access to electricity, and (iii) spur the island's economic development."*[641]

2. DIVERSIFYING PAKISTAN'S FOSSIL FUEL-INTENSIVE GRID

Section 2.1 described Pakistan's heavy reliance on fossil fuel-based energy consumption, with 61% of installed power capacity in 2020 derived from fossil fuels (20.9 of 31.4 GW), mostly LNG (35%), coal (12%) and oil (14%), with the remainder accounted for by hydropower (29%). Just 6% of Pakistan's power was produced from renewable sources in 2020.[642] Pakistan's coal reserves *"(over 186 billion tons)…are sufficient to meet the energy requirements of the country on a long-term sustainable basis"*.[643]

Despite this dependence on fossil fuels, Pakistan has made some progress in renewable energy procurement. From 2014 to 2019, 18 wind power projects and six solar projects have come online, jointly adding almost 1.4 GW to Pakistan's installed grid capacity: *"wind power projects in Pakistan have received the highest level of private sector interest due to their bite-size investment and short gestation period… Utility-scale solar power projects… have not attracted as much private sector interest as wind power"* due to their large land requirements. To overcome these restraints, several smaller private investors have begun driving DRES (rooftop solar) throughout the country.[644]

In 2021–2022, Pakistan's Ministry of Planning, Development and Special Initiatives (PSDP) allocated PKR 222 million (USD 1 million) to power sector projects and forecasts spending roughly the same amount in 2022–2023 on power generation, transmission and distribution projects (excluding IPP costs).[645] These investments are small, and the amount of renewable power procured pales in comparison to Pakistan's installed fossil-fired power capacity, but it is a step in the right direction for Pakistan's Ministry of PSDP and its three state-owned utilities: the Water and Power Development Authority, the Karachi Electric Supply Corporation and the Pakistan Atomic Energy Commission.[646]

3. FORMATION OF ENERGY SERVICE COMPANIES (ESCOS) IN ASEAN MEMBERS STATES

ESCOs are companies that provide *"an array of energy solution including the design and implementation of energy savings projects, retrofitting, energy conservation, energy infrastructure outsourcing, power generation and energy supply, and risk management."*[647] Due to this specialty, ESCOs are established to improve energy efficiency cost effectively, and may therefore play an important role in driving cost-effective energy transitions across Asia.

ESCOs began to gain traction in ASEAN Member States after the World Bank financed the Promotion of Electricity Energy Efficiency Program in Thailand in 2010. Since then, 205 ESCOs have been registered

in Malaysia, 69 in Thailand and 21 in Singapore. ESCOs *"typically use performance-based contracting models, which could include either (i) guarantee savings (guarantees of energy savings); or (ii) shared savings (provision of an equal amount of energy service at a lower cost, where the remuneration is proportional to the energy savings achieved). Both models are common across ASEAN."*[648]

Government support has backed ESCOs in the ASEAN region and allowed them to operate successfully. For instance, *"Malaysia's Green Technology Financing Scheme (GTFS) was set up to implement ESCO projects, and between 2016–2017, 228 projects had secured a total of [MYR] 2.6 billion (USD 532 million) worth of financing assistance from 26 banks and/or financial institutions from GTFS."*[649] Other ESCO markets, such as Indonesia and Vietnam, are still underdeveloped, and are unlikely to grow without ample support from government or international public financial institutions (PFIs).

4. SOUTH KOREA'S KEPCO AND COAL ASSET SALES

South Korea's state-owned power utility, Korean Electric Power Company (KEPCO), announced in May 2022 that it would sell all its coal-fired power stations outside South Korea. This followed an announcement by KEPCO that it had a loss of KRW 7.8 trillion (USD 6.1 billion) in the first quarter of 2022. KEPCO is also considering selling other gas-fired and solar power assets, mainly in the United States. Overall, as of December 2020, KEPCO *"had an installed capacity of 83.9 GW in South Korea, 3.7 GW in China, 1.3 GW in the United Arab Emirates, 841 MW in the Philippines, 731 MW in Jordan, 482 MW in Saudi Arabia and 509 MW in other countries. In the Philippines, the group owns and operates the 200 MW Cebu circulating fluidized bed (CFB) coal-fired power plant. In addition, the Nghi Son 2 (1,200 MW) and Vung Ang 2 (1,200 MW) coal-fired projects in Vietnam and the Jawa 9 & 10 (2,000 MW) coal-fired plant in Indonesia are currently under construction."*[650]

This announcement could have major implications for the future of global energy transitions, both in Asia and globally. By selling (i.e., divesting) these assets, KEPCO would not only be failing to decommission them and thereby promote a fossil fuel phase out (see section 4.2.4), but they would also be creating a new vested interest in prolonging when these fossil-intensive assets are retired. Unless, that is, they are sold to investors as part of a "transition finance" mechanism. However, this is very unlikely given the nascent stage of transition finance (see section 5.5.4).

By making such an announcement, KEPCO is, in effect, signaling to the international community that the economic case for coal-fired electricity is diminishing. However, somewhat counterintuitively, by selling these assets they are implicitly exacerbating the adverse impacts of climate change and delaying any prospect of an Asian (or global) energy transition.

