



# CASE STUDY

## Energy Transition Mechanism

# INDONESIA, PHILIPPINES, VIETNAM, KAZAKHSTAN, PAKISTAN



## 1. PROJECT HIGHLIGHTS

Key Cross-Country Benefit	Key National Benefit
 <p><i>Scalable mechanism accelerating the energy transition by retiring or repurposing coal plants early and boosting renewable energy investments.</i></p>	 <p><i>Supporting affordable and reliable energy for a fast growing demand by implementing just energy transition.</i></p>

## 2. QUICK FACTS

Categories	Project Details
<b>Project Name</b>	Energy Transition Mechanism (ETM)
<b>Project Description</b>	The ETM is a program that aims to accelerate the energy transition by retiring or repurposing coal and other fossil-fuel based power plants early and creating investment opportunities for clean energy. Just transition and safeguards are an integral

### Disclaimer:

We based the case study on the information cited and publicly available as of May 2023. The findings – especially concerning the GPG perspective – have been concluded to our best knowledge. The views expressed are the authors’ assessments and do not necessarily reflect the project stakeholders’ views. Any errors that remain are our responsibility.

	part of the mechanism. The goal is to design a scalable and replicable system. Indonesia, the Philippines, and Vietnam are the first pilot countries in Southeast Asia, and ETM has been continuing to garner interest in Kazakhstan and Pakistan, among others.
<b>Global Public Good (GPG) Theme</b>	Climate & Environment
<b>Sub-Theme</b>	Climate change mitigation
<b>Sector</b>	Energy
<b>Countries of Implementation</b>	Indonesia, Philippines, Vietnam; Kazakhstan, and Pakistan
<b>Region</b>	Asia & Pacific
<b>Income Category</b>	Lower middle income, upper middle income
<b>Implementation Period</b>	2021- ongoing
<b>Project Volume</b>	<p>Ongoing process. So far:</p> <ul style="list-style-type: none"> <li>• In-principle endorsement of \$500 million in highly concessional funding to Indonesia under the Climate Investment Funds Accelerating Coal Transition (CIF ACT) program;</li> <li>• Governments of Japan and Germany provided \$25 million and €30 million contributions respectively to the ETM Partnership Trust Fund (ETMPTF).</li> <li>• ETM Funding Vehicle is being established to blend concessional funding with public and private capital, with a first close target of mobilizing \$1 billion.</li> </ul>
<b>Financial Source</b>	MDB-managed external resources, “Public and private investments—from governments, multilateral banks, private sector investors, philanthropies, and long-term investors”
<b>Instruments</b>	Instrument mix, including policy-based lending, results-based lending, sovereign project lending, non-sovereign project lending, co-financing
<b>MDB Involved</b>	Asian Development Bank
<b>Implementing Partner</b>	Multiple: developing countries (government, private and nongovernment, including CSOs and NGOs), the Climate Investment Fund Accelerated Coal Transition (CIF

	ACT), donor governments for the ETM Partnership Trust Fund, Just Energy Transition Partnership (JETP), think tanks, philanthropies, private enterprises, among others
<b>Link to Detailed Project Information</b>	<a href="#">Energy Transition Mechanism (ETM)   Asian Development Bank (adb.org)</a> , <a href="#">Energy Transition Mechanism Explainer: How ETM Will Support Climate Action in Southeast Asia   Asian Development Bank (adb.org)</a>

## 3. WHY THIS IS A GOOD PRACTICE

This project is a good practice example for implementing the following features that promote GPG provision:

