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Implementing a Just Transition in Southeast Asia: How Financial Institutions Can Support Fair and Sustainable Growth

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Key Messages

- Southeast Asia is one of the few regions in the world where economic growth continues to be accompanied by rising emissions, highlighting the urgent need for a just transition.
- Recent analyses indicate that transitioning to a low-carbon economy in Southeast Asia can deliver substantial environmental, economic, and social benefits—provided that policies and actions effectively address associated socioeconomic injustices.
- A key challenge in achieving a just transition in Southeast Asia is the inadequate financing available for clean energy projects.
- To advance just transition objectives in Southeast Asia, the finance sector should:
  - Commit to addressing social injustices as part of their green transition strategies.
  - Leverage existing frameworks to start incorporating just transition objectives.
  - Consider region- and country-specific socioeconomic impacts in their strategies.
  - Integrate just transition goals into financial products and screening processes.
  - Scale up climate finance and enhance inclusivity.
  - Engage with clients and other stakeholders to ensure broad and inclusive participation.
  - Explore investment opportunities that offer both social and environmental benefits.
  - Monitor and disclose progress in meeting just transition goals.

The paper examines the key socioeconomic implications of Southeast Asia's green transition, categorised into three groups: territories, participants, and sectors. It also outlines the critical roles and responsibilities of financial institutions in addressing these impacts through their lending and investment activities, considering the region's unique needs, existing financial frameworks, and best practices.

Since taking office in January 2025, U.S. President Donald Trump has issued a series of energy and climate-related executive orders, including those concerning the U.S. withdrawal from the Paris Agreement and the promotion of domestic fossil fuel production. These actions are expected to have far-reaching consequences for climate action both within the U.S. and globally, including in developing countries across Southeast Asia.

However, regardless of the climate policies of the Trump administration, the authors of this paper believe that stakeholders worldwide—both public and private—must continue to advance a just net-zero transition. This transition is not only essential to preventing further environmental degradation but also represents the most economically efficient path forward. Given Southeast Asia's exceptional vulnerability to climate change and the rising costs of adaptation and mitigation, sustainable economic growth can only be achieved by aligning with the goals of the Paris Agreement. A fair and inclusive transition that considers the diverse needs of all social groups is imperative for ensuring long-term prosperity in the region.

1. Introduction

The concept of a just transition is gaining increasing attention in Southeast Asia, recognising the need to balance inclusive economic growth with environmental sustainability, especially during the shift from fossil fuels to cleaner energy sources. As Southeast Asian nations face the dual pressures of climate change and rising energy demands, there is a growing acknowledgment of the need for a green transition that is both fair and inclusive. Stakeholders, including governments and businesses, are beginning to explore strategies that promote social justice, such as safeguarding the livelihoods of workers in traditional industries. Furthermore, discussions on just transitions are becoming increasingly vital as these countries strive to balance economic development with environmental stewardship, ensuring that local communities, businesses, and households are not left behind in the move toward a more sustainable future. This evolving dialogue is crucial for creating policies that support both economic resilience and environmental protection in the face of global climate challenges.

The financial system plays a critical role in achieving a just transition. Both public and private finance are essential for mobilising and scaling up the resources needed to support a fair green future (ILO and LSE Grantham Research Institute, 2022). By directing capital towards sustainable and socially responsible initiatives, the financial sector can help bridge funding gaps, promote inclusive economic growth, and support communities, groups, and industries as they transition to low-carbon pathways. Effective

collaboration between financial institutions, governments, and other stakeholders is necessary to ensure that climate action also promotes social equity and economic resilience.

The purpose of this paper is to enhance understanding of the just transition needs in Southeast Asia, with a particular focus on the role of the financial sector in supporting a fair transition while fostering sustainable economic growth. Building on the framework for mapping socioeconomic risks related to climate action and the role of financial institutions in mitigating these risks, developed by Popovic et al. (2023; 2024), the main objectives of this paper are twofold: first, to identify region-specific just transition elements—namely, the groups, sectors, and locations most affected by a net-zero transition in Southeast Asia; and second, to provide practical recommendations for the financial sector to advance just transition objectives in the region.

2. Towards a Conceptual Understanding of a Just Transition

A just transition aims to address the adverse socioeconomic impacts that climate action may impose on society while also seizing opportunities that arise from tackling socioeconomic injustices (see, e.g., ILO and LSE Grantham Research Institute, 2022). It aligns closely with the Sustainable Development Goals (SDGs), including promoting sustainable economic growth—growth that is decoupled from environmental degradation and grounded in inclusivity, decent jobs, improved living standards, and equitable access to both financial and non-financial resources for all, as outlined in the 2030 Agenda for Sustainable Development (UN, 2015). Ultimately, it is about moving toward a net-zero economy while ensuring that 'no one is left behind'.

The shift to low-carbon energy will inevitably create and reinforce groups of winners, who will benefit from cleaner energy, lower emissions, and new job and innovation opportunities, and losers, who will face burdens or miss out on these benefits (Carley and Konisky, 2020). A just transition is based on the understanding that climate action provides long-term economic and social benefits, but an equitable distribution of these benefits is not automatically achieved (ILO and UNEP FI, 2023). Instead, climate policies may negatively impact certain regions and social groups, particularly those without the necessary resources to transition to a green future. These negative impacts include job losses, limited access to renewable energy, human and land rights violations, economic decline in communities previously dependent on carbon-intensive activities, increased food and energy prices, and more (for examples of socioeconomic risks related to a green transition see, e.g., ILO and UNEP FI, 2023; Popovic et al., 2024).

A just transition focuses not only on achieving **a fair outcome** but also on ensuring **an inclusive and transparent process** (ILO and UNEP FI, 2023). This means actively involving and consulting all stakeholders—workers, communities, businesses, and policymakers—throughout the transition. Only by incorporating diverse perspectives and addressing the needs and concerns of those affected, the transition can be successful and carried out in a timely manner.

There is a growing consensus on the importance of addressing the socioeconomic implications of the green transition. However, the specific policies and measures for implementing and operationalising such a transition remain contested due to varying definitions of a just transition. As a result, a range of topics and dimensions emerge under the umbrella of a just transition (see Popovic et al., 2023 for an overview).

Thus, the term may refer to energy justice, environmental justice, and/or climate justice (Heffron, 2021). **Environmental justice** seeks to balance the social and environmental dimensions of a green transition; **climate justice** focuses on sharing the burdens and avoiding the harms of climate change; and **energy justice** ensures that all individuals have access to affordable, safe, and sustainable energy (see, e.g., Caney, 2014; Heffron, 2021; Jenkins et al., 2016; McCauley and Heffron, 2018; Mohai et al., 2009).

Furthermore, a just transition refers to both a **"transition out"** of carbon-intensive activities and a "**transition in"** to low-carbon alternatives (Clifford Chance et al., 2021), meaning that it should be considered not only in the context of sunset industries but also in relation to sunrise industries, such as low-carbon activities and technologies. This dual transition goes beyond simply changing energy sources; it involves addressing significant economic and social shifts that will impact industries, social groups, and communities, not only in the fossil fuel sector but also in the renewable energy sector.

A just transition also encompasses various elements of justice: **distributive justice** (a fair allocation of costs and benefits), **procedural justice** (equal access to decision-making and legal processes), **recognition**

justice (consideration of the interests and needs of all groups), **restorative justice** (remedying injustices arising from the transition), and **cosmopolitan justice** (considering the transition from a global perspective) (Heffron, 2021).

Additionally, while the principle of a just transition is universal, its application is specific to the **location**, **participants**, and **sectors** involved (see Popovic et al., 2024). This means that the socioeconomic impacts of a net-zero transition vary based on several factors: the specific location (e.g., communities heavily reliant on carbon-intensive activities will be more affected than those with less dependence), the participants involved (e.g., the challenges faced by small and medium-sized enterprises will differ from those experienced by workers), and the sector in question (e.g., changes in the energy sector differ from those experienced in the agriculture sector).

Within the aforementioned meanings of a just transition, various **topics** are considered, including job losses, energy poverty, negative impacts on local and rural communities, as well as indigenous peoples, limited and uneven access to climate finance, and issues of gender and social equity. While some discussions focus on **national contexts**, many centre on justice considerations between t**he Global North and the Global South**. Given the Global North's historical benefits from a high-carbon economy and greater resilience to climate impacts, it is argued that they have a duty to support those most affected by, and least responsible for, climate change (in Anantharajah and Setyowati, 2022). **Fairness**, **inclusivity**, **equity**, and **equality** often feature as core values of a just transition.

Financial institutions face significant challenges in developing effective just transition strategies due to the lack of a clear and comprehensive definition, as well as the components and metrics of a just transition. "Uncertainty over what constitutes 'good' and how to track progress" hinders their ability to align green initiatives with just transition objectives (Roth et al., 2024:18). Additionally, there is a widespread perception that addressing social injustices is primarily the responsibility of public entities rather than private ones. Often viewed as an added cost rather than an investment opportunity (ILO, 2022a), this perspective discourages financial sector engagement. Other barriers to financing a just transition include limited integration into mainstream financial decision-making and a lack of robust, real-world leadership to establish higher standards of practice (Roth et al., 2024). An insufficient market recognition of the need to address social injustices arising from the net-zero transition represents another barrier to meaningful action (ILO, 2022a).

To overcome these challenges, it is essential to clarify what defines a just transition, especially within a specific context. This includes identifying key socioeconomic risks associated with a green transition, as well as specifying the roles and responsibilities of different stakeholders, including financial institutions, in addressing social injustices. A better understanding of context-specific challenges and clear guidelines would enable financial institutions to integrate just transition objectives into their net-zero strategies more effectively, ensure that their practices contribute to a fair transition, and enhance their ability to measure and report on their impact in this area.

3. Just Transition in Southeast Asia: Key Socioeconomic Risks for Consideration

The just transition has begun to emerge as an important topic among policymakers and other stakeholders in Southeast Asia. At the 41st ASEAN Ministers on Energy Meeting in 2023, a joint declaration was adopted, committing to "accelerate just and inclusive energy transitions while ensuring energy security, reliability, accessibility, sustainability, resilience, and affordability," among other goals (ASEAN Ministers on Energy, 2023:2). In 2024, the ASEAN Leaders for Just Energy Transition (ASEAN JET) - a CEO-led community of regional companies facilitated by the World Economic Forum - released a document outlining the community's goals for supporting a just energy transition in ASEAN (WEF, 2024).

