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# **Southeast Asia Just Energy Transition Fellowship Program**

**MAY 2024**

Reflections from Australia Awards Fellows



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### ACKNOWLEDGEMENT OF COUNTRY

We acknowledge and pay respect to the Traditional Custodians and Elders – past and present – of the lands and waters of the Wurundjeri people of the Kulin Nation on which the Climateworks Centre head office is located, and acknowledge that sovereignty has never been ceded. We extend our respect to all Traditional Custodians and Elders of the lands and waters where Climateworks operates. [More information](#).

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# Disclaimer

The Southeast Asia Just Energy Transition Fellowship Program is funded by the Australian Government through the Department of Foreign Affairs and Trade and implemented by Climateworks Centre, an independent not-for-profit working within the Monash Sustainable Development Institute at Monash University.

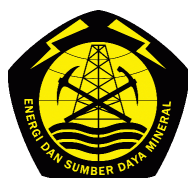


**Australian Government**  
**Department of Foreign Affairs and Trade**

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# Acknowledgements

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## ABOUT US

Climateworks Centre bridges the gap between research and climate action, operating as an independent not-for-profit within Monash University. Climateworks develops specialist knowledge to accelerate emissions reduction, in line with the global 1.5°C temperature goal, across Australia, Southeast Asia and the Pacific.



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# Prologue

While renewable energy uptake is growing, Southeast Asia's economies remain largely dependent on fossil fuels. Rapid deployment of renewable energy technologies, financed with affordable capital, is required for an energy transition. Policy-makers first need assurances that substituting fossil fuels with renewables will yield socio-economic outcomes.

Climateworks Centre recognises the need to equip policy-makers with tools and experiences that will allow them to meet the unique systemic, financial, governance and socio-economic needs of the countries and regions in which they work. Climateworks' Southeast Asia Just Energy Transition Program aims to build an understanding of how places can successfully navigate away from fossil fuels, by fostering a supportive network of government authorities, planning agencies, trade unions, think tanks and research organisations.

In this piece, we present reflections from Australia Awards Fellows who participated in the Southeast Asia Just Energy Transition Fellowship Program, hosted February–March 2024. This initiative, funded by the Australian Department of Foreign Affairs, is part of Climateworks' efforts to foster just energy transitions in Southeast Asia, with a focus on embedding place-based strategies for net zero governance frameworks. The 2024 program is an initial step towards a thriving community of practice among thought leaders who will be instrumental in accelerating energy transitions.

The core objective of the fellowship program is to cultivate an in-depth understanding of the Australian experience of a just energy transition. An immersive two-week training program, the initiative offered tailored strategies and ample opportunity to exchange views and knowledge, empowering fellows to develop a shared understanding of critical sectors and stakeholders involved in energy transition across Australia and Southeast Asia.

More specifically, the program equipped the fellows with advanced and integrated knowledge of global best practices in just energy transition mechanisms; fostered multi-stakeholder collaboration for operationalizing Just Energy Transition Partnerships (JETPs) in Indonesia and Vietnam; and enhanced networking and partnership opportunities with key Australian organisations. Designed to address the pressing needs and integrity challenges associated with net zero frameworks in Southeast Asia, the fellowship program provided the tools and case studies to address the systemic, financing, governance and socio-economic considerations to achieve a successful just energy transition.

The reflections captured in this report from the Australia Awards Fellows delve into several key areas. Fellows identified specific topics, panel discussions, lectures, field trips and workshops that were particularly beneficial for their work. The reflections also provide insights into how just energy transition is perceived in their home countries, analyse the major challenges and opportunities for implementing JETPs, and discuss how these lessons learnt and best practices will influence their future work.

We extend our heartfelt wishes for success to all the participants in the fellowship program, as their commitment and contributions are invaluable to shaping Climateworks' strategic direction in Southeast Asia. This program serves as a foundation for ongoing dialogue and lasting partnerships, fostering collaboration that will address the unique challenges and opportunities for a shared journey towards achieving just energy transitions in Indonesia and Vietnam.

**TRANG NGUYEN**, Southeast Asia Lead

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# 2024 Southeast Asia Just Energy Transition Fellows

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# From hurdles to hope: Indonesia's energy transition journey

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**ANISSA RAMANIYA SUHARSONO**

*Energy Policy Associate with the Energy program of International Institute for Sustainable Development*

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## Reflecting on the Indonesian context

With the inauguration of the new President approaching in October 2024, Indonesia is on the brink of ushering in a new administration, marking a critical moment in the country's energy transition journey. Despite a rather promising start with ambitious climate commitments, the intricacies of Indonesia's heavily politically influenced energy landscape have resulted in various hurdles and challenges in the transition journey over the past few years. After a successful fuel subsidy reform back in 2015, the nation has witnessed a troubling resurgence in subsidies for fossil fuels, soaring to IDR 551 trillion in 2022. What is most troubling is how a substantial portion of these subsidies are going towards fossil fuels instead of renewables, reflecting a persistent attachment to outdated energy paradigms.

Nevertheless, amidst these challenges lies a ray of hope in the form of the Joint Energy Transition Partnership (JETP) agreement, offering a blueprint for reshaping Indonesia's energy landscape. However, realising the vision outlined in the JETP agreement necessitates a comprehensive overhaul of Indonesia's strategy for renewable energy deployment.

Reflecting back on the materials I learned in the Southeast Asia Just Energy Transition Fellowship Program, topics such as the governance of the energy market, climate financing mechanisms, and the pivotal roles of public and private finance in catalysing the transition towards cleaner energy sources caught my interest the most. I realised that these are the fundamental pillars central to the transformation needed in Indonesia's energy landscape. It highlights how Australia navigates their energy transition journey by focusing on four governance areas that are essential for a just energy transition: inclusive and effective institutions, civic engagement and empowerment, a legal and regulatory framework, and appropriate and independent oversight.

Learning about Australia's experience with their own electricity market reform was also an eye-opening experience for me. Indonesia still needs to figure out its own approach to electricity market reform that considers the country's specific socio-political situation and implementation capabilities. There is no one-size fits all approach, and both monopolistic and full retail markets can facilitate transition when managed effectively.

## THE CHALLENGES AND OPPORTUNITIES FOR INDONESIA'S ENERGY TRANSITION

Although there was much fanfare surrounding the JETP agreement when it was first announced, progress has been sluggish. Only 1.7 GW of coal power plants are earmarked for retirement, while an additional 23.5 GW of coal power plants are still in the pipeline. Coupled with heavily subsidising fossil fuels, this inconsistency in governmental messaging has created confusion among investors. It has



led to an all-time six-year low in renewable energy investment in 2023, dealing a severe blow to Indonesia's aspirations for a cleaner energy trajectory.

It was also quite disappointing when the breakdown of the JETP fund only included a very small amount (USD 300 million) for grants, leaving the 'just' element of the energy transition question. The JETP should not merely be a financial commitment but a holistic endeavour to address the social impacts of the energy transition. Striking a balance between the social benefits of energy projects and their contributions to the transition is imperative. Innovative financing mechanisms should prioritise projects that offer both tangible social and economic benefits, ensuring that no community is left behind in the quest of transition towards a more sustainable future.

Moreover, there are some crucial barriers that must be tackled head-on to ensure the success of the JETP agreement. One such barrier is the stringent local content requirements, which have inflated project costs and stifled large-scale production of renewable energy equipment. To surmount this hurdle, a re-evaluation of local content regulations is warranted, potentially introducing gradual adjustments commensurate with increasing local production volumes.

Similarly, the pricing mechanism for renewable energy projects demands urgent attention. While recent governmental measures aimed at streamlining pricing mechanisms have been introduced, their efficacy remains in question. Imposing cost caps can impede project deployment and hinder price reduction. Instead, a scalable auction system based on fixed procurement volumes could offer a more sustainable solution.

Navigating a just energy transition is neither straightforward nor quick. However, a striking lesson emerged from our field trip to La Trobe Valley, where we witnessed first-hand the impact of coal mining closures and the early retirement of coal power plants on the local community. It became evident that proper planning, communication strategies, and a clear roadmap can facilitate the acceptance of an energy transition, even by a community deeply entrenched in a coal-based economy for generations.

To navigate Indonesia's energy transition and realise the vision of the JETP agreement, a multifaceted approach is crucial. Policymakers must prioritise phasing out fossil fuel subsidies, redirecting resources to renewable energy, and fostering economic growth and job creation in the clean energy sector. Streamlining regulatory frameworks for renewable energy projects will stimulate investment and innovation. Simplifying permitting processes and clarifying tariff structures will boost investor confidence, while improving grid infrastructure and implementing energy storage solutions will enhance reliability and resilience, overcome intermittency challenges, and facilitate seamless integration of renewable sources.

Additionally, fostering collaboration between public and private stakeholders, leveraging international partnerships and expertise, and promoting energy efficiency and conservation among consumers will accelerate the deployment of renewable energy technologies. Indonesia is still in its infancy in its journey towards a just energy transition, but the JETP Comprehensive Investment and Policy Plan (CIPP) provides a roadmap for a sustainable and equitable energy future. Realising its ambitious targets demands bold reforms and a balanced approach.

Drawing lessons from Australia's experience, while facing resistance and setbacks initially, consistent effort can make transitioning away from coal a reality. With concerted efforts and strategic interventions, Indonesia, too, can overcome its energy transition challenges.