- **Ambition:** The ambition of the project is noteworthy - retiring 50% of the pilot countries coal plants early. Thus, the ETM addresses one of the most relevant challenges in mitigating climate change: Transforming electricity supply of fast growing lower-middle income countries that are close to becoming higher-middle income countries thus having a sharp increase in electricity demand. Moreover, whereas retiring old coal-fired power plants may even be economically viable, these countries typically have very young plants that would otherwise lock the country in a CO<sub>2</sub> intensive energy production for years or even decades. Thus, the mechanism produces enormous positive global externalities due to the amount of emissions reductions potentially in the short- and long-run.
- **Sustainability:** The ETM is socially sustainable as it ensures a just transition along the whole project implementation. The economic sustainability of the project remains to be seen as it crucially depends on contributions and the practical use of financial instruments in the respective countries.
- **Scalability:** A central aim of the ETM is to develop a financing model that could be scaled beyond ADB's financial capability. However, as it still is in its first phases, the practical scalability remains to be seen.
- **Transformability:** The project is transformative as it concerns the energy production which is at the heart of a country's GHG emissions spilling over to all sectors of the economy as well as households. Moreover, the ETM mitigates lock-ins to CO<sub>2</sub>-intensive energy production of some of the fastest growing economies globally, creating a huge benefit for climate change mitigation in general. Lastly, the mechanism also mobilizes the private sector as one financing source among many.

## 4. PROJECT INFORMATION

### 4.1 CHALLENGES OF GPG PROVISION IN THE COUNTRY CONTEXT

The Energy Transition Mechanism (ETM) is **currently piloted in Indonesia, the Philippines, and Vietnam**, three of the four largest economies in Southeast Asia that also produce more than half of their electricity from coal-fired

power plants. The largest economy in Southeast Asia and 10<sup>th</sup> largest in the world (in terms of PPP) is Indonesia.<sup>1</sup> Climate change is likely to adversely affect the country concerning water availability, health and nutrition and urban development. Thus, the country has committed to mitigating climate change aiming to transition to low carbon energy in its country partnership framework (CPF).<sup>2</sup> However, as 63% of Indonesia's electricity comes from coal, the country still has a long way to go. Similarly, the Philippines is one of the most dynamic economies in the region with an average annual growth of 6.4% between 2010 and 2019.<sup>3</sup> Enhancing access to renewable energy and providing electricity service to remaining un-electrified communities is one of the country's development objectives in its CPF.<sup>4</sup> Currently, 57% of the Philippine's power generation stems from coal. Vietnam is the third success story of the region's recent economic development. Between 2001 and 2021 the country's GDP per capita increased 3.6 times<sup>5</sup>: Vietnam aims to grow in a greener, more inclusive way, and has committed to achieving net zero carbon emissions by 2050. Yet, demand for electricity is estimated to increase by 10% a year.<sup>6</sup> Thus, investments in renewable energy sources and promoting energy efficiency are necessary.

These countries and the whole Asia and the Pacific region can only realize their climate goals if they pursue a transition away from coal-based energy in the near term. Retiring 50% of the coal fleet in three of ETM's pilot countries—Indonesia, the Philippines, and Vietnam—could cut 200 million tons of CO<sub>2</sub> annually, the equivalent of taking 61 million cars off the road.<sup>7</sup> **That would make it one of the biggest carbon reduction programs in the world.** Yet, retiring the coal fleet here is particularly challenging, as 9 out of 10 young coal-fired power plants (≤ 20 years) are in Asia. In short-listing plants to be retired or repurposed under the ETM, various factors are assessed including plant age, grid system stability, carbon emissions, and plant owner willingness to pursue accelerated retirement, among others.

## Taking 61 million cars off the road

Retiring 50% of the coal fleet in the pilot countries could cut 200 million tons of CO<sub>2</sub> annually – the equivalent of taking 61 million cars off the road.