In 2022 together with the International Partners Group (IPG) - which includes Canada, Denmark, the European Union, France, Germany, Italy, Japan, Norway, the United Kingdom, and the United States - Viet Nam (Socialist Republic of Viet Nam, 2023) and Indonesia (JETP Secretariat, 2023) established Just Energy Transition Partnerships (JETPs). JETPs are a new financing partnership designed to help coal-dependent emerging economies achieve a just energy transition by supporting each country's pathway to moving away from coal reliance while addressing social impacts (IISD, 2022). In 2021, Asian Development Bank (ADB) launched the Energy Transition Mechanism (ETM), a collaborative initiative with developing member

countries to accelerate the shift from fossil fuels to clean energy while ensuring a just transition for affected workers and communities (ADB n.d.).

Some countries in the region have committed to achieving a just transition in their Nationally Determined Contributions (NDCs)—these countries include Indonesia, Myanmar, the Philippines, and Viet Nam[1]. Others have established programmes aimed at supporting just transition objectives. For instance, Singapore has established funding support for companies that develop green technologies and solutions, as well as for industrial facilities undertaking projects to improve energy efficiency (EDB Singapore, 2024).

The financial sector has also recently begun to consider a just transition as an integral part of the region's green future. For example, in 2022, ADB launched a Just Transition Support Platform to help its developing member countries plan, implement, and finance just transition strategies (ADB 2022). In 2023, Malaysia's Maybank introduced its Transition Finance Framework to promote a just transition (Maybank, 2023). Recognising that large-scale divestment from carbon-intensive sectors could cause significant economic and social disruptions, the bank's framework incorporates social considerations into environmental goals, including the protection of human rights, prevention of forced labour, safeguarding of children's rights, impact on nearby communities, poverty reduction, and job creation (Ibid.). Indonesia's Bank Mandiri also aims to developing financing products and services that enhance customers' environmental performance and promote social justice, including empowering communities and fostering financial inclusion through financing micro, small, and medium-sized enterprises (MSMEs) (Bank Mandiri, 2023).

However, despite growing interest and public commitments to supporting a just transition in Southeast Asia, the implementation of social justice principles remains limited. Moreover, the main focus of most just transition initiatives in the region is on the energy sector and workers in the fossil fuel industry, while other sectors and stakeholders remain insufficiently considered. Additionally, it is important to note that a just transition is not merely about addressing socioeconomic injustices alongside environmental concerns; rather it involves tackling both issues simultaneously to effectively manage potential synergies and trade-offs. Therefore, a holistic approach is needed to foster economic growth while addressing socioeconomic and climate-related risks.

3.1. Why Southeast Asia Needs a Just Net-Zero Transition?

"Southeast Asia stands out as one of the few regions, alongside the Middle East, where GDP and emissions continue to rise in tandem—a sign that the region's economic development remains highly carbon intensive" (IEA, 2024:7). This underscores the need for careful planning in the net-zero transition to ensure that economic growth and social benefits are sustained alongside environmental gains.

With a population exceeding 670 million and a combined nominal GDP of USD 3.6 trillion in 2022, ASEAN ranks as the third-most populous region and the fifth-largest economy in the world (ASEAN Secretariat, 2023a). Over the past decade, Southeast Asia has experienced significant growth, driven by a shift away from agriculture toward a manufacturing- and service-led economy, a young and skilled population, expanding markets and regional connectivity, rising consumer demand, and foreign direct investment (ASEAN Secretariat, 2023a; ACE, 2024; IRENA, 2023).

However, the region is highly diverse, both between and within member states, with GDP per capita varying from low- and middle-income developing countries to high-income nations such as Brunei Darussalam and Singapore (ASEAN Taxonomy Board, 2023). For instance, as the largest population in Southeast Asia, Indonesia has been the biggest contributor to ASEAN's GDP since 2005, while Thailand and Singapore accounted for the second and third largest shares, respectively (ACE, 2024). However, when considering GDP per capita, Singapore reported the highest value at USD 82.8 thousand, followed by Brunei Darussalam at USD 37.2 thousand and Malaysia at USD 12 thousand, highlighting economic disparities in the region (ACE, 2024).

The latest data shows that most Southeast Asian countries have seen a decline in poverty; for example, Lao PDR and the Philippines experienced significant reductions in poverty rates in recent years (ASEAN Secretariat, 2023a). Conversely, Cambodia's national poverty rate rose from 13.5% in 2016 to 21.5% in 2021 (Ibid.). Data in Table 1 highlight the region's diversity in poverty rates, with Viet Nam at 4.2% in 2022 and Myanmar showing the highest rate at 24.8% in 2017.

[1] ASEAN NDCs can be accessed at the following link: https://unfccc.int/NDCREG?gad_source=1&gclid=Cj0KCQjw1Yy5BhD-ARIsAI0RbXZtj0OUiI-dm48N46_FU9uB3xDkm9VG6uoBPrlIB-ppfuW2WSc7SksaAibzEALw_wcB

The Gini coefficient is a commonly used measure of income inequality, where a ratio of 0 indicates perfect equality and a ratio of 1 signifies perfect inequality (ASEAN Secretariat, 2023a). As shown in the table below,

the Philippines and Singapore exhibit the highest levels of income inequality in the region (Ibid.), along with Thailand. However, Thailand has successfully reduced its Gini ratio from 0.49 in 2010 to 0.43 in 2021 (Ibid.).

Table 1. Population, GDP, Poverty, and Gini Coefficient in Southeast Asia

Country	Population (in thousand) (2022)*	Urban population (%) (2022)*	Shares of ASEAN member states GDP to total ASEAN (%) (2022)**	GDP per capita (in thousand) (2022)***	Population living below the national poverty lines (%)**	Gini coefficient in ASEAN*
Brunei Darussalam	445.4	78.9	0.5	37,152		
Cambodia	16,843.3	39.2	0.8	1,760	21.5 (2021)	0.290 (2017)
Indonesia	275,719.9	57.9	36.4	4,783	9.5 (2022)	0.384 (2022)
Lao PDR	7,442.8	37.6	0.4	2,040	18.3 (2018)	0.362 (2013)
Malaysia	32,698.1	78.2	11.2	11,972	6.2 (2022)	0.404 (2022)
Myanmar	55,770.2	30.2	1.7	1,125	24.8 (2017)	0.300 (2017)
Philippines	111,572.3	48.0	11.2	3,499	18.1 (2021)	0.441 (2021)
Singapore	5,637.0	100	12.9	82,808		0.437 (2022)
Thailand	66,090.0	52.9	13.7	6,909	6.8 (2020)	0.430 (2021)
Viet Nam	99,461.7	37.6	11.3	4,164	4.2 (2022)	0.375 (2022)
ASEAN	671,680.7	51.1		5,330		

Sources:
*ASEAN Secretariat. (2023b). ASEAN Statistical Yearbook 2023.
** ASEAN Secretariat. (2023a). ASEAN Key Figures 2023.
*** ACE (2024). 8th ASEAN Energy Outlook (AEO8).

Economic and social variations within countries are also present in the region. For instance, Indonesia faces significant disparities between its major islands, with Jakarta's GDP per capita being more than four times the national average and over ten times that of the province with the lowest GDP per capita, East Nusa Tenggara (JETP Secretariat, 2023).

Southeast Asia is highly vulnerable to climate change impacts, including declines in fisheries, aquaculture, and crop production, economic losses from coastal city floods, extreme heat disproportionately affecting poorer populations, severe consequences of rising sea levels, disaster-induced displacement, and air pollution (Shaw et al., 2022; IRENA, 2023). In 2023, 85% of Southeast Asia's population was exposed to air pollution levels far above the World Health Organisation's safe limits, resulting in 300,000 premature deaths from outdoor air pollution and 240,000 from indoor air pollution (IEA, 2024).

Ongoing dependence on fossil fuels indicates that Southeast Asia is poised to become one of the largest regional emitters of greenhouse gases (GHG) globally (IRENA, 2023). The combined impact of fossil fuel consumption, large-scale land conversion, and deforestation has been the largest driver of carbon dioxide (CO_2) emissions in the region (Ibid.).

Given the above, climate change leads to a wide range of negative socioeconomic impacts, including a decline in economic output due to disruptions in industries such as agriculture and fisheries; heightened food insecurity driven by reduced agricultural yields and extreme weather events; and diminished livelihood opportunities, particularly for communities dependent on climate-sensitive sectors. Hence, Southeast Asia urgently requires comprehensive and coordinated climate action to address the pressing challenges posed by climate change.

Recognising these threats, many governments in the region are advancing renewable energy projects and setting low-carbon national targets, including through Nationally Determined Contributions (NDCs) (IRENA,

2023). Eight out of ten Southeast Asian countries have established net-zero emissions targets: Brunei Darussalam, Cambodia, Lao PDR, Malaysia, Singapore, and Vietnam aim to achieve this by 2050, Indonesia by 2060, and Thailand by 2065 (IEA, 2024). However, these plans must be carefully evaluated within the context of the socioeconomic implications associated with low-carbon transitions in Southeast Asia, such as the need to ensure sustainable economic growth, protect livelihoods, and maintain reliable and affordable energy access for all, particularly for vulnerable populations. Balancing the urgency of reducing greenhouse gas emissions with the socioeconomic realities of the region requires inclusive strategies that prioritise equity, minimise economic disruptions, and support the development of green jobs and industries.

Recent analyses (see, e.g., IRENA, 2023; ADB, 2023) indicate that a low-carbon transition in Southeast Asia could yield significant environmental, economic, and social benefits. These benefits include higher GDP and increased employment opportunities, as well as improved public health outcomes and greater access to energy (IRENA, 2023). For instance, transitioning to renewable energy sources can reduce air pollution, leading to fewer health-related issues and associated healthcare costs. Additionally, enhanced energy access can spur economic activity and improve quality of life for communities across the region.

An ADB analysis (2023) indicates that under the accelerated global net-zero scenario, the net present value of benefits is five times the costs for developing Asia. Even the most aggressive decarbonisation scenario would result in a loss of less than one year of economic growth for developing Asia over the 21st century, excluding benefits (Ibid.). By 2030, this scenario could save 346,000 lives annually in developing Asia due to reduced air pollution and prevent millions of tons of rice and wheat production losses from pollution damage (Ibid.). In contrast, under the high-emissions scenario projected by the Intergovernmental Panel on Climate Change (IPCC), Southeast Asia is expected to face mean GDP losses of 32% by 2100 (in ADB, 2023).

This evidence suggests that sustainable economic growth—growth that is decoupled from environmental degradation—is both a necessary and viable option for Southeast Asia. The environmental and socioeconomic outcomes of the region's green transition would be more favourable than if such a transition were not undertaken.