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## About the author



**ANISSA SUHARSONO** is currently working as an Energy Policy Associate with the Energy program of IISD. She specialises in research regarding the power sector, energy policy, fossil fuel subsidy reform, just transition, and more recently on the electric vehicle ecosystem. She has 12 years of experience working in the energy industry across four countries. Prior to working for IISD, Anissa worked as a business development associate for Vena Energy (formerly known as Equis Energy Indonesia) where she managed financial modelling and performed in-depth industry research for potential investments, and was responsible for identifying opportunities focusing on renewable energy (solar, wind, geothermal) development projects in Indonesia.

She also worked for six years as a risk management consultant with DNV GL, where she was involved in various types of projects such as quantitative cost and schedule risk analysis, smart metering, wind and solar resource assessment and monitoring, business continuity management, feasibility studies, as well as other enterprise risk management and technical safety consultancy services.

## Empowering change: Strategies for accelerating Just Energy Transition in Indonesia

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**FELICIA UTOMO**

*Researcher at the Purnomo Yusgiantoro Center*

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Throughout the Southeast Asia Just Energy Transition Fellowship Program, we engaged in various topics, activities, lectures, and workshops, each meticulously curated to address the multifaceted challenges and opportunities in transitioning to sustainable energy systems in a just way. Among the diverse topics covered, system change or systemic approaches to energy transitions has been transformative for me as an energy researcher. Participating in workshops and lectures on the intricacies of technological advancements, economic factors, and social implications allowed me to perceive how these elements are intertwined within energy systems. This comprehensive understanding is critical for formulating not only technologically feasible but also economically viable and socially equitable strategies. The systemic perspective imparted by the fellowship is instrumental in devising policies that tackle the complexities of energy transitions.

### Resonating fellowship experience

One of the most impactful experiences during the fellowship was engaging directly with stakeholders and experts from various fields. This exposure allowed me to gain a wealth of ideas through in-depth discussions that spanned a range of perspectives and lessons learned. For instance, discussions with academics shed light on the latest advancements in energy systems. Discussions with economists and policymakers revealed insights into the financial structures, markets, and policy frameworks that support Just Energy Transition (JET). Moreover, engaging with community leaders helped me appreciate the social implications of energy transitions, including issues related to gender, indigenous people, community, and public acceptance.

### Indonesia's just energy transitions journey

This program has significantly broadened my understanding of the JET and its successful applications, particularly emphasising Australia's achievements. This comparison is particularly enlightening when considering Indonesia's recent advancements in energy reforms. Over the past few years, Indonesia's commitment to phasing out coal-fired power plants has made considerable progress, such as forming the JETP secretariat and launching the Comprehensive Investment and Policy Plan (CIPP). These are promising steps toward a sustainable energy future. While the journey to fully implement JET in Indonesia presents its unique challenges yet slow progress, there is a growing momentum that is hard to overlook. Australia's robust economy supports significant investments in new technologies and infrastructure – a vision that Indonesia aspires to, despite current financial constraints and varying levels of political support. Furthermore, while public engagement with JET initiatives in Indonesia is still evolving, it is gaining traction, drawing from Australian models where public advocacy and political will have successfully influenced actions toward sustainable practices. Australia's proactive approach to JET, marked by substantial investments in technology, strong policy support, decisive political will, and active stakeholder engagement, serves as an exemplary model. Australia's significant advancements in solar and wind

energy capacities, propelled by government incentives and a robust public-private partnership model, stand out as particularly noteworthy achievements.

In Indonesia, JET is a pivotal element of the region's sustainable development agenda. Yet, it grapples with significant challenges, such as the deep-seated economic dependency on fossil fuels, which not only generates substantial revenue but also creates resistance to change, especially in regions heavily reliant on coal mining or oil extraction. Moreover, many regions in Indonesia lack the necessary modern grid infrastructure and integration to support extensive renewable energy deployments, compounded by technological limitations in energy storage and distribution systems crucial for the stability of renewable energy sources. Financing the transition is another major barrier, with the high upfront costs associated with renewable energy projects and fiscal limitations further impeding progress. Furthermore, Indonesia's policy and regulatory frameworks are often inconsistent and not streamlined enough to foster rapid renewable energy development.

Despite these hurdles, significant opportunities exist to advance JETP in Southeast Asia, thanks to the region's abundant renewable resources such as solar, wind, hydro, and geothermal energy. Indonesia, with one of the world's largest geothermal potentials and substantial capacities in solar and wind energy, stands to gain significantly. The growing public and corporate awareness of climate issues is also fostering a demand for renewable energy and creating a more conducive environment for JETP initiatives. The decreasing costs of solar and wind installations and advancements in energy storage and smart grid technologies present opportunities to bypass traditional energy development methods.

## **Recommendations for an Indonesian just energy transition**

Drawing from the insights gained in this fellowship program, we can recommend five strategies to significantly accelerate the success of JET in Indonesia.

First, reforming the policy and regulation is critical to creating a supportive environment for JET. This involves restructuring electricity market regulations to ensure fair access and pricing and reforming subsidies to shift financial support from fossil fuels to renewable energy initiatives.

Second, harnessing the region's abundant renewable resources. In Indonesia, particularly in frontier, outermost, and disadvantaged regions, there is a tremendous opportunity to leverage abundant natural resources. Increasing the renewable energy mix in these regions can contribute to environmental sustainability and energy security.

Third, increasing public and corporate awareness is essential. As awareness of climate issues grows among the public and within the corporate sector, demand for renewable energy solutions increases. This societal shift drives policy changes and motivates businesses to adopt greener practices. Governments and industry leaders must capitalise on this momentum to accelerate the transition toward sustainable energy solutions.

Fourth, fostering collaboration among stakeholders is paramount. Collaboration between governments, industry players, academia, and civil society organisations can facilitate knowledge sharing, resource pooling, and coordinated action toward common energy transition goals. Collaborative efforts can lead to innovative solutions, optimised investments, and more effective implementation of renewable energy projects.

Lastly and most importantly, JET must also highlight the social aspects. This requires policies that consider the impacts on local communities, respect the rights of Indigenous peoples, promote gender equality, and enhance educational opportunities related to the energy transition. Engaging communities in the planning and implementation processes ensures that the benefits of renewable

energy are shared widely and that local populations are not adversely affected by the transition. Addressing these diverse aspects will make JET inclusive, ensuring that all segments of society benefit from these transformative energy policies.

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## About the author



**FELICIA UTOMO** is a Researcher at the Purnomo Yusgiantoro Center, an independent, non-governmental think tank in Jakarta. Its main goal is to promote independent, unbiased, systematic, and professional analysis and research in energy and natural resources. At PYC, Felicia has been involved in several research projects on energy economics, energy policy, and environmental topics, such as carbon tax, regulatory impact assessment on electricity regulation, peer-to-peer energy trading using blockchain technology, analysis on kaya identity, and currently led ongoing research about energy subsidy reform. She has also contributed to writing articles, research papers, reports, and opinions on energy issues.

## Five lessons learned from Australia's energy transition: Embracing change for Indonesia's sustainable future

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**VIVI FITRIYANTI**

*Energy Analyst, World Resources Institute (WRI) Indonesia*

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Amidst the global push for the justice aspect of the energy transition, Indonesia is at a pivotal crossroads. As the nation grapples with its energy transition, it can draw inspiring lessons from Australia's journey. From pioneering market reforms to navigating the complexities of decarbonisation, Australia's experience offers a beacon of hope and inspiration for Indonesia's path toward a just and manageable transition. I believe at least five lessons can be adapted for Indonesia based on my experiences from the Southeast Asia Just Energy Transition Fellowship Program.

### **System change requires a redefinition of what 'good' looks like**

I gained two overarching themes from the program: the evolution of the energy system and the imperative of the just aspect in transition. Further, the aspects of the fellowship program that will be most helpful in my work developing just transition indicators are workshops and lectures related to system change. If we want to enforce the just transition, we need to provide credible data to show the stakeholders what 'good' looks like. Understanding all the aspects of a just energy transition, including governance structures, socioeconomic impacts, financial mechanisms, and systemic interdependencies, will provide valuable insights for identifying and measuring indicators of a just transition. Exploring the socioeconomic indicator for just transition in governance benchmark will be relevant in my work context. Additionally, activities focusing on meaningful participation of stakeholder engagement, policy analysis, and case studies of successful transition initiatives will contribute to developing comprehensive and contextually relevant indicators.

### **Evolution of energy systems: adaptation and innovation**

Australia's energy landscape has undergone significant transformations in recent years, marked by shifts in market structures, policy frameworks, and technological advancements. Victoria's journey, for instance, from a government-controlled system to a diversified market with numerous generators and retailers underscores the dynamic nature of energy markets. The emergence of the National Electricity Market (NEM) concept, facilitated by entities like the Australian Energy Market Operator (AEMO), highlights the importance of collaboration and regulation in ensuring market stability and efficiency.

One notable aspect is the role of financial derivatives in mitigating risks for private generators, akin to insurance policies safeguarding against price volatility. This underscores the need for governments to provide supportive frameworks that encourage investment while managing uncertainties inherent in energy markets. Moreover, the transition towards decarbonization demands a systemic approach, encompassing energy and broader socio-economic and environmental dimensions.

