



Building union power in the clean energy transition

South and South East Asia

Policy Brief: Union Aid Abroad - APHEDA

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Goal

Growing energy demand is satisfied with renewable energy, which along with low carbon works, creates decent work with trade union rights and provides affordable electricity for all.

The Problem

- The current 1°C of human created global heating is diminishing workers' livelihoods and eroding basic human rights in South and South East Asia. These are among the world's most vulnerable regions to climate change, and the workforce is increasingly exposed to extreme climate risks. The impacts are greater for vulnerable workers, such as the 70% in the informal economies and women workers. Increases in extreme heat, are reducing available work hours and directly diminishing incomes for workers. For example, Cambodian workers are set to lose 8% of productive days by 2030, with 769,000 jobs lost.¹
- Limiting global temperature rise to 1.5°C, as per the ambition of the Paris Climate Change Agreement (PA), will prevent exposing this large workforce to existential climate risks within the next decades.
- To achieve this, the Intergovernmental Panel on Climate Change shows that a rapid decarbonisation of the world's energy sector is required by 2050.² Coal use for electricity, as the most polluting source, must be dramatically reduced to 70% by 2030 and completely phased out by 2050.
- These regions are experiencing rapidly increasing electricity demands as economies develop and populations grow, with countries turning to polluting fossil fuels to meet this demand.³ South and South East Asia are responsible for 50% of the world's planned coal growth (388 GW operating and under construction and 176 GW planned).⁴ This is propelled by an increase in seaborne thermal coal trade, with Indonesia and Australia the largest exporters. Such a large and new addition of carbon pollution provides a significant threat to the ambition of the PA to limit global heating to safe levels.
- Neo-liberal policy is increasingly imposed on electricity sectors across these regions. Free trade paradigms, along with multilateral finance, actively impose for-profit motives through privatisation, deregulation and liberalisation. This is increasing the price of electricity for households and industry as well as eroding trade union power and decent work within the sector.
- New renewable energy, while proportionally very small to fossil fuel generation, is rapidly growing and there are 3.5 million low carbon jobs across these regions.⁵ These new *Green Jobs*, however, are not being found to be good jobs with trade union rights.

The Context

¹ *Working on a warmer planet: The impact of heat stress on labour productivity and decent work* (International Labour Organisation, 2019): https://www.ilo.org/global/publications/books/WCMS_711919/lang--n/index.htm

² *Global Warming of 1.5°C* (Intergovernmental Panel Of Climate Change, 2018) : <https://www.ipcc.ch/sr15/>

³ Southeast Asia's energy demand has grown by 50% from the year 2000 to 2013 and is predicted to grow again by 80% by 2040. *Southeast Asia Energy Outlook*, (International Energy Agency, 2017): <https://www.iea.org/southeastasia/>

⁴ *Decarbonising South and South East Asia* (Climate Analytics, 2019): <https://climateanalytics.org/media/decarbonisingasia2019-fullreport-climateanalytics.pdf>

⁵ *Just Transition, Decent Work and Climate Resilience* (International Labour Organisation, 2017) : https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_589098.pdf



- For developing Asian economies, *Just Transition* is best applied through developing new renewable energy and low carbon industries that ensure decent work and trade union rights, instead of building new fossil fuel generation plants. This is a very different context to *Just Transition* for developed economies, with high historic emissions, where energy demand is declining, and the focus is on closing existing polluting generation and transitioning workers.⁶
- Despite the planned exponential growth in fossil fuels, these regions have good new renewable energy potential which can satisfy growing energy demand.⁷ Even before factoring in the substantial externalities of coal generation; the price of new renewable energy is now competitive. If countries implement policies consistent with the PA, the ILO predicts that 52.5 million *Green Jobs* could be created by 2030.⁸
- Unions represent more than 65 million workers across these regions and are an important progressive force to realise the political and economic transformation that decarbonisation entails.

Unions hold a direct stake as:

- a. Workers in the electricity sector are heavily impacted by large scale structural adjustments occurring. This can include mass job losses, contractualisation, and reductions in pay and conditions.
- b. All workers are impacted by global heating. These impacts are especially severe and pose an increasingly existential threat for vulnerable workers across these regions including women, and those in the informal economies. Holding the temperature rise to 1.5 °C will make a tangible difference to these workers and provide an opportunity to better recognise existing low carbon work.
- c. Electricity is an essential service. It has a direct impact on workers' household budgets, as well as industry policy at large.
- d. Countries adopting PA consistent policy will further grow *Green Jobs* which are globally concentrated in these regions. Trade unions need to ensure new *Green Jobs* are unionised as they are currently un-unionised with poor wages and conditions.