---

<sup>1</sup> World Bank (2023): <https://www.worldbank.org/en/country/indonesia/overview>

<sup>2</sup> World Bank Group (2021): <https://openknowledge.worldbank.org/server/api/core/bitstreams/b459c991-a781-5603-b3ca-47a7d784f87b/content>

<sup>3</sup> World Bank (2023): <https://www.worldbank.org/en/country/philippines/overview>

<sup>4</sup> World Bank Group (2023): <https://documents1.worldbank.org/curated/en/891661574699296055/pdf/Philippines-Country-Partnership-Framework-for-the-Period-July-2019-December-2023.pdf>

<sup>5</sup> World Bank (2023): <https://www.worldbank.org/en/country/vietnam/overview>

<sup>6</sup> World Bank Group (2017): <https://documents1.worldbank.org/curated/en/173771496368868576/pdf/111771-PUBLIC-Vietnam-FY18-22-CPF-FINAL.pdf>

<sup>7</sup> Asian Development Bank (2021): <https://www.adb.org/news/features/energy-transition-mechanism-explainer-support-climate-action-southeast-asia>

## 4.2 INTERVENTION

### 4.2.1 Project Design and Agents of Change

The ETM is a **customized, yet scalable, collaborative initiative** developed in partnership with developing member countries **leveraging a market-based approach to accelerate the transition from fossil fuels to clean energy**. Broadly speaking, the mechanism consists of two parts:

- (1) Retiring emission-intensive power assets on an earlier schedule than if they remained in operation until the end of their technical working life.
- (2) Investing in renewable energy plants and enabling infrastructure such as grids and storage to provide clean energy.

Lastly, **just transition is an integral part of the mechanism, too**. ADB aims to ensure that workers and communities that will be affected by retiring or repurposing fossil fuel-based power plants are properly supported. ADB is also looking to conduct socioeconomic impact analysis and stakeholder mapping in ETM countries, including, among others, economic diversification analysis, financial analysis of mitigation actions as well as modelling of upside or positive impacts brought about by the energy transition. These studies are being conducted to underpin the development of robust frameworks for just energy transition, considering direct, indirect and induced impacts brought about by the transition, and these are being discussed with government and other stakeholders.

**Concerning financing the ETM draws from a number of sources, including public and private investments**, such as governments, MDBs, private sector investors, philanthropies, and long-term investors, for example. They provide grants, debts, equities, guarantees and concessional finance to the **ETM funding vehicle (ETM FV)** (see Figure 1). Moreover, the funding vehicle is also financed via the **ETM Partnership Trust Fund** to which mostly governments and philanthropies contribute to. This is expected to be the main fund providing concessional resources to the ETM FV from ADB, while other sources such as the Climate Investment Funds may also contribute to the concessional pool. Another approach that may be applicable in the future could be the integration of carbon financing more broadly. The Funding vehicle comprises two windows the Carbon Reduction Facility and the Clean Energy Facility, as displayed in Figure 1.

**Figure 1: ETM Funding Vehicle Windows**

Carbon Reduction Facility	Clean Energy Facility
<ul style="list-style-type: none"> <li>• Retire or repurpose coal-fired plants on an accelerated schedule</li> <li>• Allowing time to develop reliable, affordable, and clean replacement power</li> <li>• Leverage the power of a blended finance approach</li> </ul>	<ul style="list-style-type: none"> <li>• Catalyse and channel investment in new renewable energy generation, energy storage infrastructure, and requisite grid and storage upgrades</li> </ul>

**Practically, the mechanism is organized in four phases.** In phase zero, a pre-feasibility study is performed. This has been completed in Indonesia, the Philippines, and Vietnam. Afterwards, a feasibility study is performed in phase

one. This includes additional system-level analysis, identification of initial target coal plants, strategic environmental and social assessment (SESA), socioeconomic impacts analyses, and just transition studies. Following or partially overlapping the feasibility study, ETM pilots are undertaken in phase two, to learn from the complex transactions. During this stage, right policy framework will be laid out in the country to start working together with the government and develop a sense that ETM is indeed possible. Therefore, the pilot in this phase is both a learning as well as a trust-building exercise. As a robust policy framework is built that irreversibly commits the country to a decarbonization path, ETM will be scaled up which is the final phase three.

#### 4.2.2 Expected Results

The Asian Development Bank (ADB) currently pilots the ETM aiming **to retire or repurpose 5-7 coal-fired power plants in the concerned countries in the near term**. Repurposed plants are aimed to be converted to renewable energy generation or alternative uses.