Furthermore, Indonesia also can learn from Australia on the participation of educational institutions in energy transition. Australia is mainstreaming the transition in educational institutions, emphasising the importance of integrating green and sustainability initiatives into university curricula.

Interdisciplinary approaches, suggesting integrating sustainability topics across different courses and including training modules to enhance students' understanding. Additionally, the focus on knowledge sharing and youth washing was also discussed. The discussion also focused on supporting early to mid-level researchers, particularly in climate change-related fields, by providing incubator seed grants. Equitable access to funding across institutions was emphasised, along with partnerships with industry, NGOs, and research centres. The importance of translational research in providing guidelines for the community was discussed during the fellowship, and communication's role in effectively utilising research findings was emphasised.

I learned that one university also plans to phase out gas by 2030 and set energy efficiency targets. Monitoring and evaluation processes, including mandatory and voluntary reporting, and financial mechanisms such as climate bonds, sustainability loans, and grants to support sustainability initiatives are also involved. Overall, the panel discussion shed light on universities' diverse strategies and efforts to contribute to the transition towards net zero emissions.

## **Key strategies for just transitions: inclusivity and equity**

Based on what I learned during the fellowship, the just transition principles encompass a multifaceted approach to navigating the complexities of decarbonisation. Decarbonisation unfolds unevenly across different places and spatial scales, highlighting the need for tailored strategies to address local contexts. Just transitions are driven and contested, unfolding over intersecting timescales and evoking a spectrum of responses. It is essential to challenge transition approaches that offer only technology-led solutions and embrace a plural conception of innovation, where the transition is also driven by the holistic view of sustainability and including the participation of the Indigenous peoples and Local Communities (IPLC) and other marginalised groups.

Some exciting developments in Indonesia include increased investment in renewable energy projects, the adoption of sustainable energy policies, and growing public awareness of the importance of transitioning to clean energy sources. However, challenges such as regulatory barriers, financing constraints, social inequalities, and the absence of a contextual framework of justice in national and subnational roadmaps continue to pose significant obstacles to successfully implementing just energy transition initiatives.

Further, just transitions are deeply personal experiences for communities, emphasising the importance of meaningful engagement and participation. People are not merely recipients of transition but active stakeholders in decision-making processes. Responsibilities must be distributed equitably, ensuring the well-being of all, including non-human species and environments. However, the costs and benefits of decarbonisation are often unevenly shared in market economies, necessitating efforts to address ongoing marginalisation.

Designing for distribution requires meeting the needs of households and localities while maximising accessibility to goods and services. Fair distribution of costs and benefits is paramount, especially considering the existing distrust in markets, where incentives often exacerbate inequalities. Deliberative processes and democratic accountability are crucial for fostering transparency and intervention where necessary.

Urgency and ambition drive the quest for clear and realistic goals, accompanied by appropriate timescales for implementation. Embracing social values and diverse forms of innovation are key to

overcoming the technological paradigm and recognizing the contributions of civil society organisations. Indigenous self-determination plays a pivotal role, advocating for negotiated land agreements based on free, prior, and informed consent principles.

Advocacy for Indigenous Peoples and Local Communities (IPLC) and other affected groups in transition is central at the outset of indicators development at the local level in Indonesia. Ensuring explicit recognition of IPLC's right along with respecting IPLC's knowledge and ways of relating to nature is also vital to be included as one of the indicators. It emphasises qualitative measures that capture the nuances of just transitions. By integrating these principles into policymaking and implementation frameworks, societies can navigate the energy transition journey more inclusively and sustainably.

## Indonesia's JETP challenges and opportunities

We should appreciate what the Just Energy Transition Partnership (JETP) secretariat has done for the climate investment and policy plan. They have also already defined the tenet of justice and the justice principle for JETP. Indonesia also needs to define the framework for the national and subnational levels. Further, energy transition issues intersect with development issues; thus, monitoring the transition also requires alignment with the development indicator.

The policy and regulatory barriers are another big challenge for JETP implementation in Indonesia and Southeast Asia. I believe JETP is one instrument that needs to be encouraged as another instrument to help Southeast Asia finance its transition. The commitment to the JETP is primarily outlined in Presidential Regulation 112/2022, focusing on accelerating renewable energy development for electricity supply. However, several policy aspects remain unaddressed, such as TKDN (Local Content Requirement), procurement processes, and licensing requirements for renewable energy power plants. There are contradictions and inconsistencies within existing regulations, notably allowing the construction of new coal-fired power plants under specific conditions outlined in the aforementioned regulation. However, the authority of the Presidential Regulation may not be robust enough to effectively oversee implementation, particularly in the face of potential changes in government.

Despite the challenges, there are significant opportunities for just energy transition in Indonesia and Southeast Asia. The region's abundant renewable energy resources, including solar, wind, hydro, and geothermal, present opportunities for transitioning towards clean and sustainable energy systems. Rapid advancements in renewable energy technologies, energy storage solutions, and digitalisation offer opportunities for enhancing energy efficiency and increasing energy access. ASEAN member states can also strengthen regional cooperation and collaboration can facilitate knowledge sharing, technology transfer, and capacity building, accelerating energy transition initiatives across Southeast Asia.

## Looking ahead: Pathways to not just a transition but a just transition

The fellowship experience that resonates with me most is the emphasis on holistic and systemic approaches to energy transition planning. Understanding the interconnected nature of governance, socio-economic factors, finance, and systemic dynamics is essential for developing effective strategies and indicators for a just transition. Additionally, the focus on stakeholder engagement, capacity building, and knowledge sharing underscores the importance of collaborative efforts in driving sustainable energy transitions in Indonesia and Southeast Asia. Needs assessment and listening to the community about their problems due to transition is one of the keys. Moreover, a



coalition and open-access database across Southeast Asia would significantly enhance the ability to monitor and advance the progress of a just transition.

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## About the author



**VIVI FITRIYANTI** works as an Energy Analyst for Just Transition at World Resources Institute. Before joining WRI, she worked as a researcher at the Purnomo Yusgiantoro Center (PYC), an energy think-tank founded by the Minister of Energy and Mineral Resources of Indonesia (2000-2009). She is involved in joint research projects with international organisations. She is responsible for research design, data collection, analysis, and dissemination to key stakeholders and academic conferences. Furthermore, she enjoys writing op-ed on energy issues, which has been published in numerous national and international mass media. She researched crowdfunding as renewable energy alternative financing, energy transition in the manufacturing industry, and women's participation in just energy transition. She studied integrated biorefinery and biomass, including successfully developing a novel method for fractionating biorefinery lignins according to molecular weight, with potential for carbon fibre applications, energy, and water savings during processing enabling her to co-publish her work in the Q1 (top quartile) journal.

Her passion for education makes her involved in developing education programs related to future education and critical thinking. She presented her research related to STEAM (Science, technology, Engineering, Art, and Math) Education at the GESS Indonesia conference. In her spare time, she was an active organiser in volunteering activities at The International Movement for Leisure Activities in Science and Technology (MILSET) to inspire youth through STEAM and gave workshops on critical thinking. She holds a Bachelor's degree in Chemistry from Institut Teknologi Bandung (ITB) and a Master's degree in Green Chemistry: Energy and the Environment from Imperial College London and was awarded the Indonesia Endowment Fund for Education (LPDP) Scholarship (2016-17) from the Ministry of Finance of Indonesia.

# Insights from Australia's energy transition: Guiding Indonesia towards a net zero future

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The urgency for significant reductions in greenhouse gas emissions to prevent global temperatures from exceeding critical thresholds is clear. Southeast Asia is forecasted to witness its economies grow by an average of 4.6 per cent in 2023 and 4.8 per cent in 2024. Concurrently, the region's energy demand is expected to rise. According to the [7th ASEAN Energy Outlook](#), the region's energy consumption will likely soar by approximately 30 per cent by 2030 and escalate by 170 per cent by 2050 compared to 2020 levels.

Countries like Indonesia, with growing energy demands and reliance on fossil fuels, are pivotal in the global movement towards net zero emissions. Reflecting on [the Southeast Asia Just Energy Transition Fellowship Program](#) I attended, this piece explores valuable lessons from Australia's energy transition that could benefit Indonesia's journey towards a net zero future.

## Adopting Australia's systemic approach for Indonesia's energy transition

One notable initiative by the Australian government that I learned from the program is the establishment of the [Net Zero Economy Authority](#). This agency ensures that the transition to a net zero economy capitalises on new opportunities for communities historically dependent on fossil industries. Indonesia could adopt a similar overarching body to facilitate coordination across various sectors, thereby enhancing the effectiveness of its energy transition strategies.

Another valuable lesson is the mandatory disclosure of Net Zero strategies and plans. There is a pressing need for public understanding of what is beneficial for the country. Ultimately, integrated knowledge, place-based strategies, and a profound understanding are essential for systemic change – a model that Indonesia can adopt.

## Navigating Indonesia's unique energy transition challenges

Despite its strong commitment to a sustainable future, Indonesia faces unique challenges in its journey towards transition to a cleaner energy. The situation presents a stark contrast to Australia, a former major coal exporter now advancing in its transition to renewable energy. Key drivers for Australia's successful shift included abundant renewable energy resources, decreased costs of renewable technologies due to advancements and scale, ageing coal power plants, and escalating fossil fuel costs, supported by ambitious government renewable energy targets.