Opportunities for Trade Unions to build power in the clean energy transition:

1. Public ownership of renewable energy and low carbon work

Private models of energy investment are not decarbonising energy systems in-line with the PA, nor delivering a *Just Transition* to decent work with trade union rights in the sector.⁹ Governments can directly invest in new renewable energy generation and low carbon works programs, which ensures a rapid and orderly transition, decent work and trade union rights and equitable provision of electricity as an essential service. All countries have submitted carbon reduction plans, National Determined Contributions (NDC), through the PA. These are currently inconsistent and conflict with the planned fossil fuel expansion in respective countries across the South and South East Asia regions.¹⁰ As NDCs are revised for 2020, publicly owned renewable energy and low carbon works programs can be incorporated. International climate finance committed under the agreement should be leveraged for this purpose.

Potential actions:

- 1.1. Campaign for government/s to include publicly owned renewable energy and low carbon public works programs, which includes decent work and trade union rights provision, in climate mitigation plans and revised NDC.

⁶ *Just Transition* is enshrined in the preamble to the *Paris Climate Change Agreement* (United Nations Framework Convention on Climate change, 2015): http://unfccc.int/paris_agreement/items/9485.php

⁷ (Climate Analytics, 2019)

⁸ (International Labour Organisation, 2017)

⁹ *Preparing a Public Pathway: Confronting the Investment Crisis in Renewable Energy* (Trade Unions for Energy Democracy, 2017): <http://unionsforenergydemocracy.org/resources/tued-publications/>

¹⁰ See Appendix 1 for overview of countries targets, projections and Paris Agreement Benchmarks.



- 1.2. Lobby for international climate finance to support public ownership of renewable energy and low carbon works programs, which includes decent work and trade union rights provision.

2. A public-goods approach for workers to adapt to global heating

Vulnerable workers, whose incomes and rights are diminished directly by climate impacts, should be provided with enhanced social protection, quality public services and access to decent work with trade union rights. Governments should directly invest in adaptation through public programs and access international climate finance for this purpose. Governments should also directly invest in the workforce dealing with frontline impacts such as emergency service and health workers.

Potential Actions:

- 2.1. Organise workers directly impacted by climate change and identify climate adaptation opportunities to strengthen worker demands.
 - 2.2. Campaign for quality public services to be central to government/s adaptation plans, including emergency service workers and other frontline responder workforces.
 - 2.3. Campaign for low carbon public works programs within government climate adaptation plans, which create decent work with trade union rights for impacted workers.
3. Governments to work with unions to plan for economy wide decarbonisation which ensures decent work and trade union rights

Unions in collaboration with governments can ensure a planned transition to decarbonised economies which ensures decent work and trade union rights. Effective models differ on a country level but can include social dialogue and tripartism, active labour market policies, skills development, social protection, rights and occupational health and safety, and macroeconomic, sectoral and enterprise policies.

Potential actions:

- 3.1. Dialogue with government and / or employers regarding the workforce impacts from decarbonisation and ensure adequate transition plans are created.
 - 3.2. Campaign for government/s to implement sector wide transition plans, which could include establishing authorities with direct union oversight, to oversee and plan for decarbonisation to ensure impacted workers have an orderly transition, with wages and conditions protected, as well as ensuring decent work with trade union rights in the new low carbon sectors.
4. Worker ownership of renewable energy

Renewable energy technology provides new de-centralised worker ownership opportunities. Unions can build power through harnessing these opportunities, through collective models such as cooperatives that provide affordable electricity to workers and enhance good trade union jobs.

Potential actions:

- 4.1. Harness collective ownership of renewable energy within union organising plans, such as the creation of renewable energy consumer cooperatives to provide affordable and clean electricity to households.
- 4.2. Explore opportunities for direct worker ownership within new low carbon sectors, such as energy efficiency worker cooperatives.

For further suggestions, comment and discussion, please contact Tom Reddington, Climate justice and energy democracy organiser, Union Aid Abroad-APHEDA: treddington@apheda.org.au



Case Studies: Energy Democracy, Asia – Pacific

Unions also have an opportunity to build worker power in the clean energy transition through orienting demands for worker ownership of the low-carbon solutions. If the planet is to reduce its emissions in line with the science of 1.5°C, even conservative bodies such as the International Energy Agency infer the need for radical shift in the political economy to achieve this within the next decade.¹¹ Trade Unions for Energy Democracy (TUED) have documented how the dominant neoliberal policy approach has failed to deliver the scale of clean energy transition within the timeframe that the science outlines.¹² While new forms of renewable energy have grown in the overall energy mix, they are still a very small component, with fossil fuels including coal, being responsible for the vast majority of generation. Unions are well placed to organise and build power through offering alternative public and social ownership models in order to enable this transition and ensure progressive outcomes for workers and communities. TUED is a growing network of 66 unions across 20 countries which are committed to this agenda.