Additionally, the World Values Survey (2017–2020) reveals that citizens in ADB's member countries are increasingly prioritising environmental protection over economic growth, particularly in high-income countries (ADB, 2024a). Another survey indicates that over half of respondents in ASEAN nations support an immediate halt to new coal plant construction, with nearly two-thirds favouring the phase-out of coal consumption by 2030 (ACE, 2024).

At the same time, these and other reports emphasise the critical importance of careful planning for a green future. Effective strategies must be put in place to address the adverse effects of the net-zero transition, particularly for vulnerable groups, communities and industries that may face disruptions. Ensuring that the transition is carried out in a just and equitable manner is essential for enabling the region to pursue sustainable economic growth.

3.2. Socioeconomic Risks Related to Climate Action in Southeast Asia

The remainder of this section will discuss the socioeconomic challenges associated with the net-zero transition in Southeast Asia. To do this, the analysis will utilise the framework for mapping socioeconomic risks related to climate action, developed by Popovic et al. (2024). This framework categorises socioeconomic risks into four groups: territories, participants, sectors, and the environment. Each risk category can be further divided into subcategories, addressing different types of territories (e.g., countries/local communities dependent on high-emitting activities and low-income countries), participants (e.g., workers and consumers) and sectors (e.g., energy and agriculture) that require particular attention. Risk categories and subcategories may overlap, meaning that certain risks can be found in multiple categories/subcategories.

Additionally, within each risk category, various impacts are assessed, including the effects of climate policies on employment, welfare, human rights, social inclusion, energy and food security, and public health (Popovic et al., 2024). These impacts also align with the Sustainable Development Goals (SDGs), such as decent work and economic growth, affordable and clean energy, and climate action, among others (see Table 3).

Table 2. Socioeconomic Risks Related to Climate Action

Risks	Risk sub-categories (non-exhaustive list)	Impacts (non-exhaustive list)	SDGs (non-exhaustive list)
Territories	• All countries • Countries/Regions/ Local communities highly dependent on fossil fuel and carbon-intensive activities • Low-income and emerging economies • Rural communities	• Employment • Livelihood • Economic and social welfare • Human and social rights • Equity, equality, and social inclusion • Security (energy and food security) • Public health • Environment	• SDG1 (No poverty) • SDG2 (Zero hunger) • SDG3 (Gender equality) • SDG7 (Affordable and clean energy) • SDG8 (Decent work and economic growth) • SDG10 (Reduced inequalities)
Participants	• Workers • Households • Businesses • Vulnerable groups		
Sectors	Examples: • Energy • Transport • Agriculture		
Environment	• Negative environmental impacts of low-carbon technology and projects that might generate new socioeconomic risks.		• SDG13 (Climate action) • SDG14 (Life below water) • SDG15 (Life on land)

Source: Adapted from Popovic et al. (2024).

3.2.1. Territories

While the transition to net-zero affects all countries, regardless of their specific circumstances, some territories—such as rural communities and countries reliant on fossil fuels—may encounter additional challenges during this transition.

All countries. One of the major challenges to achieving a just transition across Southeast Asia is the insufficient financing available for clean energy. A substantial investment gap also remains between Southeast Asia's current investment trends and its development and climate objectives (IEA, 2024). The region's clean energy spending accounts for only about 2% of the global total, despite Southeast Asia comprising 6% of the global economy, 5% of global energy demand, and 9% of the world population (IEA, 2024). Capital directed toward fossil fuel supply projects surpasses that for clean energy, with about 80 cents invested in clean energy for every dollar in fossil fuels, compared to a nearly 1:2 global ratio favouring clean energy (IEA, 2024). The consequences for capital providers in the fossil fuel sector are that investment payback remains many years away, creating a significant barrier. Additionally, government subsidies for fossil fuels make investment in clean energy less attractive. Finally, with current and future energy capacity in major economic centres in Southeast Asia being fulfilled by fossil fuel generation, the investment case for clean energy is undermined.

The International Energy Agency (IEA) estimates that ASEAN's clean energy financing must increase fivefold by 2030 (in WEF, 2024). IRENA (2023) projects that to meet the region's renewable energy and energy efficiency goals for 2025, Southeast Asia will require USD 300 billion in investments. In comparison, in 2023, total energy investment in the region was just over USD 70 billion, with approximately USD 32 billion going to clean energy projects (IEA, 2024). There is also a clear disparity in attracting investments between medium- to large-scale projects and higher-risk projects, such as smaller projects in rural off-grid areas and R&D initiatives (IRENA, 2023).

When it comes to individual states, the situation mirrors that of the region as a whole. For instance, a study on climate finance in Indonesia found that banks are hesitant to offer longer loan tenors for renewable energy projects, viewing them as high-risk investments (Anantharajah and Setyowati, 2022). This reluctance likely stems from limited capacity and experience in financing such projects, compounded by an uncertain regulatory environment (Ibid.).

A lack of sufficient financing could not only delay the region's green transition but also result in inadequate funding to address the socioeconomic impacts and other development goals, including sustainable economic growth. Since the success of climate action depends on public support and its perceived fairness (Robins et al., 2020), this funding shortfall could further hinder progress toward green initiatives.

In addition to the overall lack of sufficient funding for green energy, countries in Southeast Asia may face additional socioeconomic challenges, such as the uneven allocation of costs and benefits both within countries and across the region, job losses in high-emitting sectors, and adverse effects on businesses, households, and vulnerable groups. These challenges will be addressed in the subsequent subsections.

Countries and communities dependent on fossil fuel production and carbon-intensive activities. Countries whose GDP heavily depends on fossil fuel production will face revenue declines due to the low-carbon transition, along with increasing costs to support those adversely affected by the shift and to incentivise renewable energy producers. For instance, Indonesia, whose government finances depend on income taxes from coal production and power generation, may face financial shortfalls due to the phase-out of coal, at least in the short run (JETP Secretariat, 2023). A decline in domestic demand for coal will lead to a decrease in tax revenues from the energy sector, while simultaneously, the government will have to boost public spending to encourage renewable energy producers through fiscal incentives (Ibid.). This will strain the government budget, which must be allocated for clean energy, while also supporting workers, businesses, and vulnerable groups during the transition. The stretched public finances, combined with insufficient private investment in clean energy, could delay the countries' sustainable growth, perpetuating both socioeconomic and environmental issues.

Communities reliant on carbon-intensive industries and fossil fuel production also face significant socioeconomic risks, such as declining industrial output, reduced tax revenue, job losses, and a lack of green investments to replace high-emitting activities (see Popovic et al., 2024). This is particularly true for regions lacking economic diversification. For example, East Kalimantan in Indonesia, where coal contributed 31.5% of provincial GDP in 2020, saw economic contraction when coal prices dropped in 2015-16 (ILO, 2022c). Similarly, Vietnam's JETP Resource Mobilisation Plan highlights coal mining communities at risk of disruption, with green business opportunities and jobs potentially emerging in different locations (Socialist Republic of Viet Nam, 2023). New green activities may not be established where the losses from mine closures are most felt, and a timing mismatch is likely, with green jobs and opportunities emerging at a later stage (Deleuze and Peythieu, 2020).

This underscores the need for a just low-carbon transition that addresses economic losses in a timely and location-specific manner. For instance, Quang Ninh province, a major coal mining area in Vietnam, successfully developed tourism and trade industries, helping workers transition into new sectors (Socialist Republic of Viet Nam, 2023).

Spill-over effects to other territories and stakeholders must also be considered. For instance, in Indonesia the mining sector employs approximately 250,000 individuals, so a decline in mining activities could affect hundreds of thousands of Indonesians, while the loss of local government revenue in the affected provinces could further impact services for an even larger population (JETP Secretariat, 2023). Additionally, transitioning away from fossil fuels could lead to population declines in mining communities (ILO, 2022c). The phase-out of coal in regions heavily reliant on it, such as Indonesia, the Philippines, and Vietnam, will affect not only coal companies, workers, and their families, but also others integrated into the regional industrial ecosystems (ILO, 2022c).

Rural communities. Despite significant poverty reduction in recent decades, poverty in Southeast Asia remains most severe in rural areas, which suffer from poor infrastructure, limited public services, weak market connectivity, low access to social protection, high climate risks, widespread informal employment, and marginalised populations (ILO, 2024b). This could result in an unequal distribution of the costs and benefits from a decarbonised economy.

Some analyses suggest that the current emphasis on large-scale climate finance projects is widening the electrification gap between urban and rural areas (Anantharajah and Setyowati, 2022; Setyowati, 2021). For instance, in Indonesia, local organisations and project developers have often been excluded from off-grid rural electrification efforts, as climate finance increasingly prioritises commercially viable projects, leaving small-scale rural initiatives without funding opportunities (Anantharajah and Setyowati, 2022).

Overcoming the gap between rural and urban populations in access to clean cooking presents another challenge of the low-carbon transition (ACE, 2024). For instance, in the Philippines and Vietnam, almost all wealthy urban households use clean cooking fuels, while most rural households, particularly those with low incomes, continue to rely on traditional biomass (Ibid.).

Remote and island communities. The region's diverse geography and the archipelagic structure of countries like Indonesia and the Philippines result in numerous remote areas and islands that risk being overlooked in the energy transition. National grids are central to electrification in many Southeast Asian countries, yet extending them to remote and rural areas is often costly and impractical (Merdekawati et al., 2024). To address this challenge, countries such as Cambodia, Lao PDR, the Philippines, and Vietnam have established rural electrification funds to support off-grid solutions (Ibid.). However, a regional shortage of actors willing to undertake the difficult and often unprofitable task of electrifying vulnerable communities largely leaves this responsibility to governments, state-owned utilities, and philanthropic foundations, with only limited support from corporate social responsibility initiatives (Ibid.).

Some analyses indicate a persistent focus on centralised electrification that prioritises on-grid over off-grid solutions, with small-scale and off-grid renewable energy systems remaining minimal compared to on-grid renewables (Anantharajah and Setyowati, 2022). Microgrids powered by renewable energy can offer sustainable access to electricity and accelerate the development of remote areas and islands in Southeast Asia, particularly in countries like Indonesia and the Philippines (IEA, 2024).

International dimension. International climate action also raises concerns related to just transition. An international emissions allocation framework could enable fairer climate policies for developing Asia and the world by addressing the unequal distribution of the global mitigation burden, which currently falls disproportionately on lower-income countries with minimal historical responsibility for climate change (ADB, 2023). A coordinated approach that employs clear emissions allocation principles and global carbon trading could enhance efficiency and equity in mitigation efforts while compensating these lower-income nations for keeping emissions low (Ibid.).