In contrast, Indonesia's coal power plants are predominantly new, and the country [continues to integrate coal power into its energy strategy up to 2030](#). This approach reflects a nuanced balancing of energy security, affordability and accessibility. Additionally, a study by the [Oxford Sustainable Finance Group](#) highlighted that Southeast Asia is one of the few regions where renewable utilities

often face higher capital costs than those generated from fossil fuels – approximately 2-3 times higher than in advanced economies. This disparity highlights the region's unique financial challenges and emphasises the critical need for innovative financing solutions that could lower these barriers over time. Additionally, the Indonesian government's recent decision to lower its renewable energy targets for 2030 shows the formidable challenges that lie ahead in its energy transition pathway.

## **Harnessing Opportunities: Indonesia's Path to a Sustainable Energy Future**

The Just Energy Transition Partnership (JETP) not only represents an opportunity for Indonesia to advance its climate diplomacy but also provides a robust platform to elevate the country's climate ambitions on a global scale. This initiative allows Indonesia to engage more actively in international climate negotiations, showcasing its commitment to sustainable development and leading by example in the ASEAN region.

Moreover, as seen in Australia, the transition towards renewable energy could drive job creation and economic revitalisation. Investing in education and training programs focused on green skills will empower local communities and stakeholders, ensuring the transition is inclusive and equitable.

Educational and capacity-building initiatives could further empower local communities and stakeholders. By investing in education and training programs focused on green skills, Indonesia can develop a workforce ready to meet the demands of new green industries. This approach not only supports the energy transition but also ensures that it is inclusive and equitable, leaving no communities behind.

Finally, the JETP gives Indonesia a platform to innovate in green technology. By fostering partnerships with international tech companies and investing in research and development, Indonesia can become a leader in renewable energy technology within ASEAN. This leadership could translate into economic advantages and increased geopolitical influence, positioning Indonesia as a pivotal player in the global fight against climate change.

By effectively capitalising on these opportunities, the JETP has the potential to transform Indonesia's energy sector, drive economic growth, and significantly enhance its environmental and social sustainability.

## **Way forward: Community-driven strategies for Indonesia's energy future**

A particularly resonant lesson to me from the fellowship was the community-led transition in Australia's Latrobe Valley. This approach emphasised the importance of strong local involvement, which could guide Indonesia's energy transition. Engaging communities directly not only fosters acceptance but leverages local insights to ensure strategies are well-suited to regional challenges.

Moreover, the necessity for economic diversification and innovation emerges as a critical theme. As Indonesia navigates its path towards a sustainable energy future, embracing a variety of economic activities and technological advancements will be essential in reducing dependency on traditional energy sectors and fostering a resilient economy.

In conclusion, by embracing strategies observed in Australia's energy transition and adapting them to its unique context, Indonesia can significantly enhance its ability to meet net zero targets and improve socio-economic resilience against climate change impacts. This tailored approach promises a sustainable and inclusive path towards a cleaner, more resilient energy future for Indonesia.

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## About the author



**ALDILLA NOOR RAKHIEMAH** joined the ASEAN Centre for Energy (ACE) as the Senior Research Analyst of the Power Fossil Fuel, Alternative Energy and Storage where she also leads research for the ASEAN Climate Change and Energy Project (ACCEPT) as Senior Research Analyst. She is deeply involved in the project with a critical mission: to bolster ASEAN's capacities in transitioning towards a low-carbon energy system and ultimately achieving a net zero future. Her responsibilities include leading research on the energy and climate nexus within the ASEAN region, and the strategic management and coordination of ACCEPT, where she is dedicated to broadening its impact and reach throughout Southeast Asia.

Aldilla's expertise encompasses a broad spectrum of critical areas in the energy sector, including the intricate relationship between energy and climate change, energy policy formulation and the innovative fields of carbon capture, utilisation, and storage (CCUS). Prior to joining the ASEAN Centre for Energy, she had seven years' experience at Pertamina, Indonesia's state-owned Energy Company. She holds an MSc in Geography from the University of Zurich, Switzerland, and a BA in Economics from Airlangga University, Indonesia. She is currently finishing her doctoral degree at the Chinese University of Hong Kong.

## It is hard but it is possible: Learning from Australia for driving energy transition in Southeast Asia

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### SUWANTO

*Senior Research Analyst of the Power, Fossil Fuel, Alternative Energy and Storage (PFS)  
Department at the ASEAN Centre for Energy*

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It was a great honour to be one of the Fellows at the Southeast Asia Just Energy Transition Fellowship Program, supported by the Department of Foreign Affairs and Trade (DFAT) of Australia as part of its Australia Awards Fellowships, hosted by the Climateworks Centre and Monash University. This comprehensive two-week program was designed for information and knowledge-sharing sessions, case study and discussions, field trips, and capacity building and networking opportunities.

As one of the Fellows, participating in this program has equipped me with various knowledge, tools, lessons learned, and best practices for pursuing just energy transition. Considering the different socioeconomic conditions of Australia and the ASEAN region, this program has provided some insights into how the ASEAN region should embrace just energy transition.

### Energy transition in Australia and the ASEAN region

Australia's energy system shows a very big transformation in the coming years. By 2030, the Australian Energy Market Operator (AEMO) forecasts that the capacity of solar and wind energy integrated into the national grid will triple. Additionally, the capacity of rooftop solar installations is anticipated to double. Moreover, the capacity for energy storage is projected to increase by sixfold. In relation to technology, approximately 16 terawatt-hours (TWh) of renewable energy needs to be constructed over the next decade to achieve the target set for 2030 of 82 per cent of electricity coming from renewable energy. Further, the Australian government released its Long Term Emissions Reduction Plan to achieve net zero emissions by 2050.

Even though ASEAN is not as ambitious as Australia in terms of target and progress, its commitment towards cleaner energy has to be acknowledged. According to the ASEAN Power Updates 2023, the share of installed renewable energy capacity was 33.3 per cent in 2022 or only a 1.7 per cent gap from the 2025 target, although lower than in 2021 after solar boom phenomena in Vietnam in 2020-2021.

In terms of greenhouse gas emissions reduction commitments, ASEAN member states (AMS) have announced their emission reduction target based on their submission of the NDCs, primarily in the form of a percentage reduction relative to the BAU scenario, as summarised in Table 1 below. Moreover, almost all AMS have formalised their planning towards net zero emissions or carbon neutrality into the long-term target documents by 2050 or 2060.

TABLE 1. ASEAN MEMBER STATES' TARGETS IN ENERGY TRANSITION (SOURCE: [UNFCCC](#))

Country	Official Emission Reduction Target	Carbon Neutrality or NZE Target
Brunei Darussalam	Reduce GHG emissions by 20% from BAU scenario by 2030	NZE by 2050
Cambodia	Reduce GHG emissions by 42% from the BAU scenario by 2030	Carbon Neutrality by 2050
Indonesia	Reduce GHG emissions by 31.89% from BAU scenario by 2030 (unconditionally) and 43.2% from BAU scenario by 2030 (conditionally)	NZE by 2060
Lao PDR	Reduce GHG emissions by 60% from the BAU scenario by 2030 (unconditionally)	NZE by 2050
Malaysia	Reduce carbon intensity (against GDP) by 45% from 2005 level by 2030	NZE by 2050
Myanmar	Reduce GHG emissions by 244.5 Mt CO <sub>2</sub> e by 2030 (unconditionally) and by 414.75 Mt CO <sub>2</sub> e by 2030 (conditionally)	Partial NZE from LULUCF by 2040
Philippines	Reduce GHG emissions by 75% from the BAU scenario by 2030 of which 2.71% is unconditional and 72.29% is conditional	N/A
Singapore	Reduce GHG emissions to around 60 MtCO <sub>2</sub> e in 2030 after peaking emissions earlier	NZE by 2050
Thailand	Reduce GHG emissions by 30% from the BAU scenario by 2030	Carbon Neutrality by 2050, NZE by 2065
Vietnam	Reduce GHG emissions by 15.8% from the BAU scenario by 2030 (unconditionally) and by 43.5% from the BAU scenario by 2030 (conditionally)	NZE by 2050

Among other ASEAN Member States, [Indonesia and Vietnam](#) embarked on important milestones in their transition efforts by announcing the signing of Just Energy Transition Partnership (JETP) with International Partners Group (IPG) members to raise the element of social justice into climate action, apart from energy trilemma concept, which one of the focuses is decommissioning or re-purposing coal-fired power plants (CFPP).

## Lessons from Latrobe Valley, Australia

The [Latrobe Valley](#) is home to three large active power stations, apart from Hazelwood, which was closed in 2017. One of the power stations, Yalloom, has announced a closure in 2028 at the latest. Yalloom is known for being the dirtiest coal-fired power plant in Australia, but it also plays a vital role in the history of Latrobe Valley, driving local economics and Victorian electricity in general. Learning from the closure of Hazelwood, it is important to attract new businesses to replace the coal sector, upgrade skills for the employees for those new businesses and the government and local authority to support its transformation.