I. A public goods approach

Retaining and reasserting public ownership of energy systems has been a focus of unions across the region over many decades. TUED has demonstrated that the science of climate change and the need to rapidly decarbonise energy systems can add further impetus to this.¹³ Public ownership can position energy as an essential service which is rapidly decarbonised, affordable for households, while ensuring decent work and respecting trade union rights. Governments can borrow capital at lower rates than the private sector and are well positioned to reassert and take back ownership of energy systems to ensure clean energy transition.¹⁴ Globally it is estimated that USD90 trillion is required by 2030 to build infrastructure in line with the Paris Agreement. The World Bank and OECD have attempted to dismiss the role of public finance, stating only USD2 trillion is available therefore private capital is key. This claim, however, is misleading as it has been demonstrated that up to USD 73.9 trillion of public finance is available, and therefore it should play a leading role in climate mitigation efforts.¹⁵

In Indonesia, unions within the state-owned utility PLN have been involved in a decade's long struggle to protect public ownership to ensure affordable electricity, decent work and trade union rights. In 2004, mass mobilisations and legal challenges saw the 2002 electricity law enabling privatisation in the sector to be overturned. Private interests, however, did not give up and in 2009 PLN was unbundled. This resulted in fragmentation of union power, erosion of conditions and privatisation "through the back door" with new power generation being commissioned through private Independent Power Producers (IPPs). In 2016, the unions again asserted public ownership through a successful constitutional court ruling that found sectors such as electricity should be retained in public control. PLN currently employs 45,000 permanent and over 80,000 outsourced workers. Along with its subsidiaries, it is responsible for 76% of the country's installed capacity, with the remaining 24% delivered through private IPPs. Public ownership is set to be further eroded, with new energy demand being satisfied primarily through the IPPs model. This is true for the 27 GW of new coal generation; however PLN also continues to invest in new coal directly and its existing coal

¹¹ For example see. *Deep energy transformation needed by 2050 to limit rise in global temperature*, (International Energy Agency, 2017) : <https://www.iea.org/newsroom/news/2017/march/deep-energy-transformation-needed-by-2050-to-limit-rise-in-global-temperature.html>

¹² Trade Unions for Energy Democracy : <http://unionsforenergydemocracy.org/resources/tued-publications/>

¹³ Trade Unions for Energy Democracy : <http://unionsforenergydemocracy.org/resources/tued-publications/>

¹⁴ for example, *Public ownership of the UK energy system – benefits, costs and processes*, (Public Sector International Research Unit, 2016): <https://www.psir.org/sites/default/files/2016-04-E-UK-public.pdf>

¹⁵ *Public Banking on the Future We Want* (in Public Finance for the Future We Want, Trans National Institute, 2019) : <https://www.tni.org/en/publicfinance>

generation fleet leaves it highly exposed. Such new coal additions contradict with the NDC and the re-elected Joko Widodo's administration has made some signals around a move away from coal. It is possible to envisage a further wave of privatisation through renewable energy supported through the IPP model. As an alternative, while outside of the current campaign scope, it is possible to position a reinvigorated publicly owned PLN, which drives rapid clean energy transition across the archipelago, ensuring affordable electricity, just transitions for workers and decent work with strong trade union rights.

Parallels can also be identified in Vietnam, another developing economy with a large pipeline of new coal generation. In Vietnam, neoliberal "reforms" have been much slower to be adopted in a country where the energy sector has been state-owned with one of the lowest electricity prices and better access rates in Asia. It has been closely tied to its inclusive development success. The 2004 Electricity Act, however, signalled a shift, and although there has been some trepidation and delay, equitization of the state-owned enterprises is occurring and there is an ambition to introduce competitive retail markets within the next decade. While this private investment model is already increasing power prices, there are serious concerns around meeting growing energy demand. The Ministry of Industry and Trade has documented a number of obstacles, including local opposition to the 33GW of new coal power plants, and an inability of projects to attract private capital.¹⁶ There is concern around large scale job losses and the ongoing role of the trade union in the equitized state owned enterprises. The new renewable sector, which aims to bring on line 20 GW by 2030, is delivered using IPPs. Initial union focused investigations reveal poor job quality and a limited role for the trade union in the new private renewables sector.¹⁷