ADB (2023) suggests that Asia should adopt an allocation framework that balances realism and equity under Article 6 of the Paris Agreement to finance low-carbon development in the region's poorest countries. In the absence of coordinated climate policies, Carbon Border Adjustment Mechanisms (CBAMs) may inadvertently penalise lower-income countries; therefore, revenues from CBAMs should be reinvested into low-carbon initiatives in these nations, alongside efforts to assist them in establishing domestic carbon pricing arrangements (Ibid.).

3.2.2. Sectors

Just transition considerations are not only location-specific but also sector-specific. This section examines the socioeconomic risks unique to three sectors – energy (including renewable energy), agriculture, and transport. Some of the challenges related to other sectors are only briefly mentioned.

3.2.2.1. Energy

Economic and population growth in Southeast Asia has led to a significant rise in energy demand. Since 2010, the region has contributed 11% to the increase in global energy demand and is anticipated to account for more than 25% of this growth by 2035, based on the expected trajectory of the energy sector under current policies (IEA, 2024).

The IEA's (2024) most recent Energy Outlook for Southeast Asia reveals the current energy trends in the region:

- Since 2010, nearly 80% of Southeast Asia's growing energy demand has been met by fossil fuels.
- Coal's share in the regional energy mix has risen from 9% in 2000 to 28% today, with Indonesia producing nearly 90% of the region's coal as of 2022, followed by Viet Nam as the next largest producer and consumer. In 2023, coal supplied half of Southeast Asia's electricity, accounted for 80% of power sector emissions, and met 30% of industrial energy demand, including rising nickel production in Indonesia.
- Oil demand has surged by 60% since 2000, remaining the dominant energy source at over 30%, primarily produced by Indonesia, Malaysia, and Thailand. However, overall oil output in Southeast Asia peaked in the 1990s and has since declined by more than a third. Rising consumption, particularly in

the transport sector, has necessitated a significant increase in imports, which have risen 2.5 times since 2000, impacting the balance of payments and energy security.

- Natural gas accounts for about 20% of the region's energy mix. Indonesia was the world's largest LNG exporter for two decades but rising regional demand—almost doubling since 2000—has diminished this surplus and increased reliance on imports, making consumers vulnerable to price fluctuations.
- Renewable energy's contribution has nearly tripled from 2000 to 2023, with significant growth in solar PV and wind, especially in Viet Nam. However, modern bioenergy, geothermal energy, and hydropower still comprise 96% of the total renewable energy supply in Southeast Asia.
- In 2000, the shares of the three main sectors—industry, transport, and buildings—in Southeast Asia's final energy consumption were almost equal. However, since then, energy demand in the industry and transport sectors has surged, while demand in the buildings sector has grown more modestly as modern energy sources have replaced the inefficient use of biomass for cooking. The industry sector has driven demand for all major energy sources, particularly with a sharp rise in steel production, including stainless steel from the region's abundant nickel resources, contributing to increased coal consumption. Meanwhile, the transport sector has fuelled the rise in oil demand.

3.2.2.1.1. Fossil Fuel Sector

Concerns about energy security and affordability are top priorities for Southeast Asia, where demand is growing faster than domestic supply, leading to increased reliance on fossil fuels (ACE, 2024; IEA, 2024). Declining oil production in several countries—due to mature fields and limited new discoveries or investments—has further increased dependence on imports to secure energy supply (ACE, 2024).

The recent global energy crisis highlighted the region's vulnerability to fuel price shocks (IEA 2024). The heavy reliance on fossil fuels and imported oil has strained public resources and low-income household budgets, while also driving up GHG emissions (Ibid.). The impact of rising energy prices varied across Southeast Asia, with poorer countries and communities being especially vulnerable due to the high share of income spent on energy—households in Lao PDR, for instance, spend nearly one-third of their income on energy (Ibid.).

All this underscores Southeast Asia's urgent need to transition to a greener and more diversified energy mix (IEA, 2024), while emphasising the importance of a well-planned approach to protect low-income households and countries. As domestic production of fossil fuels declines, countries may face an increased reliance on energy imports to meet their growing demand. This shift can expose countries in the region to fluctuations in global energy prices and supply disruptions, making them more vulnerable to external energy shocks, such as geopolitical instability or market volatility. Such dependencies can undermine national energy security and economic stability, as countries become more susceptible to the influence of external suppliers and events that can disrupt the availability and affordability of energy resources. Increased investments in clean energy will be essential—not only to protect the environment but also to offset government revenue losses from the fossil fuel sector, support vulnerable groups, and decrease dependence on imported energy.

Access to clean cooking—defined as the non-reliance on traditional fuels (IRENA, 2023)—is another critical issue in Southeast Asia (ACE, 2024). While over 95% of households in the region have electricity, approximately 20% still lack access to clean cooking options, especially in Lao PDR, Myanmar, and Cambodia, where many rely on coal, traditional biomass, and kerosene (IEA, 2024). Access to clean energy requires not only affordability and security but also ensures that individuals and local communities benefit from and have opportunities in the shift to a sustainable energy system (ACE, 2024). Those without reliable green energy should be given opportunities to improve their livelihoods and well-being as part of this shift.

Affordable energy prices are also a major concern in Southeast Asia. For instance, in Indonesia, there is a widespread belief that eliminating fossil fuel subsidies will lead to an increase in electricity bills, making them unaffordable for many, especially in Java, which is responsible for most of the country's electricity demand and relies heavily on coal-fired power supplied by PLN (Indonesian State-Owned Power Utility) (Fair Finance Asia and Stockholm Environment Institute, 2022). According to Vietnam's JETP Resource Mobilisation Plan, the energy transition may initially raise prices due to significant investments in renewables, grid infrastructure, and energy storage (Socialist Republic of Viet Nam, 2023). Carbon tax increases on fossil fuel use in households, transport, and industry will further raise energy costs, disproportionately affecting low-income households and small businesses (Ibid.).

This is also confirmed by an IRENA analysis (2023) showing that under the 1.5˚C scenario, carbon pricing and the use of high-cost renewable technologies drive up energy prices in the region, with electricity costs rising particularly in Malaysia and Indonesia through 2030. However, the rapid deployment of renewable energy, mainly solar PV, along with the significant drop in solar PV costs under the 1.5˚C scenario, leads to a reduction in electricity prices by 2050 compared to 2030 (Ibid.)

3.2.2.1.2. Renewable Energy Sector

In addition to just transition considerations associated with phasing out fossil fuels, socioeconomic risks may also arise in relation to renewable energy projects and green energy policies.

For instance, carbon pricing is recognised as a key tool in the transition to a decarbonised economy (see, e.g., World Bank Group n.d.). This mechanism assigns a cost to GHG emissions based on their external impacts—such as crop damage, healthcare costs, and property loss—thereby incentivising emitters to either reduce their emissions or absorb the associated costs, ultimately facilitating the achievement of environmental goals in a flexible and cost-effective manner (World Bank Group n.d.). Revenues generated from carbon pricing schemes should support just transition initiatives, including social protection and job transition programs toward green sectors (ILO, 2022b). However, as noted in the Investment and Policy Plan for JETP Indonesia, the revenue potential of carbon pricing instruments depends on the rate at which carbon producers decline during the energy transition and may be limited in the long term as the share of renewable energy in the energy sector grows (JETP Secretariat, 2023). Besides, although the revenues from carbon pricing could fund compensation for vulnerable groups impacted by climate action, in developing Asia, they are typically directed toward general public expenditures and companies rather than directly supporting these individuals (ADB,2023).

This indicates that while carbon pricing has the potential to offset some revenue losses from declining fossil fuel production in Southeast Asia, these revenues will also decrease over the long term as the number of carbon emitters and the intensity of emissions diminish with the advancement of the green transition. Therefore, additional instruments, policies, and investments will need to be implemented to address socioeconomic injustices in the long run. Additionally, policies like carbon pricing tend to be more politically acceptable when accompanied by robust social insurance and low inequality (in ADB, 2023), underscoring the need to protect vulnerable groups from socioeconomic shocks.

Furthermore, the development of a domestic renewable energy industry has the potential to drive economic growth and create jobs in Southeast Asia. Specifically, establishing a regional renewable energy sector will aid the energy transition and support low-carbon objectives while maximising benefits for workers, communities, and local supply chains, ultimately strengthening the region's overall economic resilience (JETP Secretariat, 2023). However, several challenges must be considered in the transition to a renewable-based economy.

For instance, currently, investments in local renewable manufacturing capabilities in Indonesia are low, leading to a costly environment due to the lack of economies of scale and insufficient production capacity to support an expanded renewable energy deployment initiative (JETP Secretariat, 2023). Additionally, the shift to clean energy will impact industries, such as steel production, and the transportation sector in Southeast Asia, both of which are heavily reliant on fossil fuels. While analyses of a just energy transition in the region indicate that decarbonisation will generally have positive economic and environmental effects on these sectors, they also emphasise the need to address associated challenges (JETP Secretariat, 2023; Socialist Republic of Viet Nam, 2023). These challenges include rising energy costs, at least in the short term, transition costs - related to training and reskilling workers and public finance required to leverage private investments in renewable energy, high learning costs, and difficulties in accessing financing, particularly for low-income countries and local manufacturers.

Renewable energy projects also require careful attention to their other socioeconomic and environmental impacts. Firstly, the rising demand for renewable energy is driving land acquisition for large-scale solar and wind projects, which can lead to both voluntary and involuntary displacement of communities. This might disrupt lives and livelihoods by affecting access to housing, agricultural land, and other traditional sources of income. The analysis by the ASEAN Centre for Energy (ACE) indicates that by 2050, land allocated for solar and wind projects in ASEAN could cover as much as 1 million hectares in the absence of energy policy interventions, with this figure rising to 4 million and 5 million hectares under national and regional decarbonisation scenarios, respectively (ACE, 2024). Excluding affected communities from decision-making

has historically led to conflicts and economic issues, highlighting the importance of obtaining Free, Prior, and Informed Consent (FPIC) from affected groups (Ibid.).

Since 2010, the Business & Human Rights Resource Centre has documented over 150 claims of human rights violations in the renewable energy sector worldwide, encompassing issues such as land seizures, unsafe working conditions, and detrimental effects on the livelihoods of indigenous peoples (Signorelli and Horvath, 2019). As an example, the study refers to a letter from 2019, in which over 200 Indonesian NGOs and civil society leaders warned the European Commission that European biofuel demand was driving deforestation, land grabs, human rights violations, labour exploitation, and ecological damage, while marginalising small-scale farmers and threatening biodiversity (Ibid.).