In late 2016, when the announcement of the Hazelwood power station's closure was made, the Victorian government introduced a \$266 million transition package and established the [Latrobe Valley](#)

Authority (LVA) to oversee the region's economic development during the transition. Simultaneously, the federal government offered a \$40 million support package. Some positive impacts are seen, such as the number of new businesses that have moved to this area, thus decreasing the unemployment number. A growth of clean energy development has also been observed since Gippsland Solar hired ex-Hazelwood workers and a 300 MW wind farm proposal.

## Challenges and opportunities of coal phase-out in the ASEAN region

When it comes to the ASEAN region, the plan of phasing out coal-fired power plants (CFPP) becomes more complex, due to its role in securing the energy supply at the lowest cost possible, its contributions to the region's economy, and the social impacts on coal-dependent areas. According to the 7th ASEAN Energy Outlook, coal will remain an important energy source in ASEAN. This remains the case even when AMS pursues its regional target in 2025, especially if the least-cost optimisation (LCO) scenario is to be achieved.

According to the ASEAN Centre for Energy's internal database and estimate, the mean age of the coal power plants in the ASEAN is around 11.8 years. The coal sector has also contributed to ASEAN's economic development, provided its affordability and flexibility in the energy systems, and shown its critical role in enabling higher penetration of renewable energy as baseload power.

Having Just Energy Transition Partnerships (JETP) in Indonesia and Vietnam would be a great opportunity for ASEAN to take concrete action towards the energy transition. It would provide a fundamental movement where other member states could take the lessons learned and best practices from Indonesia and Vietnam to demonstrate a just energy transition. This would also help the region build regional cooperation to advance its energy transition in a just way.

## How could ASEAN learn from Australia in pursuing just energy transition?

Latrobe Valley in Australia has been an excellent pioneer in the rapid energy transition, where all the stakeholders take part in the movement. According to the report, 'Life after coal: pathways to a just and sustainable transition for the Latrobe Valley', to successfully achieve a just transition, two important processes are (1) an order and planned transition away from coal and (2) collaboration and inclusive transition towards a sustainable local economy. It is also important to encourage local leaders to champion the transition efforts along with the Latrobe Valley community to ensure that the change happens and is impactful.

For ASEAN to smoothly transition towards cleaner energy, the region needs careful planning, including coal phase-out, to ensure balancing energy security, affordability, economic growth, environmental sustainability, and social inclusivity. Therefore, the development of the ASEAN coal phase-out roadmap is essential as the guidance for the region in ensuring resilient energy systems. This should consider the whole energy system, not only solely the coal sector. Learning from the case of Latrobe Valley, encouraging local leaders and communities is also one of the key successes of the just energy transition. This would essentially emerge the concept of bringing empathy through humanity's approach to driving climate solutions.

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## About the author



**SUWANTO** is currently a Senior Research Analyst of the Power, Fossil Fuel, Alternative Energy and Storage (PFS) Department at the ASEAN Centre for Energy (ACE), an intergovernmental organisation within the Association of Southeast Asian Nations (ASEAN). He is specifically responsible for the Fossil Fuel, Hydrocarbon and Minerals (FOM) Unit.

He is an energy enthusiast with a unique background encompassing diverse domains, including non-renewable energy industries, renewable energy, and other low-carbon technologies, extending from profit-driven ventures to non-profit sectors and from business to research activities. Delving extensively into energy think tank institutions and engaging in energy and climate projects, he has significantly broadened his comprehension of energy transition and climate actions for sustainable development.

He has experience in energy project development in ASEAN, including ACE-USAID SPP, ASEAN Power Grid Advancement Program with ETP/CASE, ASEAN Low-Carbon Energy Technology Roadmap on Hydrogen and Ammonia with ERIA, South East Asia CCS Accelerator (SEACA) with GCCSI, etc.

He holds a master's degree from the University of Freiburg, Germany, majoring in Sustainable Systems Engineering. Prior to his master's degree, he served as a Petroleum Engineer at a multinational oil and gas company in Indonesia.



## Reflections on the fellowship experience

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### **DO TRUONG PHUONG LAM**

*Research associate at the Fulbright School of Public Policy and Management,  
Fulbright University Vietnam*

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The fellowship program has deepened my understanding of the energy transition. The program reinforces the importance of encompassing the comprehensive consideration of energy transition on socio-economic aspects, along with the aim to alleviate reliance on fossil fuels. Ensuring equity, inclusiveness, and fairness in the communities is, therefore, essential in any strategy for energy transition.

Another topic that I found very helpful is how technical constraints such as transmission grids or baseload generation hinder decarbonisation in the power system. Therefore, one of the priorities for the government is to upgrade the power system. Moreover, the trilemma in a power system indicates that it is almost impossible to achieve reliability, affordability, and sustainability at the same time. As a result, the government should carefully consider various factors to decide which goals the country would like to achieve in each period.

### **Just energy transition progress in Vietnam**

In the last few years, Vietnam has successfully increased its installed capacity of renewable energy. By 2022, solar and wind accounted for more than a quarter of the total capacity. Unfortunately, generation from wind and solar does not reach their potential. Variable renewable energy plants are unevenly located: most are built in the South and Central Vietnam while emerging demand rises in the North. Since our transmission grid is insufficient to carry electricity from the South and Central to the North, we have to increase coal generation and import electricity from Lao PDR and China. Additionally, our current transaction cycle is 30 minutes, which does not allow the operator to respond instantly to the change in the load. Other supporting factors, such as ancillary services, retail electricity market, or distributed energy resources, have not yet been established.

As a result, the government hesitates to deploy renewable energy. They still prefer traditional sources, namely hydropower, coal, gas, and oil. While Vietnam has achieved significant achievements in its energy transition in recent years, to make this transition sustainable in the future, an upgrade in the power system, along with a comprehensive power market reform, is inevitable.

### **The challenges and opportunities for JETP implementation in Indonesia and Vietnam**

JETP provides significant financial support to Vietnam to achieve multiple targets in decarbonisation. However, mobilising these huge resources is challenging. This requires a strong collaboration between the ministries in charge. Moreover, since a significant proportion of the fund is concessional loans, the government should make stronger movements to encourage the participation of the private sector. Given that the next milestone in Vietnam's commitment to JETP is to bring forward the peaking date for all greenhouse gas emissions and also emissions in the power sector to 2030, the government is urged to implement actions to reach these targets.

While Indonesia may experience the same difficulties as Vietnam, its situation seems to be more challenging as it is a large coal producer, implying a strong dependency on fossil fuels in both

economic and social aspects. The Indonesian government should make additional efforts to accelerate the energy transition.

JETP motivates the government to unlock the potential of the private sector in accelerating energy transition. To achieve multiple commitments on emissions reduction faster, the government should support the participation of the private sector by establishing clear policies about the energy sector, especially for new areas such as the development of energy storage systems (BESS), instructions for the private sector to build transmission lines, implementing the mechanisms for direct power purchase, etc.

To achieve the commitments in JETP, the governments of ASEAN countries should promote the establishment of multilateral power trade within the region and, in the long-term, with other countries across regions. This approach seems to be prominent as, given the diversity in resources each ASEAN country has, a common power market would accelerate energy transition while ensuring national power security.

## Supporting communities in transitions

I was impressed with the field trip to the Latrobe Valley to visit multiple coal plants and discuss with the community about transition energy in the area. This community has been known for its strong connection with the coal industry, hence, it is understandable that the inhabitants were upset with the energy transition in the first place. Now, they accept it and are willing to adapt to the change. To get that consensus among the majority of the community, the local government has been working hard with multiple stakeholders to provide a clear vision for the region, implementing actions with careful consideration to ensure that no one is left behind in the energy transition.

The story of the Latrobe Valley is an interesting case study about energy transition in a region that is deeply attached to fossil fuels. Besides meeting with the community, I was also fascinated by the rehabilitation plan required by the Australian government for coal mine operations as the efforts to minimise the effect of these mines on the environment and the locals. In other countries, if rehabilitation is compulsory, it will increase the cost of coal mining or coal plants, which can discourage corporations from operating fossil fuels and encourage them to deploy renewable energy.

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## About the author



**DO TRUONG PHUONG LAM** is a research associate at the Fulbright School of Public Policy and Management, Fulbright University Vietnam. She handles several research projects focusing on the energy transition, electricity market, and climate change. She also supports the Fulbright Review of Economics and Policy – the Fulbright’s academic journal. Her research interests include energy and environmental economics, applied economics, and development economics. She obtained her Master's degree in Applied economics and econometrics at Monash University, Australia.

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# Reflections on the fellowship program

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## **Nguyen Ngoc Oanh**

*Researcher of Environmental and Sustainable  
Development Department of Institute of Energy*

## **Dang Huong Giang**

*Senior researcher of Center for Renewable  
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## **Hoang Thi Thu Ha**

*Researcher in Power System Development  
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## **Nguyen Hoang Nam**

*Specialist of Science Technology & International  
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## **Key components of the program**

The Southeast Asia Just Energy Transition Fellowship Program has several main objectives. The program presented and discussed current Australian federal and state government policies and regulatory programs. It identified, presented and analysed current developments and future trends, challenges and opportunities associated with net zero strategies and a just energy transition in Australia.