Emerging examples of unions winning the fight for publicly owned renewable energy can be found across the region. Nepal is an energy deficit country, reliant on electricity imports from India and 25% of the population do not have access to electricity. Developing the country's hydro-electric resources provides an opportunity to combat these challenges. Of the 42 GW hydro-electric potential, less than 1 GW has been harnessed. Most new projects are planned to be developed using a Public-Private Partnership (PPP) model. Unions are working with the progressive government to investigate alternatives. The government granted a feasibility permit for the development of the Upper Tamakoshi Hydroelectric Project (.5 GW) using a Public- Public Partnership approach.¹⁸ This model looks to leverage capital across government departments and through pension funds. The Centre for Labour and Social Studies is currently working with unions to research the effectiveness of this alternative model and ability for it to be up-scaled. In Bangladesh, the publicly owned Infrastructure Development Company Limited provided the capital to install more than three million solar panels in rural areas between 2003 and 2014. This brought electricity to the homes of thirteen million people.¹⁹ It did so by providing capital to private partner organizations (NGOs and local businesses that install solar systems) with the help of US\$750 million in grants and soft loans from multilateral development banks and agencies. While the creation of quality jobs and role of unions is not clear, this example helps illustrate the scope of what public finance can enable. In Australia, unions have campaigned for many decades to protect public ownership in the energy sector.²⁰ In the

¹⁶ *Progress of power projects in the revised power development plan* (Ministry of Industry and Trade [Vietnam], 2019).

¹⁷ For example, in Vietnam see: *Just Energy Transition: Opportunities and Challenges for Vietnam* (Green ID, 2019): <http://en.greenidvietnam.org.vn/view-document/5d12d3776dae2a6727172aba>

¹⁸ (Upper Tamakoshi Hydropower Limited): <http://utkhpl.org.np/information/2>

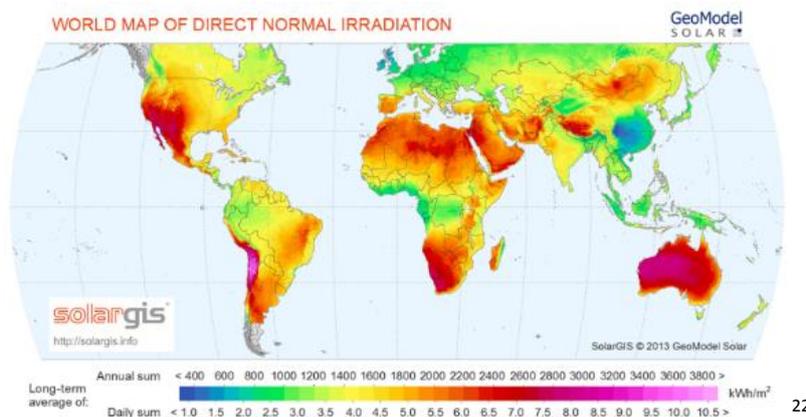
¹⁹ (Trans National Institute, 2019)

²⁰ For example see *The Costs of Market Experiments: Electricity Consumers Pay the Price for Competition, Privatisation, Corporatisation and Marketization* (The Australian Institute, 2019)

Australian state of Queensland, the Electrical Trade Union along with others pushed the state government to commit to 1 GW of new renewable energy to be delivered through public ownership. The state-owned “Clean Co” has been established through merging current state owned hydro assets into this new publicly owned company. Wages and conditions in the new renewables projects will be carried over from the existing agreements, with a ‘no job loss’ guarantee.

Finally, given the increasing fossil fuel flows across the region and its global significance, an internationalist approach is necessary. In some situations, market substitution may be possible. The LNG export sector provides an example of this. With research and development in exporter countries such as Australia where there is large renewable energy potential, LNG could be substituted for clean hydrogen, especially given the current East Asian markets’ demand for increased low-carbon energy sources.²¹ In other areas, however, market substitution may not be so easy but the public benefit is extremely significant. For example, Australia has some of the best solar generation potential globally and this is next to Indonesia, which has greatly expanding energy needs primarily being satisfied through new coal generation. Through regional union planning, unions furthering an internationalist approach can ensure:

1. Carbon pollution is reduced in line with the science of avoiding catastrophic global warming scenarios.
2. Workers and communities’ benefit through decent work, trade union rights and energy equality.



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II. Social Ownership

Renewable energy technology provides new de-centralised ownership opportunities. Unions can build power through harnessing these opportunities through collective models that provide affordable electricity to workers and enhance good trade union jobs.