Though palm oil is the primary feedstock for liquid biofuel production in Southeast Asia, with Indonesia and Malaysia leading the region in palm oil production, it faces significant criticism (IRENA, 2023). Key concerns include the potential negative impact on biodiversity, risks linked to oil plantations—such as heightened forest fire risks and social conflicts between palm oil companies and local communities—as well as challenges related to land tenure and the equitable distribution of benefits for rural populations (in IRENA, 2023). To ensure sustainable growth, the future development of palm oil-based biodiesel must thoughtfully address these issues (Ibid.).

Other socioeconomic and environmental risks of renewable energy technology include conflicts over agricultural land, negative impacts on food prices and security, land clearing, and biodiversity degradation, among others (Fair Finance Asia and Stockholm Environment Institute, 2022).

3.2.2.2. Agriculture

Competition between energy projects and agriculture can disrupt food production leading to higher food prices. Namely, the transition to a net-zero economy might trigger significant shifts in land use, including the expansion of afforestation efforts and the cultivation of biomass for energy production (ADB, 2023). These changes could intensify competition for land, potentially decreasing the area available for traditional agricultural activities such as food production (Ibid.). This reduction could, in turn, drive up food prices and reduce affordability. Projections indicate that food prices in net-zero scenarios could rise by as much as 25% by the middle of the century in developing Asia, disproportionately affecting poorer households that spend a larger share of their income on food, particularly in lower-income regions of Asia (Ibid.).

As food prices increase, poorer populations could face severe restrictions in their ability to access sufficient nutrition, potentially pushing as many as 60 million people in developing Asia into hunger by 2050 (in ADB, 2023). Among the most affected groups will be women, who are often the primary caregivers in households and are more likely to bear the consequences of economic stress, which might, in turn, exacerbate gender inequalities (Ibid.).

Those employed in the agricultural sector could also face significant negative impacts. With 600 million people relying on agriculture for employment, this sector is vital to the livelihoods of many of Asia's poor (ADB, 2023). However, ambitious decarbonisation efforts could result in the conversion of up to 22% of land currently used for cereal crops into energy crops and forests by 2070, threatening these livelihoods (Ibid.). Strengthening land rights will become a critical priority to protect farming communities from displacement as the growing demand for land to meet energy needs intensifies (Ibid.).

In addition to these challenges, farmers will need to adapt to new, green agricultural practices and technologies to align with climate goals. This shift will require the acquisition of new skills and knowledge, placing additional financial strain on farmers, particularly those already struggling. While low-carbon agricultural technologies hold the potential to improve productivity and sustainability, these innovations are likely to be more accessible to wealthier farmers who can afford such upgrades, leaving smaller farms at a disadvantage in terms of productivity and climate resilience (ADB, 2021). Moreover, limited access to green technologies may make these smaller farms less attractive to potential investors and buyers (Ibid.), further threatening their viability.

3.2.2.3. Transport

Decarbonising the transport sector is essential for achieving a net-zero emission future in Southeast Asia. Electric vehicles (EVs) are a key component of this transition, with ambitious targets set for EV adoption in several countries in the region, including Indonesia, Malaysia, and Thailand (IEA, 2024). Additionally,

expanding public transport and promoting cycling or less energy-intensive two- and three-wheelers can also contribute to lowering emissions from the transport sector (Ibid.).

However, the decarbonisation of the transport sector brings several just transition implications that must be carefully considered. These include: a decline in employment opportunities in the electric vehicle (EV) sector compared to those in internal combustion engine (ICE) vehicles, due to reduced maintenance needs and fewer assembly hours required for electric engines; negative impacts on the livelihoods of formal and informal workers who depend on traditional fossil fuel-intensive public transport for their income; adverse effects on lower-income workers and families, driven by higher fuel prices resulting from carbon taxes and increased vehicle costs due to stricter fuel efficiency and vehicle standards; and disruption to the livelihoods of workers involved in small-scale transport services (ADB, 2021; ILO and UNEP FI, 2023). ADB (2023) also predicts that ambitious decarbonisation will initially lead to higher transportation costs due to investments in infrastructure upgrades and vehicle fleet electrification, though these changes are expected to result in long-term cost savings.

3.2.3. Participants

Just transition considerations vary depending on the participants involved. The following subsection examines some of the socioeconomic challenges related to workers, households, businesses, and vulnerable groups.

3.2.3.1. Workers

Unemployment in Southeast Asia is relatively low, projected at around 2.5% in 2024 (ILO, 2024a). However, the region faces persistent structural issues, including significant gender inequalities, inadequate investment in youth, marginalisation of vulnerable groups, and a dual labour market where many migrant workers and those in informal employment lack full rights and benefits under the law (ILO, 2024b). Climate change, as well as unjust climate action, could further exacerbate these challenges.

Estimates indicate that in 2024, 69.3% of total employment in ASEAN is made of informal workers, with countries like Cambodia, Lao PDR, and Indonesia leading this trend (ILO, 2024b). Both younger and older workers are more likely to be informally employed, and there is a strong link between low skill levels and informal employment (ILO, 2024b). Agricultural and elementary workers account for 40% of employment in Southeast Asia (ILO 2024a), with a large portion of those in agriculture and industry being informal workers (IRENA, 2023).

While significant progress has been made in establishing social protection systems across ASEAN over the past decades, the region still underinvests in social protection, spending only about 1.9% of GDP (ILO, 2024b). As a vital component of a just transition, social protection can help mitigate the structural changes occurring in the region by enhancing resilience to shocks, reducing poverty, ensuring economic security, and facilitating a smooth transition to a green economy (ILO, 2024b).

Transitioning to a net-zero economy will result in job losses in the fossil fuel sector, as well as in others like transportation due to the shift from internal combustion engine (ICE) vehicles to electric vehicles. Fossil fuel-dependent countries will face significant job losses that could adversely affect labour markets without appropriate labour policies in place. For instance, in Viet Nam, approximately 77,000 coal mining jobs may be at risk (Socialist Republic of Viet Nam, 2023). Informal workers are likely to be disproportionately affected due to a lack of social protection and representation. For example, adverse effects on informal employment can be anticipated for small-scale charcoal producers and many jobs associated with coal transportation in Indonesia (JETP Secretariat, 2023). Gender-based and other inequalities may also influence job losses and opportunities (Socialist Republic of Viet Nam, 2023).

Although many analyses indicate that the number of jobs created by a low-carbon transition will generally exceed those lost (e.g., ADB, 2023; IRENA, 2023), traditional roles linked to fossil fuel extraction, such as coal mining, will disappear. Jobs generated by the renewable sector are often urban and require higher skills, while the lost jobs are typically rural and low-skilled, making it challenging for displaced workers to find new employment in these emerging sectors (ADB, 2023). Those affected will need reskilling for alternative occupations, leading to additional transition costs.

Furthermore, in addition to the quantity of new jobs, the quality of employment resulting from the green transition is also vital (Deleuze and Peythieu, 2020). This encompasses working conditions, salaries,

benefits, and other factors that should be integrated into green policies. Finally, as previously mentioned, new job opportunities may not emerge in the same location or timeframe as those that have been lost. Therefore, effective employment planning is crucial as part of the transition.

3.2.3.2. Households

A net-zero transition may pose several challenges for households. Firstly, as noted above, decarbonisation efforts could lead to higher food prices due to increased competition for land and a subsequent reduction in agricultural areas. These rising food prices disproportionately affect low-income households, which spend a significant share of their income on food.

Beyond food prices, ambitious climate change mitigation policies primarily impact households through energy sector price signals (ADB, 2023). Climate policies raise the cost of gas and coal for heating and cooking to encourage a transition to electricity (ADB, 2023). According to Vietnam's JETP Resource Mobilisation Plan, while a renewable energy-dominated mix is expected to be more cost-effective in the long term, the immediate impact of rising energy costs in Viet Nam will disproportionately burden low-income households and small businesses, with electricity bills representing 31% of the income for urban poor households and 41% for those in rural areas (Socialist Republic of Viet Nam, 2023).

Another challenge of the energy transition will be narrowing the gap between rural and urban households (ACE, 2024). In countries like the Philippines and Vietnam, nearly all wealthy urban households use clean cooking fuels, while most rural, lower-income households still depend on traditional biomass (Ibid.). Only 22% of rural households in Indonesia and 32% in Thailand currently use clean fuels (Ibid.).

Rising transportation costs during the initial phase of the energy transition, as explained earlier, also place an additional burden on household budgets. Finally, mine closures can create intra-household tensions by forcing male household members to migrate in search of new jobs, increasing the domestic responsibilities and workload for women (Fair Finance Asia and Stockholm Environment Institute, 2022).

3.2.3.3. Businesses

Businesses face significant challenges in transitioning to a low-carbon economy, including potential financial losses from stranded assets. Owners of emissions-intensive assets may see their investments become less viable in a decarbonised market (see Popovic et al., 2024). Fossil fuel extraction companies could face stranded assets due to the transition, along with other sectors that rely on fossil fuels as production inputs, such as aviation (Matikainen and Soubeyran, 2022). For instance, coal mines and related businesses in Indonesia face an uncertain but likely declining future due to both international market trends and domestic commitments to reducing coal consumption (JETP Secretariat, 2023). Additionally, all companies must bear the costs of adapting to new green regulations, investing in sustainable technologies, and aligning business operations with increasingly stringent environmental standards.

The effects on businesses in communities reliant on carbon-intensive industries, such as coal mining communities, are expected to be even greater. These impacts extend beyond the local coal mining industry, as negative spill-over effects can affect other industrial activities and workers along the supply chain, both within and beyond the same community (see, e.g., ILO, 2022c; Popovic et al., 2024; PCC, 2022).

Furthermore, small and medium enterprises (SMEs) often face significant barriers to adopting green measures, such as energy-efficient equipment, due to their limited capacity and access to finance (Socialist Republic of Viet Nam, 2023). However, targeted investments can create new opportunities by supporting local SMEs, as well as women, ethnic minority business owners and workers, and members of low-income households (Socialist Republic of Viet Nam, 2023).

Finally, companies in emerging markets are more vulnerable to both physical and transition climate risks due to their geographic exposure and regulatory environments. Compounding these challenges, they often have limited access to capital and financial instruments to mitigate these risks, putting them at a competitive disadvantage compared to firms in advanced economies (Moody's, 2022), which benefit from stronger financial markets, policy support, and investor confidence.