Once precedent transactions have been closed, ETM will be scaled through a public-private ETM FV. The aim of the ETM is to retire 50% of the coal fleet in the pilot countries. Thus, up to 200 million tons of CO<sub>2</sub> could be saved annually. This central results indicator is highly relevant from the GPG perspective as it clearly addresses the mitigation of the negative externality itself.

## 5. PROJECT IMPACT

### 5.1 NATIONAL BENEFITS

The ETM benefits the client countries in several ways, including:

- 1) Mitigating climate change:** Although climate change mitigation has significant cross-country spillovers, it's also in the client countries' interest. This is reflected in their respective NDCs and LTS/LT-LEDS as well as the country partnership documents with MDBs. ADB's Country Partnership Strategy for Vietnam, for example, already mentions ETM,<sup>8</sup> while Objective 2 of World Bank's CPF for Indonesia is transitioning to low carbon energy.<sup>9</sup> The same holds true for the Philippines that aim to enhance access to renewable energy<sup>10</sup> and Vietnam that envisages promoting low carbon energy generation, including renewables and energy efficiency, and reducing GHG emissions.

---

<sup>8</sup> Asian Development Bank (2022): <https://www.adb.org/sites/default/files/institutional-document/819731/cps-viet-nam-2023-2026.pdf>

<sup>9</sup> World Bank Group (2021): <https://openknowledge.worldbank.org/server/api/core/bitstreams/b459c991-a781-5603-b3ca-47a7d784f87b/content>

<sup>10</sup> World Bank Group (2018): <https://documents1.worldbank.org/curated/en/891661574699296055/pdf/Philippines-Country-Partnership-Framework-for-the-Period-July-2019-December-2023.pdf>

- 2) **Reducing energy cost:** Speeding up the retirement of coal-fired electricity will increase the demand for clean energy by 2-3 times. Although the initial investment in renewables is high, the operational costs are lower than for fossil fuels leading to a decline in overall energy generation costs in the long run.
- 3) **Driving investment in the energy transition:** ETM will help unlock or “crowd in” investments in cost-effective renewable generation and support and enable technologies such as smart grids, hydrogen, electric vehicles, and other clean technologies. For countries like Indonesia, in which per capita electricity consumption has increased by more than 80% between 2009 and 2019, this is particularly important.<sup>11</sup>
- 4) **Other socio-economic benefits:** As the mechanism aims to retire or repurpose coal-plants and invest in renewable energy sources applying a just transition, several other benefits may arise for a country depending on the context. This may include health benefits from reduced pollution, job creation, and increased education levels. Moreover, the country’s competitiveness may benefit as well if impacted by trade-related measures such as the EU Carbon Border Adjustment Mechanism (CBAM). Another potentially beneficial aspect is increased economic diversification as new sectors and industries may be created leading to greater economic resilience.

## 5.2 CROSS-COUNTRY BENEFITS

The ETM has large cross-country benefits as it is a transformational and ambitious approach to accelerate the clean energy transition in an important region. As mentioned before, retiring 50% of the coal fleet in the pilot countries could potentially cut 200 million tons of CO<sub>2</sub> annually. **Assuming an estimate of the social cost of carbon (SCC) of US\$307 per tonne of CO<sub>2</sub> the project would yield a yearly global benefit of US\$ 61.4 billion.**

Besides the ETM’s direct contributions to climate change mitigation, it also provides a **scalable and replicable model** that can be applied in different regions and contexts as well. Thus, other countries benefit from its design and lessons learned, potentially leading to an even greater reduction in global emissions. For instance, a regional platform has been established, so that resources can be pooled.

Other GPGs that may be affected are free and fair international trade systems as well as global public health. Promoting the energy transition helps to keep up free international trade even if trade policies like the CBAM are implemented. Global public health may be supported as retiring coal-fired power plants reduces pollution – a problem particularly severe in Asia.