SENTRO in the Philippines has unions across the 121 electric cooperatives (co-ops) in the country, and recently formed a new federation, POWER, to focus on advancing energy democracy. The electricity co-ops are the last remaining non-privatised part of the energy “market” in the country. The market is dominated by oligarchs who glean large profits from selling risk-free imported coal power, creating one of the highest prices in Asia, and making it unaffordable for many households in

<http://www.tai.org.au/sites/default/files/P470%20Electricity%20Consumers%20Pay%20the%20Price%20%5BWEB%5D.pdf>

Also see *Electricity Privatisation in Australia: A record of failure* (Electrical Trades Union, 2014):

https://www.etuvic.com.au/Documents/Campaigns/Electricity_Privatisation_Report.pdf

²¹ (Australian Labour Party, 2019)

²² Note how Australia has one of the best solar resources in the Asia – Pacific region:

<https://solargis.com/maps-and-gis-data/download/world>



the country.²³ The electricity co-ops are responsible for distribution of electricity to around 70% of households. Recently they have been under pressure by vested interests to become privatised and a number has de-mutualised. For workers in SENTRO's unions, this has resulted in large job losses and reduced pay and conditions. As a response, and also noting the increasing reliance of imported expensive coal power, a campaign has been initiated to re-invigorate the business model of the electric co-ops to protect its social ownership through embracing renewable energy generation. A pre-feasibility study demonstrated good potential for the 121 electric co-ops to add solar, wind and micro-hydro generation. With necessary access to capital, this could allow the co-ops to have greater independence from expensive, coal dominated grid power, and in turn, provide more affordable electricity to households. The union is preparing to pilot this model with the Masbate Island Electric Co-op, following the completion of a full feasibility study later in 2019.

The Self Employed Women's Association (SEWA) is a trade union with 1.5 million poor, self-employed women workers in the informal economy in India. It provides another example of how unions can build power through organising to collectively own renewable energy. SEWA's membership is on the frontline of climate change impact. These include extreme weather events, increased food insecurity and erosion of livelihoods. In 2008, SEWA learned that household energy issues were both at the core of its members' struggles and also presented an immense opportunity to increase productivity and improve health. This was brought on by the global financial crisis and long running pressures on resources (the costs of firewood, electricity, diesel and kerosene were rising). SEWA members were spending up to 40% of their time and up to 25% of their incomes to access energy. Simultaneously, SEWA found that the gains of clean energy productivity are: improved health, decreased domestic burden and improved working conditions. As a consequence, SEWA launched its *Hariyali* or 'Green Livelihood' program in 2009. SEWA has piloted a number of collective ownership models for renewable energy lighting, cooking, water pumps and household electricity. It is currently looking at opportunities to upscale this, using collective ownership models, for the benefit of all of its members.

A similar approach has been taken by unions in Australia, who have formed a worker-owned electricity retailer.²⁴ "Cooperative Power Australia", was initiated by the National Union of Workers whose low paid and precarious membership reported that rising energy costs were having a large impact on household budgets. The co-op looks to cut out the large profit margins in the private electricity retail market and redistribute them to union members, while also supporting community renewable energy. A number of environment and community energy groups have also joined the co-op. Currently the co-op has access to over 100,000 union members and working with community energy members and government to provide an affordable, clean electricity offer. Consultation with the membership has revealed that along with affordable electricity, members want to advance collective ownership structures and support meaningful renewable energy transition.

²³ *The Politics of Power: The Political Economy of Rent-Seeking in Electric Utilities in the Philippines*, (World Bank, 2011) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1872312WPS4805

²⁴ (Cooperative Power Australia): <https://www.cooperativepower.org.au/>

Appendices

1. Source: *Decarbonising South and South East Asia* (Climate Analytics, 2019):

<https://climateanalytics.org/publications/2019/decarbonising-south-and-south-east-asia/>