The program enhanced a common understanding between governmental and non-governmental organisations to align resources of key actors (local, business, research institutions, international/development partnerships) to the country's priority areas of energy transition, encouraging the deployment of clean energy towards the goal of achieving net zero by 2050. It aligned the views of regional, national, local, private authorities, research institutions and international/development partners on a just energy transition. It presented and discussed a just energy transition in Australia, Indonesia, South Africa. We learned about electricity market reforms, Australian experience and recommendations for Indonesia and Vietnam.

The program outlined energy transition for the coal industry and socio-economic issues that need attention, such as income, employment, training, environmental restoration). We learned about renewable energy projects, supporting energy transition which some international organisations (such as ADB, RMI, Amperes) are implementing in Southeast Asian countries, including Vietnam.

During the program, we visited several energy projects, such as Monash University's Clayton Campus. The campus has about 30,000 students. Clayton is Monash University's oldest and largest campus, with many initiatives in research projects to combat climate change. Typically, the development of a microgrid on the Clayton campus, investment in renewable energy (solar power, battery storage, biomass electricity) and the construction of high-performance net zero buildings.

We visited Barwon Water Plant in Geelong, Victoria, Australia and projects to combat climate change and protect water resources. We visited Yallourn Power Station (the second largest power station in Victoria, providing 22 per cent of Victoria's electricity and 8 per cent of the national electricity market). The discontinued coal mine in Yallourn is in the process of renovating and restoring the natural environment. We also visited Hazelwood 150MW/150MWh battery plant (built at the location of the 1600MW Hazelwood brown coal-fired power plant that has been decommissioned since 2017 located in the Latrobe Valley of Victoria, Australia).

## Difficulties and challenges when implementing energy transition in Australia, Vietnam and Indonesia

The course covers a wide range of content related to the just energy transition in Australia, South Africa, and Southeast Asian countries. Some of the content left a lasting impression on us.

Australia's experience in transitioning from fossil fuels to renewable energy and its roadmap to a 2050 net zero energy sector were particularly interesting. Australia has operated a competitive electricity retail market since 1998. While electricity demand increased steadily between 2000 and 2010, it has since begun to level off, with future forecasts even suggesting slight growth. This decline is attributed to energy efficiency programs, a shift away from electricity-intensive industries, and consumer response to rising electricity prices.

By 2023, Australia had a total peak load capacity of 32.5 GW and a total installed capacity of 77.7 GW. Renewable energy sources (solar, wind, hydro, bioenergy) accounted for about 47 per cent of capacity and 39 per cent of electricity generation, with coal and gas still playing a role. Battery storage capacity is expected to reach 3 GW by 2023, helping to integrate renewable resources and stabilise the grid. Australia plans to achieve net zero emissions by 2050 by phasing out coal- and gas-fired power plants (most of which will reach the end of their technical life within the next decade) and investing heavily in wind and solar power. Towards 2050, Australia's power structure is expected to reach nearly 100 per cent renewable energy. To achieve this goal, Australia needs consensus and active participation of sectors in society. Australia's experience in energy transition has always been a valuable lesson for Vietnam, Indonesia, and Southeast Asian countries to refer to in the process of implementing Just Energy Transition Partnership (JETP).

Southeast Asia faces a significant challenge in reducing greenhouse gas emissions, with a large share coming from coal-fired power plants. Vietnam, for example, is driven by the dual goals of becoming a high-income country by 2045 and achieving net-zero emissions by 2050. To meet its JETP target of increasing the proportion of renewable energy to 47 per cent by 2030, Vietnam estimates it will need over \$11 billion in annual financing. Similarly, Indonesia has issued a Comprehensive Policy and Investment Plan (CIPP) outlining a roadmap to peak emissions by 2030 and achieve net-zero by 2050. The CIPP estimates a total investment need of \$97.3 billion to reach the 2030 target and \$500 billion for the entire 2023-2050 period. However, a recent report by the [New Climate Institute and IESR](#) suggests an even higher figure, considering the additional costs of early coal phase-out and social support programs for affected workers.

These figures highlight the immense investment capital required for the energy transition in Southeast Asian countries. While international partners under JETP contribute through grants and loans, their role is primarily to catalyse and accelerate the transition. Emerging economies like those in Southeast Asia face a "climate-investment trap" characterised by difficulties in raising capital, incoherent policies and legal frameworks, underdeveloped markets hindering access to financial resources, and high-risk premiums that make investments more expensive compared to developed countries. Risks include political instability, policy uncertainty, transmission grid limitations, technological hurdles, and liquidity concerns. In Indonesia and Vietnam, investment capital is a decisive factor in the Levelized Cost of Energy (LCOE) when developing power sources. The [IEA reports](#) that capital investment and financing costs can account for 80-95 per cent of LCOE in emerging markets, compared to only 4.6 per cent for Australia.

Despite ambitious renewable energy development goals, Vietnam, and Indonesia face challenges such as transmission congestion, rising project costs, and investment licensing difficulties. The energy transition and rapid reduction of fossil fuels also raise concerns about economic impacts, employment disruptions, and social consequences. Integrating variable renewable energy sources necessitates innovative auxiliary service markets to maintain grid reliability and security.

In terms of development orientation, Vietnam has approved PDP VIII and the National Energy Master Plan with the goal of ensuring energy security, gradually implementing its commitment to achieve Net Zero by 2050. Vietnam established the JETP Secretariat in July 2023 and announced a Resource Mobilization Plan (RMP) in December 2023. The promulgation of master plans and plans opens up a favourable and attractive environment for Vietnam to attract investment capital, financial support, technical and technological cooperation from international organisations and developed countries in the world. However, the energy transition with ambitious climate commitments is posing many challenges for Vietnam: energy transition management system; mechanisms and policies on electricity development; mobilising investment capital; building a roadmap to reduce coal-fired thermal power and gas; rationally exploit and use natural resources for the development of renewable energy resources; mastery of engineering and technology; employment problem solving; and changing perceptions and behaviours of individuals, businesses, and social communities.

## The most impressive experience in the course

Our most enjoyable experience during the course was visiting Monash University's Clayton Campus, home to around 30,000 students. Clayton is Monash's oldest and largest campus, leading the way in sustainability efforts. For example, the [Net Zero Initiative](#) features a microgrid development, investment in renewable energy (solar power, battery storage, biomass energy), and the construction of high-performance net zero buildings. The campus has developed a regional scale microgrid platform funded by the Australian Renewable Energy Agency (ARENA) as part of its Smart Energy City project. This project allows control of distributed energy sources, including 1 MW of solar panels, 20 buildings, electric vehicle charging stations, and 1 MWh of battery storage. Real-time monitoring of these assets will optimise them for efficient and reliable power supply. Monash University has a bold vision: all energy used on campus will be clean and renewable by 2030.

Thanks to Climateworks Centre at Monash University for facilitating our participation in this very interesting and rewarding fellowship. We hope in the future, the Institute of Energy (Vietnam) will have more opportunities to cooperate with you in the next projects/courses.

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## About the authors



**NGUYEN HOANG NAM** is a specialist of Science Technology & International Cooperation Department of Institute of Energy, as known as an expert on science technology and international cooperation who has the Bachelor's Degree in International Business and Strategy and is now doing a Master's Degree in Energy Economics. During the working time, Nam has gathered numerous experiences on: engaging in international relations and foreign affairs, overseeing and carrying out collaboration with international organisations, especially in seeking for training opportunities. Simultaneously, he also conducts projects on scientific research and technology development cooperation. Recently, he has had the opportunity to engage deeply in the National Power Development

Plans – PDP8 as long as its Implementation Plan. Mr Nam is an expert for projects related to international cooperation assessment such as: National Development Plan assignments including National Power Development Plan for the period of 2020 to 2030, up to 2050 and National Energy Development Plan for the period of 2020 to 2030, up to 2050, international cooperation projects with international organisations in the field of energy transition and fuel conversion for coal-fired thermal power plant to meet national targets and international commitments on GHG emissions reduction such as green hydrogen and especially for phase out coal with the assignment of GIZ namely ‘Regional Energy Transition Dialogue (RETD)’ in Manila, Philippines; ‘The Future of Electricity – Vietnam’ launched by the Australian Government with support from the Party Central Committee’s Economic Commission.



**TRINH HOANG LONG** is a Senior Researcher of Environmental and Sustainable Development Department of Institute of Energy known as a subject-matter expert on environment, climate change and GHG inventory who has a Master’s Degree in Environmental engineering with 24 years working in sustainable development. During the long-period working time, Long has gathered numerous experiences on: renewable energy; energy efficiency; energy transition; GHG emissions inventory, GHG emission reduction; emission factor; and Strategic environmental impact assessment for the National Development Plans on Energy and Power. Mr. Long is a technical expert for projects related to strategic environmental assessment for national development plan for power and energy, emission calculation, greenhouse gas, energy efficiency inventory such as: National Development Plan assignments including National Power Development Plan for the period of 2020 to 2030, up to 2050 and National Energy Development Plan for the period of 2020 to 2030, up to 2050. Ministerial and state level research assignments related to reducing greenhouse gas emissions due to energy activities, greenhouse gas inventory, carbon footprint, carbon credits, carbon market, carbon pricing, the development of greenhouse gas control measures, the emission reduction roadmap of the energy sector under key ministerial or state level programs. International cooperation projects with WB, UNDP in the field of energy transition and fuel conversion for coal-fired thermal power plant to meet national targets and international commitments on GHG emissions reduction such as green hydrogen and especially for phase out coal with the assignment of UNDP namely ‘Assessment of scenarios of taking coal-thermal power generation in Viet Nam to net-zero greenhouse gas (GHG) emissions by 2050’ and WB namely ‘Develop a Roadmap to Phase Out Coal-Fired Power Plants in Vietnam’.