This discussion is included here to underscore what Asian energy companies should avoid in the future: divesting the dirty assets they have created and absolving themselves of responsibility or accountability for decommissioning these assets. Granted, doing so would imply massive write-offs, perhaps to the tune of several billions of dollars. Transition finance mechanisms may therefore be critical for Asian power utilities like KEPCO to truly catalyze an energy transition (see section 5.5.4).

5. INDIA'S SOLAR CITIES

There are good examples of countries that have successfully matched supply and demand despite energy infrastructure challenges. India, for instance, has been able to approve and create solar parks in most regions of the country, supplying key cities with solar energy. This has significantly lowered the costs of deploying renewable energy solutions, and today renewable energy in India is cheaper than fossil fuel-generated power.[651]

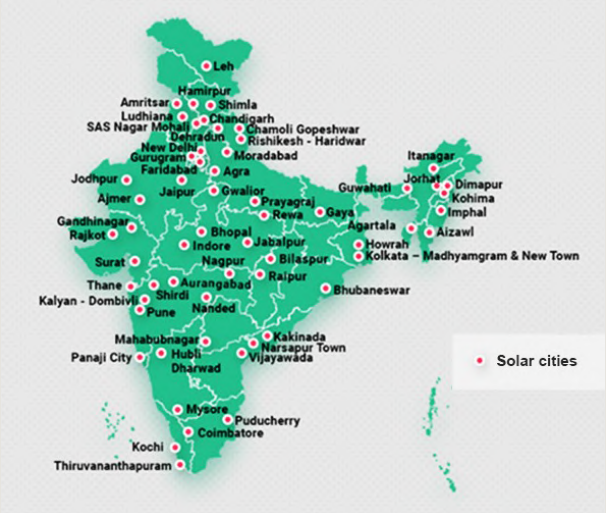
6. INVESTMENT PLANS OTHER ENERGY COMPANIES

In Thailand, the renewable energy share of B. Grimm Power's portfolio is expected to rise from 10% to 30% by 2022, and it is expanding its portfolio of overseas renewable power projects. The Blue Circle identifies, develops, finances, owns and operates large-scale wind energy projects across Southeast Asia, and Sindicatum Renewable Energy Company develops, owns and operates clean energy projects across the Philippines and Thailand.[652] B. Grimm has also announced plans to spend between THB 250 and 300 billion (USD 7.0–8.4 billion) from 2021 to 2030 in capital expenditure on new power procurement. It currently allocates roughly 70% of investments to hydropower and natural gas procurement and the remaining 30% to other renewables, although it has pledged to increase its share of renewable spending in Asia and Europe in the coming decade.[653]

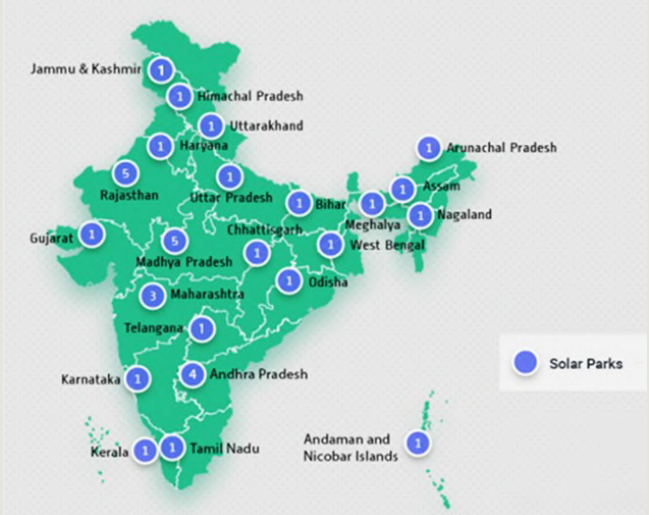
Notably, business conglomerates throughout the region are establishing partnerships to ramp up the share of renewables in their equity portfolios. At times this is happening domestically, as in the Philippines, while other times it is occurring internationally, with *"business giants in Thailand... investing in renewable energy in Cambodia, the Lao PDR, and Vietnam"*.[654] Furthermore, *"Malaysia's national utility company, Tenaga Nasional Berhad (TNB), has a renewable energy subsidiary to grow the renewable energy business for TNB. Thailand's Global Power Synergy Public Company Limited has approximately 11% of its equity capacity in renewables."*[655]

FIGURE 20 - DEMAND AND SUPPLY MAP FOR SOLAR ENERGY IN INDIA

SOLAR CITIES IN INDIA



APPROVED SOLAR PARKS



Source: India National Investment Promotion and Facilitation Agency (n.d.) "Investment India: Renewable Energy Sector", online: https://www.investindia.gov.in/sector/renewable-energy, viewed in August 2022

Other examples:

- Solar Philippines, an IPP, is investing heavily in both grid-scale and DRES solar power projects to add solar capacity to the national grid while simultaneously addressing the geographical challenges that limit national grid connectivity (see section 4.4.1).[656]
- Despite its fossil fuel power procurement plans, Japan plans to invest in non-fossil fuel energy, with the president of TEPCO (Tokyo Electric Power Company) pledging to spend between JPY 1 and 2 trillion (USD 9.2–18.4 billion) in new offshore wind and hydropower by 2035.[657]

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