3.2.3.4. Vulnerable Groups

Certain social groups (e.g., women, the elderly, informal workers, migrants, Indigenous peoples) may be particularly susceptible to the negative impacts of a net-zero transition because they have limited means to adapt to the resulting changes. Moreover, if left unaddressed, existing inequalities can be exacerbated not only by climate change but also by short-sighted climate policies (ADB, 2021). For instance, in Viet Nam there are currently no existing mechanisms through which the representatives of youth, women, the elderly, migrants, informal workers, and ethnic minority groups can participate in dialogues about the energy transition (Socialist Republic of Viet Nam, 2023).

There is a significant lack of awareness regarding the crucial role of women in the energy transition (Sumarno et al., 2024). Key challenges include limited employment opportunities in the energy sector, lack of gender awareness, and substantial income disparities between men and women (Ibid.). Furthermore, women are often underrepresented in energy-related decision-making processes (ACE, 2024). A just and inclusive energy transition offers an important opportunity to empower women (Ibid.). As of 2020, women made up only 8% of the labour force in the industrial crude, petroleum, and natural gas extraction sectors in the region (ACE, 2024). The growth of the renewable energy sector presents a valuable opportunity to increase women's representation and participation in this area. Moreover, addressing the unequal burdens placed on women by the energy transition, alongside the untapped potential of development finance, is essential to fostering greater inclusivity (ACE, 2024).

Indigenous peoples also face significant risks, as they inhabit lands that contain a substantial share of the minerals required for a low-carbon transition and areas required for green projects (ILO and UNEP FI, 2023). Their rights, including the right to Free, Prior, and Informed Consent (FPIC), are often not formally recognised, resulting in their exclusion from critical decision-making processes (Ibid.). This lack of recognition exacerbates their vulnerability to the adverse effects of the green transition. Additionally, other vulnerable groups, such as informal workers and low-income individuals, may also suffer or fail to benefit from a low-carbon transition if existing inequalities are not properly addressed.

The table below summarises the key socioeconomic risks discussed above.

Table 3. Examples of socioeconomic risks related to climate action in Southeast Asia

Risk categories	Examples of socioeconomic risks
Territories	
All countries	• **Insufficient financing for clean energy**: Limited access to capital for developing renewable energy technologies.
Countries/ communities dependent on fossil fuel production and/or carbon-intensive industries	• **Decreased revenue for local authorities**: Lowered tax collection due to the decline in fossil fuel industries. • **Reduced industrial output**: Decreased production in carbon-intensive sectors due to decarbonisation. • **Adverse spill-over effects**: Economic decline affects not only fossil fuel producers and workers but also a wide range of related industries, both within and beyond affected communities. • **Lack of green investments**: Insufficient funding for sustainable initiatives to replace carbon-intensive industries. • **Population decline**: Migration away from former mining communities as opportunities diminish.
Rural communities	• **Unequal distribution of benefits**: Disparities in access to the advantages of a decarbonised economy, with rural communities often receiving fewer benefits compared to urban areas. • **Underfunded rural initiatives**: Small-scale rural projects may lack financial support, limiting their ability to participate in the green transition and benefit from its opportunities. • **Uneven access to clean cooking**: Rural communities often lack sufficient access to clean cooking, especially when compared with urban populations.
Remote and island communities	• **Overlooked remote areas and islands**: Remote regions and islands risk being excluded from energy transition strategies, exacerbating existing disparities and leaving these communities behind.

Sectors	
Energy	• **Rising energy prices**: Increased costs of energy during the transition may disproportionately affect low-income households and small businesses. • **Concerns related to energy security**: Declining domestic production of fossil fuels might increase dependence on energy imports and vulnerability to external energy shocks. • **Socioeconomic and environmental risks related to renewable energy projects**: These include conflicts over agricultural land, negative impacts on food prices, displacement of communities, unsafe working conditions, detrimental effects on indigenous peoples, land clearing and deforestation, and biodiversity loss.
Agriculture	• **Rising food prices and reduced affordability**: Competition for land between renewable energy projects and agriculture can disrupt food production, resulting in higher food prices and decreased affordability. • **Conversion of agricultural land**: Decarbonisation efforts may convert cereal croplands into energy crops, threatening the livelihoods of those dependent on agriculture. • **Vulnerability of small farmers**: Small-scale farmers are disproportionately impacted compared to wealthier farmers, as they often lack the financial resources to transition to green agricultural practices.
Transport	• **Decline in employment opportunities**: The shift to electric vehicles reduces jobs in maintenance and assembly for internal combustion engine vehicles, as EVs require simpler manufacturing. • **Higher fuel prices and impact on low-income workers**: Carbon taxes and increased fuel prices disproportionately affect low-income workers, who struggle with higher transportation costs. • **Disruption of small-scale transport services**: Workers in small-scale transport services may face livelihood disruption as the transition to electric vehicles and cleaner transport models increases operational costs, while many lack the financial resources to adapt.
Participants	
Workers	• **Job losses**: The transition to cleaner energy sources leads to job losses in fossil fuel industries. • **Adverse effects on informal workers**: Informal workers, who lack social protection and representation, are vulnerable to economic disruptions and may struggle to access support during transitions. • **Mismatch between job losses and new opportunities**: New green energy jobs may not be available in the same locations or at the same time as those lost in the fossil fuel industry, causing geographic and temporal employment gaps.
Households	• **Rising energy, food, and transportation costs**: Households face financial strain as the costs of energy, food, and transportation rise, particularly impacting low-income families. • **Closing the gap between rural and urban households**: Efforts to reduce the disparity between rural and urban households may be challenged by uneven access to resources and clean fuels.
Businesses	• **Negative effects on business owners of carbon-intensive assets**: Business owners with investments in emissions-intensive assets may incur financial losses as these assets become less viable in a decarbonised market. • **Transition costs**: Business owners must bear the costs of green technologies and align business operations with environmental standards. • **Negative effects on the local coal mining industry**: The local coal mining industry will face direct challenges, with negative spill-over effects potentially impacting other industrial activities in the supply chain, both within and beyond the community. • **Barriers for small and medium enterprises (SMEs) in adopting green measures**: SMEs often struggle to adopt green technologies due to limited financial capacity and access to financing.

Vulnerable groups	• **Adverse effects on vulnerable social groups**: Women, informal workers, Indigenous peoples and vulnerable groups are at higher risk during the net-zero transition due to limited resources and capacity to adapt to changes like job displacement, rising costs, and shifts in industry demand.

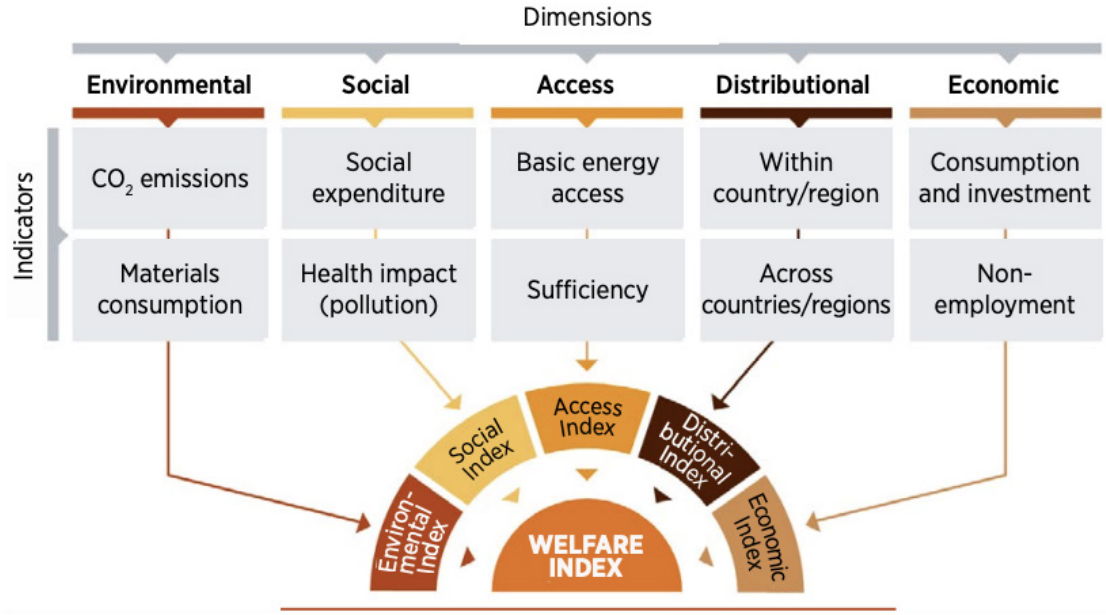
The analysis above underscores the importance of ensuring that the net-zero transition in Southeast Asia is just. Insufficient regional progress toward the Sustainable Development Goals (SDGs), with no goal currently on track to be fully achieved by 2030 (UN, 2024), confirms the urgent need for a fairer and more inclusive green future. While advancements have been made in areas such as poverty reduction, maternal and child health, per capita economic growth, and innovation, significant challenges remain—particularly with SDG 13 (climate action), where reversing current negative trends is crucial (Ibid.).

Other analytical frameworks also offer valuable opportunities to analyse and understand the socioeconomic impacts of the green transition in the region. One such example is presented below.

3.3. IRENA's Energy Transition Welfare Index

To address the socioeconomic consequences of an energy transition, IRENA has developed a Welfare Index which measures an energy transition's impacts across economic, social, environmental, distributional, and access dimensions (IRENA, 2023). Each dimension includes two indicators (see Figure 1).

Figure 1. Structure of IRENA's Energy Transition Welfare Index



Source: IRENA (2022a).

Source: Taken from IRENA (2023).

The most recent analysis by IRENA (2023), comparing a scenario based on already announced plans (the Planned Energy Scenario (PES)) with an ambitious transition scenario (the 1.5°C Scenario) in Southeast Asia, suggest that the socioeconomic impacts of a net-zero transition will be predominantly positive. The analysis indicates that Southeast Asia could experience higher GDP and employment under the 1.5 °C Scenario compared to the PES from 2021 to 2050. Although Southeast Asia's economies and job markets gain significantly from the energy transition, the greatest benefit is seen in human welfare (IRENA, 2023). Driven by social and environmental factors, welfare in Southeast Asia is expected to rise by 10.9% by 2050 under the 1.5°C Scenario compared to the PES. The energy transition significantly improves public health, expands energy access in ASEAN, and reduces CO2 emissions.