**DANG HUONG GIANG**, Senior researcher of Center for Renewable Energy of Institute of Energy is known as a specialist on renewable energy, waste reduction, low carbon technology who has the Master Degree of Climate Change with more than 16 years working in renewable energy field. In addition, Ms. Giang has attended for implementing or coordinating a number of important projects such as: National Renewable Energy Development Plan for Vietnam up to 2025 with an outlook to 2035; National Biomass Power Development Plan for Vietnam up to 2025 with an outlook to 2035; National Biomass energy development planning up to 2020 with an outlook to 2030 for Vietnam; Update, revision and restructuring of Vietnam Solid Biomass Investment

Guidelines; and Study and propose the 'Supporting mechanism for development of grid-connected electricity generated from biomass projects in Vietnam' as base for Government to promulgate decision No. 24/2014/QĐ-TTg dated 24/3/2014 on supporting mechanisms for biomass power in Vietnam.



**NGUYEN NGOC OANH**, Researcher of Environmental and Sustainable Development Department of Institute of Energy, is known as a subject-matter expert on environment, climate change and GHG inventory who has the Master's Degree in Environmental with 19 years working in sustainable development. During the long-period working time, Mr. Oanh has gathered numerous experiences on: renewable energy; energy efficiency; energy transition; GHG emissions inventory; GHG emission reduction; emission factor; and Strategic environmental impact assessment for the National Development Plans on Energy and Power. Mr. Oanh is a technical expert for projects related to strategic environmental assessment for national development plan for power and energy, greenhouse gas, energy efficiency inventory such as National Development Plan assignments including National Power Development Plan for the period of 2020 to 2030, up to 2050 and National Energy Development Plan for the period of 2020 to 2030, up to 2050; and Ministerial level research assignments related to reducing greenhouse gas emissions due to energy activities, greenhouse gas inventory, carbon footprint, carbon credits, carbon market, carbon pricing, the development of greenhouse gas control measures, the emission reduction roadmap of the energy sector under key ministerial level programs.



**HOANG THI THU HA** has been a researcher in the Power System Development Department at the Institute of Energy (MOIT) in Vietnam since 2010. She has a background in power source development planning, power transmission grid planning, power system analysis, power system stability and long term power modelling and scenario development. She has bachelors and masters degrees in electric power systems from Hanoi University of Technology.

## Reflections on the fellowship program

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### DR LE VIET PHU

*Senior faculty at the Fulbright School of Public Policy and Management at Fulbright University Vietnam*

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The lectures helped deepen my understanding of the electricity system and related policies and regulations in a country with more advanced power systems such as Australia and learn their implications for Vietnam's future energy transition.

The fellowship was also very useful for extending my network to those working on similar issues in the region. We are currently collaborating with partners in and out of Vietnam to push forward an ambitious plan, involving three components: networked policy-related research, capacity building, and outreach to support evidence-based policy planning and advocacy. We work with various research institutions to study an alternative energy development scenario to replace fossil fuels and integrate more renewable energy in the power system. Our goal is to build a long-range least cost energy sector model to combine hydropower, solar, wind, storage, and smart grids to meet projected future demand while minimising the environmental cost and greenhouse gas emissions. The Australian experience in advanced power market development will serve as critical inputs for our research and policy dialogues, particularly relating to stakeholders buying in the transition and its outcomes.

### Just energy transitions in Vietnam

The Vietnamese government has taken a much more progressive role in delaying coal power plants with solar and wind projects. An impressive development of renewable energy took place between 2018-2020. The [last National Power Development Plan](#) (the revised PDP 7, adopted in March 2016) aimed to raise the renewable energy share in the power system to 850 MW by 2020, 4000 MW by 2025, and 12 GW by 2030. However, these targets have been easily exceeded with the passing of the temporary preferential Feed-in-Tariffs (FIT) for solar and wind power which were effective between 2017-2019. As of now, the total solar installation capacity has exceeded 17 GW (8 GW solar farms and 9GW rooftop solar systems), while wind power has reached 4GW. The pressure to rapidly add more capacity has created significant changes in the market structure. The state-owned Electricity Group of Vietnam (EVN), the de-facto monopoly buyer and system operator of the power sector, has to gradually relinquish its grip on the power system in order to attract low-cost capital for financing power projects from private and international developers. Under the negotiated Just Energy Transition Partnership (JETP) framework, Vietnam has set high renewable energy targets (including solar, wind, and hydropower) of approximately 47 per cent by 2030, up from 36 per cent as of now. These targets are much more ambitious than many regional countries.

Yet, these developments have proven to be unsustainable. Vietnam has been facing power shortage due to the delayed construction of new power plants and transmission networks and the underutilisation of renewable energy sources that were already installed but not timely put into operation. Furthermore, Vietnam's ambitious renewable energy targets would certainly exacerbate the reliability issue of power generation both in short and long terms. Many existing power plants in Vietnam, mostly coal-fired and combined cycle gas turbine (CCGT), are designed as base-load generators. They are not suitable in a rapidly changing environment. Then, EVN must deal with how to safely integrate a vast number of renewable projects while ensuring system instability and the overall fiscal impact of high-level variable renewable energy (VRE) integration on retail pricing. Note that the power price is much lower in Vietnam than most regional countries. The price in Australia is



much higher. Future large-scale energy storage projects as we saw during a site visit of the 150MW BESS in Hazelwood, VIC, could increase the system flexibility and reduce VRE curtailments.

## The challenges and opportunities in Indonesia and Southeast Asia

The JETP is unlikely to change the current power sector landscape in Vietnam due to its relatively small size compared to the overall need, the condition for financing, and local scepticism toward long-term commitment to reforms.

Referring to [Dr Cau's](#) lecture on the energy trilemma of affordability, reliability/security and sustainability, it is important to align the interest of the system's operators and regulators to take advantage of the market to incentivise private sector's participation. Under the right conditions, the private sector could lead a quick transition toward a cleaner energy mix through investments in solar and wind, energy storage, transmission grids, and the implementation of energy efficiency initiatives.

To do so, Vietnam must overcome many barriers, from policy obstacles to economic, financial and technological challenges. The Vietnamese government must remove numerous policy hurdles to mitigate unnecessary risks to investors and financial institutions. In addition, renewable energy should be seen as part of the country's economic development strategy. In the long term, to fully benefit from the clean energy transition, Vietnam must develop its own energy supply chain combining international industries, local manufacturing, and indigenous expertise. There remain significant challenges to overcome. While commercial-scale solar projects have become more cost efficient, wind power projects are capital-intensive and technically demanding in all phases of manufacturing, project designs, construction, operations, maintenance, and decommissions. Currently, there are only limited gains from low value-added activities employing low-skilled labours for equipment assembly and construction. We need more analysis on job creation, income distribution, government fiscal policy, as well as on the socio-economic and environmental impacts of alternative energy development scenarios.

## Finding a way forward

We share many opportunities and challenges with our Indonesian neighbours. Many regional countries currently do not have legal frameworks and market conditions in place to realise ambitious power development scenarios that build on substantially increased renewable energy. On the positive side, this will pressure countries to work together as our experience could be shared and replicated in other places.

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## About the author



**LE VIET PHU** is a senior faculty at the Fulbright School of Public Policy and Management at Fulbright University Vietnam. His main areas of research include energy policy, power system designs and renewable integration, climate and other emerging issues in the Mekong River Delta of Vietnam.

## Reflections on the fellowship program

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### **The power of a systems change approach**

The concept of a system-change approach to decarbonisation was the most inspiring aspect of the fellowship program, in my opinion. While the idea of a system-change approach is not new when it comes to organisational transformation, it's interesting that I haven't seen it discussed much in relation to energy transition.

Following the COP 26 commitment, the Vietnamese government has made great efforts to design comprehensive plans for energy transition towards a net zero emission goal by 2050. However, there are separate plans for each sector of the economy such as the power sector, industrial sector, and transportation sector. These plans aren't closely connected to each other and to the financial and business plans, which may be the reason why we haven't yet figured out how to make it happen in reality after releasing the Power Development Plan VIII in May 2023. The system change approach I learned from the fellowship program pointed to what Vietnam could do better for planning its energy transition.

During the lecture, I learned that system concepts include both physical systems and enabling systems. In decarbonisation, the physical system is where emissions are generated. Enabling systems include sustainable finance and investments, sustainable corporates and their influencers, sustainable economies, and feedback loops between private and public sectors. The energy transition systems – which include energy systems, urban systems, industrial value chains, the financial sector, and business sector – are complex and dynamic, making it nearly impossible to change a system by addressing a single element.

To apply a systems change approach, we must first acknowledge the existing systems with their own momentum that are serving the current goals well. Then, we must understand the best way to interact with the system for change, identify the transformations needed, and align it towards our new goals. Focusing on the highest impact opportunities can help reduce larger emissions with smaller efforts or require working with a smaller number of decision-makers but achieve greater influence in each sector. Such system changes would require coordination across stakeholders, sectors, and geographic places, in which the government should play the role of a coordinator.