Country	Targets, projections and Paris Agreement benchmarks
Vietnam	<ul style="list-style-type: none"> • Vietnam’s NDC commits the country to an 8% reduction in emissions compared with Business-as-Usual emissions by 2030. This can rise to 25% conditional upon international support. • The NDC target can be reached through a scenario achieving the RE target for 2030: 30% RE share in power generation including large hydro, with wind and solar together reaching 6.8% of power generation in 2030, and 28% share in primary energy supply. An IRENA remap analysis shows the potential to reach a higher share of 35% renewables in electricity generation by 2025. A Paris Agreement consistent scenario for South East Asia requires reaching a 50% share of decarbonised electricity generation by 2030. • Other regional modelling studies show that a faster decarbonisation is possible, with an increase of renewable electricity to up to 100% by 2050, and energy efficiency and sector coupling allowing for the overall system transformation and decarbonisation necessary for progress towards meeting the long-term temperature goal of the Paris Agreement. • In contrast, currently planned coal fleet expansions would lead to a dramatic increase in emissions, with committed emissions from coal-fired power plants likely to peak only by 2040, with an eventual phase-out only by 2070. This far exceeds the phase-out date derived from regional benchmarks in a Paris Agreement consistent pathway, which sees coal-fired power being phased out in the ASEAN region by 2040. • There is scope for enhancing the NDC, accelerating renewable energy update, and developing a long-term strategy towards 100% renewable energy power generation and electrification of end use sectors, which would also align with the aspirational goal of supplying 100% of its power with renewable energy, as part of a commitment by the Climate Vulnerable Forum, of which Vietnam is a member.
Indonesia	<ul style="list-style-type: none"> • In its NDC Indonesia declared an unconditional commitment of 29% emissions reduction compared with business-as-usual. Conditional on international support, it also has the goal of reducing emissions by 41% compared with BAU. • Indonesia aims at increasing the share of “new and renewable” energy in primary energy supply to 23% in 2025 and 31% by 2050. According to the IRENA Remap scenario, the 2050 renewable energy goal can already be achieved 20 years earlier. • The 2025 target is unlikely to be achieved with current policies, and is not in line with the Paris Agreement compatible scenario results for the ASEAN region, according to which a 33% share of decarbonised electricity generation in 2025, and 51% in 2030 would need to be achieved. • Electricity demand is increasing more slowly than expected under national energy plans, leading to a mismatch between planned capacity additions and likely future electricity demand. • Coal is still considered as a cheap power source in Indonesia. It is an abundant domestic natural resource, favoured by large government subsidies, and without a carbon price that reflects the high environmental and social externalities. Consequently, coal is the main energy source for power generation (about 60% in 2018) and, under current plans, it will continue to expand substantially. • The planned new coal power accounts for over 7% of the global coal fleet expansion plans. It by far exceeds the generation benchmarks under a Paris Agreement compatible scenario, which established a phase-out of coal-fired power by 2040 for