However, economic and distributional gains are more modest (IRENA, 2023). The economic dimension shows no improvement under the 1.5℃ Scenario compared to the PES. Income distribution in Southeast Asia improves slightly under the 1.5℃ Scenario compared to the PES, primarily due to limited fiscal space

(IRENA, 2023). Despite international funding, reduced carbon tax revenues from decreased reliance on fossil fuels, revenue losses in the oil and gas sector, and increased public expenditure for transition-related subsidies and investments contribute to only a modest improvement in the distributional dimension under the 1.5°C Scenario compared to the PES.

4. How Can Financial Institutions Support Fair and Sustainable Growth Objectives in Southeast Asia?

"A low-carbon transition must be just to succeed" (ADB, 2023:85). All stakeholders have an important role to play in achieving a just transition in Southeast Asia, and the financial sector is no exception. The remainder of this section offers practical recommendations for financial institutions in Southeast Asia on advancing just transition objectives in the region.

Recommendation 1: Make commitments. Financial institutions should commit to just transition objectives by integrating them into their core strategies and operations. This requires building internal capacity and expertise in just transition issues, including a deep understanding of the region-specific socioeconomic impacts of decarbonisation.

Both Vietnam's and Indonesia's JETP plans highlight the limited availability of domestic expertise in sustainable and transition finance (JETP Secretariat, 2023; Socialist Republic of Viet Nam, 2023). This gap in knowledge presents a significant challenge in mobilising financial resources to support a fair and equitable low-carbon future. Strengthening financial institutions' capacity in just transition objectives will be essential to ensuring that transition policies are tailored to each country's unique socioeconomic and environmental conditions.

The concept of a just transition is becoming a key element in Southeast Asia's green transition, with many countries beginning to make it a core part of their climate policies. Complying with these government policies is essential for managing transition risks, including reputational and litigation risks[2]. Besides, ignoring socioeconomic injustices can exacerbate climate-related financial challenges by delaying or obstructing the transition, ultimately undermining financial institutions' green strategies and investments (see Popovic et al., 2024).

This issue is particularly critical in Southeast Asia, where environmental concerns are deeply intertwined with the economic and social aspects of climate mitigation and adaptation. Achieving just transition objectives is vital for investors, banks, and other stakeholders to fully comprehend the risks associated with climate change. Ultimately, a just transition cannot occur without sufficient funding to support the necessary environmental, economic, and social changes. Therefore, it is crucial for the financial sector to understand regional just transition goals, commit to achieving these objectives, and incorporate them into their products and services.

As an illustration, in its "Transition Finance Playbook", the SMBC Group identifies just transition as one of the four core principles guiding transition finance (SMBC, 2023). The just transition principle emphasises that investments should optimise social and economic benefits through meaningful consultations with affected groups (Ibid.). This means that SMBC, for example, should evaluate how a project addresses employment issues stemming from its implementation (Ibid.) Similarly, BNP Paribas committed to improving industry knowledge on the social risks related to the energy transition by joining AFG's (a French investment management industry group) Just Transition working group to advise investors on climate transition regulations (BNP Paribas et al., 2024).

Recommendation 2: Leverage existing just transition frameworks. Financial institutions can leverage existing just transition frameworks designed for the financial sector (e.g., Curran et al., 2022; ILO and LSE Grantham Research Institute, 2022; ILO and UNEP FI, 2023). These frameworks offer guidance on incorporating just transition objectives in finance, primarily by aligning recommendations with the five themes identified by the Glasgow Financial Alliance for Net Zero (GFANZ) for net-zero transition plans: foundations, implementation strategy, engagement strategy, metrics and targets, and governance (see, e.g., Curran et al., 2022). As an illustration, the table below presents recommendations made by Curran et al. (2022).

[2] For examples of climate litigation related to a just transition, see ILO and UNEP FI (2023).

Table 4. Recommendations for financial institutions incorporating just transition into net-zero plans

Themes	Recommendations
Foundations	• Financial institutions should incorporate just transition factors into their net zero plans, as part of disclosing net-zero objectives, targets, and timelines.
Implementation strategy	• Financial institutions should evaluate the social impacts of their net-zero plans and develop just transition strategies based on sectors and regions under consideration. • Banks should assess their customer groups (retail, corporate, SMEs, and capital markets) to evaluate how they (i) integrate just transition considerations into existing products, and (ii) develop new products to assist customers in reaching just transition objectives. • Investors should incorporate a just transition into their investment process (e.g., screening and allocation of investments) and support assets dedicated to a just transition.
Engagement strategy	• Financial institutions should work with corporate clients and investee companies to incorporate just transition considerations into their net-zero plans, ensuring clear objectives, resourcing, and disclosure. • Financial institutions should engage with policymakers at all levels to advocate for policies that support a just transition, including scaling up investment. • Financial institutions should engage with climate-related initiatives in the finance sector to commit to supporting a just transition through their frameworks. • Financial institutions should consult stakeholders, including trade unions and civil society, during the preparation and implementation of their net-zero plans.
Metrics and targets	• Financial institutions should develop and disclose metrics to track progress on just transition goals and demonstrate the just outcomes of their green plans.
Governance	• Financial institutions should ensure that addressing just transition objectives is overseen by the board. • Financial institutions should build the skills and knowledge necessary to support a just transition and embed its principles into their operations and culture.

Source: Curran et al. (2022).

As an illustration, HSBC has outlined a framework for incorporating just transition considerations into its net-zero transition plan through:

1. **Customer engagement** – Incorporating just transition factors into corporate customer transition plan assessments and providing insights to customers on just transition.
2. **Policies and risk management** – Embedding just transition principles in thermal coal phase-out and energy policies and applying the Equator Principles to assess and manage environmental and social risks in projects HSBC finances.
3. **Financing and investing** – Supporting SMEs in a just transition and participating in blended finance initiatives, including through involvement in the Just Energy Transition Partnerships in Viet Nam and Indonesia.
4. **Partnering for systemic change** – Supporting HSBC's suppliers in their just transition efforts and co-founding the Just Transition Finance Lab at LSE's Grantham Research Institute.
5. **Governance** – Overseeing just transition aspects within sustainability risk policies through the Environmental Risk Oversight Forum and guiding the development of HSBC's just transition approach via the Sustainability Execution Committee (HSBC, 2024).

As mentioned earlier, the concept of a just transition is inherently complex, encompassing a broad range of issues. This complexity makes it challenging for financial institutions to fully understand and effectively integrate just transition principles into their decision-making processes. However, in addition to the established frameworks mentioned above, financial institutions can leverage the growing body of research linking just transition and finance to better understand the socioeconomic consequences of their actions (see, e.g., Anantharajah and Setyowati, 2022; Heffron et al., 2024; McCauley and Pettigrew, 2023; Winkler et al., 2021). Heffron et al. (2024) contribute to this body of knowledge by offering a comprehensive definition

of just energy investment as one "where a just energy outcome is secured for society which aligns to energy and climate societal goals over the medium to long-term, and financing is in accordance with a set of just energy principles which will deliver a just transition to a low-carbon economy". These studies provide valuable insights that can help banks and investors navigate just transition issues more effectively.

Recommendation 3: Consider region-specific socioeconomic impacts. Financial institutions should consider socioeconomic risks relevant to Southeast Asia, categorised into territories, participants, and sectors, along with their respective subcategories, as outlined by Popovic et al. (2024). These categories offer a structured framework for understanding the complex and interconnected risks associated with the green transition. By using this approach, financial institutions can develop targeted strategies to mitigate these risks, support vulnerable stakeholders, and align their investments with the principles of a just transition.

For example, one of the key goals of a just transition is to foster inclusive economic growth, promote social well-being, and prevent environmental degradation. Micro, Small, and Medium Enterprises (MSMEs) are considered "the engines of growth in Southeast Asia" as they create jobs, drive the development of new products and services, stimulate consumption growth, and industry competition (UNFCCC et al., 2023). In most ASEAN countries, the MSME sector comprises approximately 97-99% of all enterprises (Ibid.). Despite their importance, MSMEs often face challenges in accessing sustainable financing (World Bank and Institute of Finance and Sustainability, 2022), which hinders their ability to adopt green practices and contribute to the broader transition to a low-carbon economy. This gap in sustainable financing is a significant barrier, preventing many small businesses from scaling up their sustainability efforts or transitioning to more environmentally friendly models.

Given the critical role of MSMEs in Southeast Asia's economic development, it is essential for financial institutions to focus on these businesses, particularly by prioritising investments in green and sustainable initiatives. For instance, BNP Paribas has demonstrated its commitment to financial inclusion and microfinance by providing €332 million in microfinance support in 2022, including projects that generate positive social and environmental impacts (BNP Paribas, 2023).

Recommendation 4: Integrate just transition objectives into financial products and screening processes. Financial institutions should embed just transition considerations into their existing product offerings—such as green loans and transition finance—, screening and due diligence processes, and lending agreements (see, e.g., ILO and the Grantham Institute, 2022; ILO and UNEP FI, 2023). They should assess clients' exposure to the socioeconomic impacts of climate policies and identify their related financial needs (ILO and UNEP FI, 2023).

Banks and investors can incorporate a 'social' dimension into green finance or embed 'green' components into products designed to achieve positive social outcomes (ILO and UNEP FI, 2023). Incorporating just transition considerations into product offerings can involve making investments in renewable energy more accessible or offering more attractive mortgages for energy efficiency upgrades or renovations (Ibid.). This approach ensures that social and economic considerations are addressed alongside environmental impacts, fostering a more inclusive green transition. Additionally, sustainability-linked loans, which allocate proceeds to businesses with both environmental and social impacts, such as those offered by SMBC (SMBC n.d.), are gaining increasing global attention[3].

[3] For additional examples of financial instruments utilised across public, private, and blended finance to support a just transition, refer to IHRB and JTFL (2024).

The table below provides examples of activities that financial institutions might undertake to address location-, sector-, and participant-specific socioeconomic challenges.

Table 5: Illustrative actions financial institutions can take to prevent or mitigate location-, participant, and sector-specific socioeconomic challenges.