---

<sup>11</sup> World Bank (2023): <https://data.worldbank.org/indicator/EG.USE.ELEC.KH.PC?end=2019&locations=ID&start=1971&view=chart>

## 6. LESSONS FOR FUTURE GPG PROVISION

### 6.1 SUCCESS FACTORS

Since the ETM is still in its first phases, success factors and lessons learned concerning the practical implementation remain to be seen. However, a few key success factors can be identified so far. One is the **countries own interest in being part of the ETM**. Although these countries are interested in climate change mitigation as well, **ensuring affordable and reliable energy access** as well as a just transition seems central to them. Here, the ETM subsidises where the private sector reaches its limits and promotes necessary framework conditions. Moreover, for some countries the program may also help to address concerns relating trade measures like the **EU Carbon Border Adjust Mechanism (CBAM)**. Vietnam, for instance, has benefitted from the recent supply chain diversification and worries are growing that not having access to clean energy may soon decrease the country's competitiveness.

Another key success factor identified is building **country ownership**. The ETM establishes this by designing the mechanism in partnership with the governments, in line with their development and decarbonization roadmaps, in a way that is perceived as fair by the countries. Aspects that may contribute to the perception is the comparatively high degree of national benefits in terms of energy security and affordability as well as the just transition part. Or as Sri Mulyani Indrawati, the Minister of Finance in Indonesia puts it: "ETM is an ambitious plan that will upgrade Indonesia's energy infrastructure and accelerate the clean energy transition toward net-zero emissions in a just and affordable manner".<sup>12</sup> In summary, countries appreciate that the ETM provides a way for a fair, just, and managed transition.

 *ETM is an ambitious plan that will upgrade Indonesia's energy infrastructure and accelerate the clean energy transition toward net-zero emissions in a just and affordable manner (Sri Mulyani Indrawati, Minister of Finance, Indonesia)* 

Additionally, the ETM partnership fund has the potential to **reduce the variety and fragmentation of the large number of existing trust funds that is often criticised**. Lastly, due to its size, contributing countries and parties can be sure that funding will be used efficiently maximizing its effectiveness.

Last is the availability of concessional funds, which is critical in mobilizing large amounts of commercial financing, creating a pool of low-cost capital to retire or repurpose coal plants. The ETM Partnership Trust Fund has been attracting contributions from developed country governments to fund initial ETM activities and deals but more would be required to leverage private and public finance in order to scale up and replicate ETM across Asia.

### 6.2 HOW TO REPLICATE THE GOOD PRACTICE

Replicability plays a large role in the design of ETM. However, the practical replicability remains to be seen. Yet, countries beyond Southeast Asia such as Kazakhstan and Pakistan have expressed interest already.

<sup>12</sup> Asian Development Bank (2021): <https://www.adb.org/news/adb-indonesia-philippines-launch-partnership-set-energy-transition-mechanism>



The lessons learned so far can be summarized:

- **Climate action in middle income countries is crucial as they constitute a significant share of global emissions.** Moreover, many middle-income countries are growing quickly and so is their energy demand. As investments in energy sources are long-term, these countries' energy mix will be decisive for mitigating climate change. Thus, projects on the energy sector of middle-income countries are essential.
- The ETM shows that action can be incentivized by designing an attractive and fair mechanism that creates national as well as cross-country benefits. A central aspect is providing an option **for reliable and affordable electricity in the long-term.** This is a particularly strong incentive for middle-income countries due to their fast-growing energy demand. Therefore, it would not work to just shut down the coal plants, but it is necessary to ensure power supply (by investments in green energy).
- The carbon reduction facility of ETM – the retirement of emissions-intensive power plants – remains highly reliant on the availability of flexible, concessional funds. The level of subsidy is directly correlated to the ultimate reduction in the target CFPP operational life. Thus, the success and scalability of the ETM is exposed to donors' willingness to contribute. The more concessional funding they can bring in, the more they can accelerate the progress.