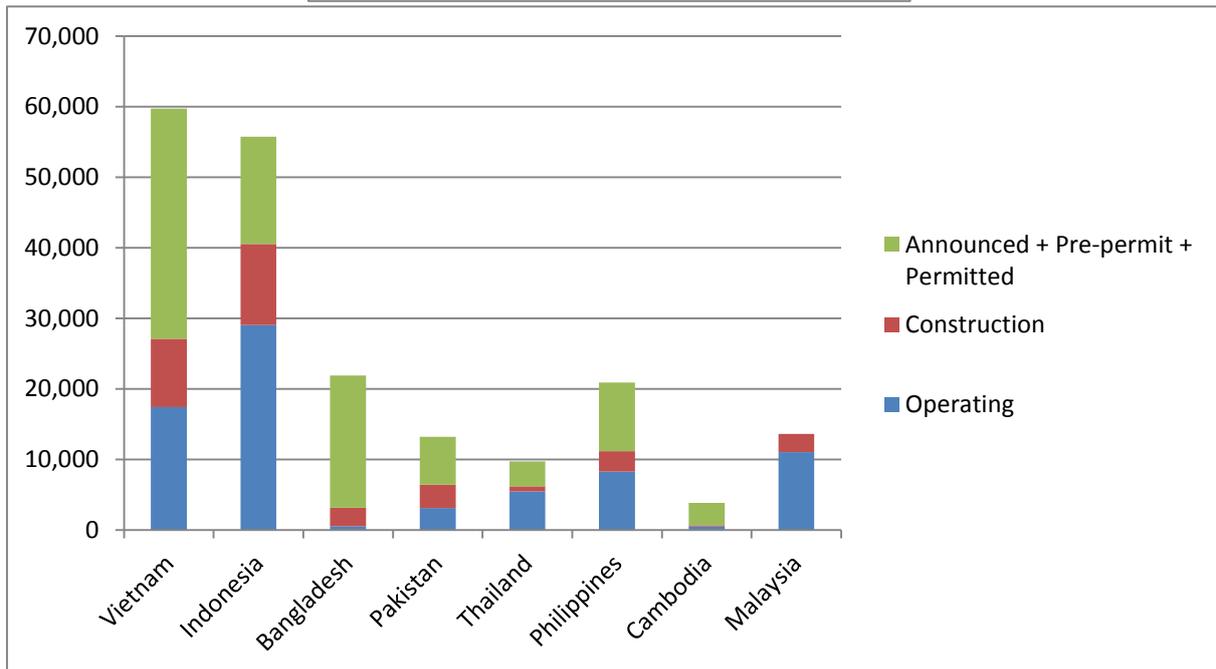
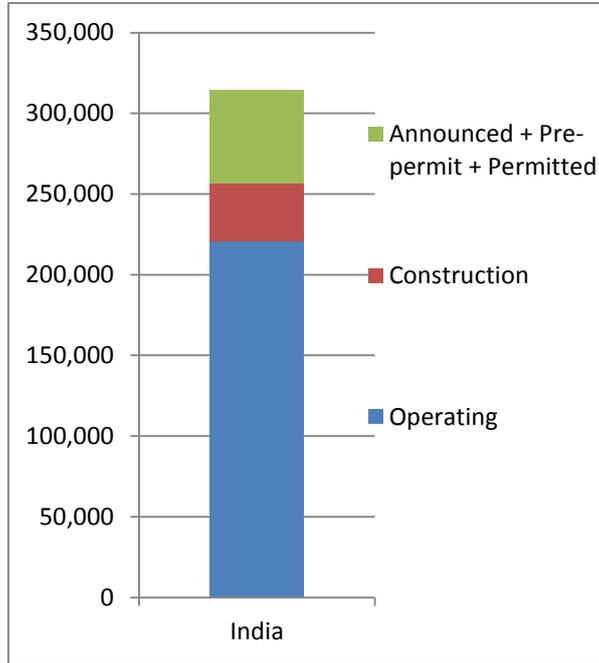
	<p>the ASEAN region.</p> <ul style="list-style-type: none"> • Under current plans, the committed emissions from coal-fired power plants would peak only around 2035, with an eventual phase-out only by 2069. • Demand overestimates in national plans along with rapidly decreasing cost of renewable energy result in a high risk of overcapacity for coal power generation under current expansion plans. This is likely to lead to low utilisation rates, and a high risk of stranded assets, in addition to enormous climate, health, and social and economic externalities. • Several studies show that a 100% renewable energy scenario by 2050 is possible considering the renewable energy potentials of Indonesia. • There is thus significant scope for enhanced NDC ambition and developing an ambitious long-term strategy towards 100% renewable energy power generation and electrification of end-use sectors to align Indonesia’s energy future with the goals of the Paris Agreement and reap benefits for sustainable development.
Philippines	<ul style="list-style-type: none"> • The Philippines’ NDC commits the country to a 70% reduction in emissions below Business-as-Usual emissions by 2030, conditional on international support. This commitment is rated 2°C C compatible by the Climate Action Tracker. • Neither implemented nor planned policies are currently sufficient to achieve the Philippines NDC target (CAT 2018) but full implementation of the planned “National Renewable Energy Program (NREP)” and “The Energy Efficiency and Conservation Roadmap” would lower emissions by 11% compared with current policy projections. • The NDC target is unlikely to be met if all the announced coal-fired power plant capacity (more than 10 GW announced to be constructed by 2025) were to be built. • The massive expansion of coal-fired power plants means that emissions from coal fired power plants are likely to peak only by 2035, with an eventual phase-out only by 2062. This far exceeds the phase-out date derived from regional benchmarks for Paris Agreement compatible scenarios, which sees coal-fired power being phased out in the ASEAN region by 2040. • A Paris Agreement consistent pathway for the ASEAN region shows a share of 51% of decarbonised electricity generation in 2030 and full decarbonisation by 2050. Based on this and other scenario analysis, there is scope for developing a long-term strategy towards 100% renewable energy power generation and electrification of end use sectors, which would also align with the aspirational goal of supplying 100% of its power with renewable energy, as part of a commitment by the Climate Vulnerable Forum countries.
India	<ul style="list-style-type: none"> • India’s NDC target of non-fossil fuel generation of 40% by 2030, which includes nuclear generation, is rated 2°C compatible by the Climate Action Tracker. However, the non-fossil power generation target falls short of the 51% decarbonised/renewable energy generation benchmark consistent with the Paris Agreement, derived based on the IEA B2DS scenario. • The National Electricity plan (NEP) projects that India’s non-fossil fuel-based capacity will significantly exceed the 40% NDCs goal for 2030. However, there is uncertainty as to whether all renewables projects in the pipeline will be completed on time and integrated into the grid. Based on current policies, the Climate Action Tracker projects the share of non-fossil power generation capacity to reach 60-64% in 2030, corresponding to a 40-44% share of electricity generation, which still falls short of the Paris Agreement benchmark of 51% in 2030. • The potential generation from coal in India far exceeds the benchmarks under a Paris Agreement compatible scenario, which establishes a phase-out of coal-fired power by 2040. There is a high risk of stranded assets unless current expansion plans are revised.