Actions	Examples
Territories - Utilise blended financing structures that combine public and private funds to simultaneously address environmental and social objectives.	Indonesia and Vietnam entered into Just Energy Transition Partnerships (JETPs) in late 2022, with G20 governments pledging significant funding to support their transitions—$10 billion for Indonesia and $7.75 billion for Viet Nam. In addition, private financial institutions have committed to mobilising at least an equivalent amount of capital. HSBC, as part of GFANZ, is contributing as both a mobiliser and provider of private capital. Source: HSBC (2023).
Territories - Expand investments in emerging markets with a focus on achieving both social and environmental goals.	Standard Chartered is accelerating the adoption of sustainability-linked financing in emerging markets, aiming to support a just transition by advancing climate goals while preserving growth and prosperity in these regions. The bank has pledged to mobilise $300 billion in green and transition financing to drive sustainable development in emerging markets. Source: Standard Chartered (2022a; 2022b).
Participants - Support SMEs in their efforts to transition to a green economy.	In 2021, HSBC UK launched a £500m Green SME Fund as part of its commitment to supporting SMEs investing in green initiatives. The fund is available to businesses with a turnover of less than £25m and offers 1% cashback on loans. Source: HSBC (2021a). In 2020, OCBC Bank has created the SME Sustainable Finance Framework, simplifying and reducing costs for Singapore SMEs to access up to S$20 million in sustainable financing to support their low-carbon efforts. SMEs no longer need to develop custom frameworks to demonstrate compliance with international green standards before applying for funding. Source: OCBC Bank (2020).
Participants – Ensure clients evaluate the negative impacts of climate action on workers and support those affected.	Amundi created a just transition rating system to assess issuers' performance on social issues relative to peers, with continuous monitoring and dialogue ensuring score adjustments. Amundi's Transition Score is based on four pillars, ensuring that investee companies: help workers in restructuring industries transition to sustainable jobs; make consumer goods affordable and accessible; equitably share the costs and benefits of the transition to local communities; foster full stakeholder participation and constructive dialogue. Source: PRI (2021). In its recently launched Net Zero Transition Fund, BNP Paribas embeds just transition objectives by engaging with portfolio companies to sustainably implement climate strategies, focusing on mitigating social risks to workers and communities. Source: BNP Paribas et al. (2024).

Sectors – Provide financial support for a just transition within the agriculture sector.	Lloyds Bank provides financing for agroforestry costs through its Clean Growth Financing Initiative (CGFI), offering term loans for sustainable farming investments with no set-up fees. Source: Lloyds Bank (2024). HSBC's sustainability risk policies on forestry and agricultural commodities address human rights considerations, including land rights, the prevention of child and forced labour, indigenous and local community rights, workers' rights, community relations, and health and safety. Source: HSBC (2024).
Sectors - Include just transition consideration linked to renewable energy projects and low-carbon technologies into due diligence, client screening, and monitoring processes.	BNP Paribas Asset Management's Responsible Business Conduct Policy requires that upstream palm oil companies have several policies in place to prevent negative social and environmental impacts. These include a policy prohibiting the use of child or forced labour; policies protecting labour rights and ensuring workers' health and safety; a policy to obtain the free, prior, and informed consent (FPIC) of indigenous and local communities before developing new oil palm plantations; and a formal grievance mechanism to identify and address stakeholders' concerns. Source: BNP Paribas (2024).

Recommendation 5: Scale up climate finance and improve inclusivity. According to the IEA (2024), achieving Southeast Asia's climate goals will require over USD 190 billion in clean energy investments in 2035—five times the current investment level.

Given the limited availability of clean energy financing, financial institutions should take a proactive approach to supporting low-carbon energy projects (Fair Finance Asia and Stockholm Environment Institute 2022). This could involve offering technical assistance to project developers to enhance project bankability and implementing collective insurance mechanisms to mitigate potential project losses, ultimately reducing interest rates (Ibid.).

Collaboration with local governments and development finance institutions (DFIs) is also critical. Public-private partnerships and scaling up blended finance can help reduce financial risks associated with green energy projects. Green and transition finance often carry higher transaction costs than conventional finance, including expenses for project eligibility assessments, environmental impact analyses, and certification (ADB, 2023). Governments can play a vital role in reducing these costs, especially for new market entrants (Ibid.).

In addition to insufficient financing, climate finance in the region often prioritises low-risk, large-scale projects, leaving smaller, decentralised renewable energy initiatives underfunded, which can exacerbate existing inequalities (Anantharajah and Setyowati 2022). To address this disparity, financial institutions should develop innovative financial products and governance structures to bridge these gaps (Ibid.). Inclusive financial mechanisms, such as those supporting rural electrification, can help ensure that financing contributes to equitable development (Ibid.).

As an example, in 2021, HSBC and Temasek, a Singapore-based investment company, launched a partnership to create a debt financing platform for sustainable infrastructure projects, initially focusing on Southeast Asia (HSBC, 2021b). A significant portion of the platform's loan portfolio will support marginally bankable projects, offering development expertise, technical assistance, and blended finance solutions where needed (Ibid.).

Recommendation 6: Engage with clients and other stakeholders. Financial institutions should actively engage in dialogue with governments, local communities, customers, clients, and other stakeholders to better understand the nuanced socioeconomic impacts of climate mitigation and adaptation efforts in Southeast Asia. This engagement can help identify vulnerable groups, regions, and industries most affected by the green transition and ensure that financial products and strategies are tailored to address these challenges effectively.

As an illustration, in 2022, AXA IM began engaging with TotalEnergies on the just transition (AXA IM 2023). Building on previous discussions about climate and governance, AXA IM held several meetings with TotalEnergies' investor relations team to raise awareness of the just transition. AXA IM recommended that TotalEnergies define its understanding of the just transition, identify stakeholders adversely affected by the energy transition, and develop a detailed action plan to mitigate these impacts. Notably, in 2023, AXA IM observed increased transparency when TotalEnergies included a dedicated just transition section in its annual Climate Progress Report for the first time (Ibid.).

Similarly, Amundi began engaging with corporations, particularly in transport and extractive industries, on just transition in 2020 (Amundi 2023). In 2023, it expanded efforts by engaging 35 developed market banks to integrate just transition considerations into their operations. This increased awareness across sectors, though progress beyond policy commitments remains mixed (Ibid.).

Recommendation 7: Explore investment opportunities with social and environmental impacts. Financial institutions should further explore the potential financial benefits of a just transition. An analysis by the ILO (2024c) highlights significant business opportunities for firms arising from a just transition to a green economy. Shifting consumer preferences are opening new markets, while global investors are increasingly prioritising green projects. Companies that adopt inclusive practices experience higher productivity, and stronger stakeholder alliances help mitigate reputational risks. Additionally, firms are capitalising on fiscal incentives for green investments, which not only boost profitability but also contribute to environmental benefits (Ibid.).

Financial institutions should actively invest in innovative opportunities that address both environmental and social objectives. For example, climate-smart agriculture, increasingly promoted in Southeast Asia, enhances food security by boosting crop productivity and supports climate adaptation through sustainable land management practices (Shaw et al., 2022). Similarly, investments in nature-based and eco-tourism - a booming sector in Southeast Asia (Steele et al., 2021) - generate both environmental and economic benefits. Other promising investment areas in Southeast Asia include sustainable forest plantations, herbal products, and the vegetarian and vegan markets (Steele et al., 2021).

By supporting these synergistic initiatives, financial institutions can play a pivotal role in addressing both environmental and social challenges, while also unlocking new markets and revenue streams. For example, Triodos Bank provides loans to organic farmers and supports conventional farmers transitioning to organic practices, ensuring a balance between ecological restoration and agricultural productivity (Triodos Bank, 2024). Similarly, in 2022, SMBC announced an investment agreement with The Reforestation Fund (TRF) in South America to plant trees on degraded land for timber production and forest restoration (SMBC, 2022). SMBC will finance these activities and offer clients credits to support decarbonisation.

Recommendation 8: Monitor and disclose progress in meeting just transition goals. Financial institutions should implement systems to track and report their progress in meeting just transition goals. This entails defining clear metrics and benchmarks to evaluate their impact on social equity, environmental sustainability, and economic inclusivity. Regular assessments should capture not only financial outcomes but also the social and environmental benefits of their initiatives. Engaging communities, clients, and other stakeholders throughout the monitoring and reporting process is crucial. Their insights can help financial institutions refine their strategies, address challenges, and remain responsive to the needs of those most affected by the transition.

Emerging global disclosure frameworks, such as the Taskforce on Inequality and Social-related Financial Disclosures (TISFD), are particularly relevant in this context. The TISFD aims to establish standards for reporting on social and inequality-related impacts, complementing existing frameworks like the Taskforce on Climate-related Financial Disclosures (TCFD) (TISFD, 2024). Financial institutions should actively engage with these initiatives, aligning their practices with global best practices to ensure consistency, comparability, and transparency in their reporting.

Additionally, some countries are beginning to establish their own monitoring criteria for investment projects. For instance, Vietnam's JETP Resource Mobilisation Plan recommends incorporating 'just' criteria into the development and monitoring process of energy-related investments (Socialist Republic of Viet Nam, 2023). These criteria include: (i) general assessment criteria, such as energy access; (ii) environmental criteria, focusing on the impact of projects on biodiversity; (iii) social criteria, addressing effects on employment, communities, indigenous peoples, and cultural heritage; and (iv) just criteria, which examine the effects on livelihoods, vulnerable groups, social protection, and indirect impacts beyond the scope of the projects

(Ibid.). Considering this, the finance sector should begin developing internal expertise and metrics to prepare for emerging local and international disclosure requirements.

5. Conclusion

As the concept of a just transition brings together economic, social, and environmental dimensions of a low-carbon future, it is increasingly becoming a central part of discussions on the green transition in Southeast Asia. Given that fossil fuels have been the primary driver of economic growth in ASEAN countries, understanding the complex relationship between socioeconomic development and climate change in the region has become essential. This requires exploring policies and measures to decouple economic growth from high-emission activities, while ensuring that the benefits of the green transition reach all communities, improving the well-being and livelihoods of every individual in the region.

This paper adopts a comprehensive perspective on the just transition by examining the key socioeconomic implications of Southeast Asia's green transition, categorised into three groups: territories, participants, and sectors. The analysis highlights the need for a transition that is not only environmentally sustainable but also socially equitable and inclusive.

Achieving just transition objectives requires a global shift in financial strategies to support these goals. Therefore, integrating socioeconomic considerations into financial planning is crucial for managing the risks associated with climate change while ensuring that economic growth remains sustainable. The paper outlines the critical roles and responsibilities of financial institutions in addressing social injustices within their lending and investment activities and provides recommendations on how to effectively integrate just transition objectives into financial practices, considering the region's unique needs, current financial frameworks, and established best practices.

In the end, it is important to note that climate finance is not neutral when it comes to social justice implications. While investments in green projects generally have positive environmental and social impacts, they can also inadvertently reinforce or exacerbate existing inequalities. For example, prioritising large-scale energy projects over smaller, community-focused solutions can deepen spatial inequalities, particularly in access to electricity between urban and rural areas (Anantharajah and Setyowati, 2022). As such, financial institutions must be mindful of these potential risks and ensure that their investments are aligned with both environmental sustainability and social equity, thereby creating a truly just transition for all.

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