	<ul style="list-style-type: none"> • Given the dramatic decrease in the costs of renewables, several studies show that it is technologically and economically feasible for India to achieve 100% renewable electricity generation by 2050. • There is significant scope for upgrading the NDC and developing an ambitious long-term strategy towards 100% renewable energy power generation and electrification of end-use sectors, to align India’s energy future with the goals of the Paris Agreement and reap benefits for sustainable development.
Bangladesh	<ul style="list-style-type: none"> • Bangladesh’s NDC commits the country to an unconditional emissions reduction of 5% below Business-as-Usual emissions by 2030. This can rise to 15%, conditional on international support. • Current plans to develop domestic coal production, importing LNG to meet domestic gas demands and expansion of coal-fired power projected to reach a share of 35% by 2041) are not in line with the need to decarbonise the energy system and phase out coal for power generation by 2040, as a Paris Agreement compatible pathway for South Asia shows. • There is significant scope to develop an ambitious long-term strategy towards 100% renewable energy power generation and electrification of end-use sectors, to align Bangladesh’s energy future with the goals of the Paris Agreement and reap benefits for sustainable development, as well as with the goal of the Climate Vulnerable Forum (CVF) countries to achieve 100% renewable energy generation as soon as possible
Pakistan	<ul style="list-style-type: none"> • Pakistan’s NDC commits the country to a 20% reduction in emissions below Business-as-Usual by 2030. • Current plans to develop domestic coal production and expansion of coal-fired power are not in line with the need to decarbonise the energy system and phase out coal for power generation by 2040, as a Paris Agreement compatible pathway for South Asia shows. • There is significant scope to develop an ambitious long-term strategy towards 100% renewable energy power generation and electrification of end use sectors, to align Pakistan’s energy future with the goals of the Paris Agreement and reap benefits for sustainable development.
Thailand	<ul style="list-style-type: none"> • In its NDC Thailand commits to a 20% reduction in GHG emissions compared with Business-as-Usual emissions by 2030. This can rise to 25%, conditional on international support. • Thailand’s Ministry of Energy’s Alternative Energy Development Plan (AEDP2015) aims to increase the share of renewables in final energy consumption to 30% by 2036, and in the electricity sector to between 15-20% in 2036. • The renewables target for the electricity sector is expected to be achieved earlier; it has been increased 21 GW in 2037. • A Paris Agreement consistent pathway shows a share of 50% of decarbonised electricity by 2030 and full decarbonisation by 2050 for the ASEAN region. Other scenarios show that a share of more than 60% can be achieved by 2030 for Thailand, including a role in decarbonising end use sectors. • The planned coal fleet expansions would add substantially to Thailand’s emissions profile and delay the peaking and phase-out of emissions by more than 10 years. If all the plants in the pipeline were built, the committed emissions from coal-fired power plants would likely peak between 2021 and 2032, with an eventual phase-out only by 2069. This far exceeds the phase-out date derived from regional benchmarks, which sees coal-fired power being phased out in the ASEAN region by 2040.



2. Source: (Global Coal Plant Tracker, 2019): https://docs.google.com/spreadsheets/d/1W-gobEQugqTR_PP0iczJCrdar-vYkJ0DzztSsCJXuKw/edit#gid=0

Coal generation Mega Watts



3. Source: South East Asia Energy Outlook (International Energy Agency, 2015):
https://www.iea.org/publications/freepublications/publication/WEO2015_SouthEastAsia.pdf

Table 2.2 > Electricity generation by fuel in Southeast Asia (TWh)

	1990	2013	2020	2040	Shares		CAAGR*
					2013	2040	2013-2040
Fossil fuels	120	648	925	1 699	82%	77%	3.6%
Coal	28	255	482	1 097	32%	50%	5.6%
Gas	26	349	406	578	44%	26%	1.9%
Oil	66	45	36	24	6%	1%	-2.2%
Nuclear	-	-	-	32	-	1%	n.a.
Renewables	34	141	180	481	18%	22%	4.7%
Hydro	27	110	119	255	14%	12%	3.2%
Geothermal	7	19	27	58	2%	3%	4.2%
Bioenergy	1	10	22	75	1%	3%	7.7%
Other**	-	2	12	93	0%	4%	16.0%
Total	154	789	1 104	2 212	100%	100%	3.9%

*Compound average annual growth rate. **Includes wind and solar PV.