### **Vietnam's just energy journey**

Vietnam has made significant strides in promoting wind and solar power in recent years, thanks to attractive feed-in tariffs and long-term power purchase agreements. However, electricity production in 2023 still heavily relied on fossil fuels (55 per cent) and hydropower (29.6 per cent). This was because the transmission capacity did not grow fast enough to cope with the rapid growth in renewable energy. While solar power was mostly developed in the Central and Southern regions, the Northern region experienced an electricity shortage. Vietnam thus had to curtail solar and wind generation, while developing more gas-fired power plants, to provide peak and balancing

services. These problems suggest that Vietnam needs to adopt a system change approach for energy transition.

During the fellowship program, I learned about how the competitive market mechanism works for the Australian energy system. I believe competitive markets could lead to a systemic and smooth energy transition in Vietnam. With technical support from Australia and other developed countries, Vietnam has begun to decentralise the wholesale electricity market and establish markets for carbon credits and ancillary services. Multiple new regulations have also been discussed to keep up with the growth of renewable energy. Once these markets and regulations are in place, they can provide appropriate incentives for stakeholders to invest in clean energy and ancillary services, thereby moving away from fossil fuels.

## **The challenges and opportunities for Vietnam**

The Vietnamese government and businesses view the Just Energy Transition Partnership (JETP) as an enormous financial support for decarbonisation projects. However, I do not believe that JETP can significantly drive Vietnam towards clean energy in terms of financing. In contrast, I consider financing to remain the biggest challenge for Vietnam and other Southeast Asian countries to implement JETP successfully. This is because the amount of 15.5 billion USD pledged in JETP is only a fraction, approximately 10 per cent, of the total amount that Vietnam needs for its energy transition until 2030. Moreover, most JETP funding comes with commercial interest rates and other conditions that may be unaffordable for domestic investors in developing countries such as Vietnam and Indonesia.

Without affordable and sufficient funding, it is infeasible for Vietnam to gradually scale up clean energy, phase out coal-fired power, and reach its peak carbon emission in 2030, as committed under JETP.

The most significant impact of JETP could be creating international and public pressures that will encourage the government and businesses to make efforts to transition to clean energy systems while also paying attention to the JUST aspect during the transition. A strong commitment towards energy transitions could even lead to financial institutions providing loans with smaller risk premiums. Technical support from partner countries could also accelerate the transition process.

## **Partnerships and insights for future progress**

Besides the opportunity to go on two field trips to Geelong and Latrobe Valley, the fellowship brought me an invaluable opportunity to meet and discuss with numerous leaders, policymakers, and experts from Indonesia, Vietnam, and Australia. It was amazing to meet so many great people during such a short time.

The fellowship program gave me practical insights into how various Australian government departments, research institutions, and corporations have been involved in the energy transition. Through my conversations with the Indonesian and Vietnamese fellows, I gained a deeper understanding of the current energy transition situation in Southeast Asia and identified some new research topics that I will continue to work on after the fellowship.

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## About the author



**DR DOAN THI THANH THUY** is a Postdoctoral Fellow at Fulbright School of Public Policy and Management, Fulbright University Vietnam. Her broad interests include environmental, energy, and development economics. Motivated by an interest in informing public policy, her work focuses on analysing and evaluating energy conservation policy, clean energy transition, climate impacts, and vulnerable population well-being. She is skilled in applied econometrics, data analytics, data visualisation, and computational optimisation model.

From 2013 to 2016, Thuy served as a full-time lecturer in Economics at Ho Chi Minh City Open University, where she developed course materials and taught Microeconomics and Public Economics. Besides, she was a teaching assistant at the Vietnam Fulbright Economics Teaching Program and the University of Hawaii at Manoa during the periods of 2012 – 2013 and 2016 – 2018. During those years, she had gained teaching experience in multiple courses, such as Microeconomics, Behavioral Economics, Mathematics for Economics, and Econometrics.

Before becoming an academic, Thuy worked at the Bank for Investment and Development of Vietnam (2008 – 2011) and at Saigon General Service Corporation Vietnam (2007 – 2008). Since then, she has developed her expertise in project appraisal and financial analysis.

Thuy holds a Master's in Public Policy from the Fulbright Economics Teaching Program and a Ph.D. in Economics at the University of Hawaii at Manoa.

## Reflections on Just Energy Transition Fellowship Program

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### **MARIA EMENINTA**

*International Department of Konfederasi Serikat Buruh Seluruh Indonesia (KSBSI), regional coordinator program ACV/CSC International in Asia and national coordinator of Indonesian Trade Unions Committee on Just Transition*

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As one of the top ten carbon-emitting countries, Indonesia has been under the global spotlight for the past decade. Alongside this recognition, numerous initiatives have been launched to address the situation and shift Indonesia towards its goal of carbon neutrality by 2060. One of the most ambitious initiatives currently underway is the transformation of the energy sector through the Energy Transition Mechanism, which includes the Just Energy Transition Partnership (JETP).

Unfortunately, these initial initiatives have faced criticism for being perceived as inadequate in addressing the existing situation, particularly in terms of the lack of social aspects from the outset. The Just Energy Transition SEA program, facilitated by the Australian government, provides a pathway that sheds light on many aspects closely related to Indonesia's current situation, especially the JETP.

There are some elements I found crucial to address the energy transition in Indonesia, learning from sustainable progress in Australia, as we learnt during the fellowship program:

### **Socio-economic aspect**

In my work as a trade unionist, the socio-economic aspect is one of the most crucial topics I learned about during the fellowship program. This aspect is closely intertwined with other important categories, particularly Good Governance and the Financial System. In this regard, a systems change approach is essential because interconnected industrial sectors and economic actors significantly impact social life. The private sector needs to confidently commit to reducing their emissions. Teams in physical systems and enabling systems, including capital and financing, must work to translate necessary technologies (such as those in transport and other sectors). Ensuring the sharing of information and knowledge, as well as fostering strong relationships, is vital. Another critical element of systemic change is the synergy among stakeholders, especially the government. Indonesia, unfortunately, is weak in this area. Each department operates with its own policies and programs, lacking a clear coordination system to form a comprehensive policy. Sadly, the Department of Manpower has no significant program or policy involvement, leading to the marginalisation of workers in this process.

### **Challenges of transitioning away from fossil fuels**

A reflection on the just energy transition in Indonesia over the last few years shows significant progress. However, transitioning from fossil fuels, especially coal, to non-fossil fuels will be challenging for two main reasons. First, coal is a major production resource in Indonesia and serves as a significant export commodity, contributing substantially to the country's revenue. Second, renewable energy sources are still new and unfamiliar. They have not been widely adopted and lack strong operational schemes due to limited resources and funding.

Adequate capacity is needed to explore the potential that suits the country, a transition that not only maximises existing resources but also provides sufficient understanding to the community about the necessary changes and the strong reasons behind them, ensuring that the transition truly becomes a shared endeavour. For this, the lessons learned during the fellowship, particularly during the field visit

to the Latrobe Valley where all community elements were involved from the beginning, need to be practised in Indonesia. This could potentially be done through a pilot project in one city or region in Indonesia, such as Bontang in East Kalimantan, which is a major coal area, or Bekasi in West Java, which is the largest industrial city. In this context, a strong commitment from local authorities, involving the community representatively from the initial planning stages, is key to successfully designing a just transition scheme, which can then serve as a model for other regions in Indonesia.

## Challenges of implementing the Just Energy Transition Partnership in Indonesia

Currently the Just Energy Transition Partnership is the major initiative that can be seen as a benchmark for whether Indonesia can prove its commitment to a proper and just transition. This will be a model for Asia, as Indonesia is the first country of JETP in this region. There are number of challenges for JETP implementation in Indonesia and also in Southeast Asia as well:

- + JETP does not involve all aspects of society in a representative manner, which may lead to potential rejection.
- + JETP is fraught with weaknesses in its implementation scheme: for example, the threat of privatisation, inaccurate and incomplete baseline data, such as where the targets are, how many people are affected, how many workers will lose their jobs, the potential for job creation, and so on.
- + JETP is still evolving and has not yet become a fixed and standard working scheme. The JETP Secretariat, formed in haste, has undergone structural changes and raised many questions: who does what and how.
- + Funding for JETP is still questionable. Why is it so slow, giving the impression of strong foreign intervention in national affairs? The amount of grants is very small compared to the other three JETPs in Africa, Senegal, and Vietnam, and is also considered too burdensome and will only add to the list of burdensome loans for the country.

## Opportunities of implementing the Just Energy Transition Partnership in Indonesia

As stated previously, the challenges can also be the opportunities for JETP. As the pilot of the energy transition in the country, its success will be a role model for simultaneous energy transition in Indonesia, not only for the energy sector but also other sector particularly four others in the NDCs: plantation, land use/forestry, IPPU and waste. The JETPs will also be the pathway to position Indonesia as a good model in reducing emission in the climate change era, including in the Asia region.

## Resonating fellowship experience

There are number of the fellowship experiences that resonates the most:

- + A good governance and comprehensive planning of multi stakeholder in Geelong and Latrobe Valley as an example for Indonesia.
- + The job sustainability plan (from 1.2 million job losses to 1.5 million jobs planned in Indonesia) and this needs an employment roadmap with integration to the national roadmap for energy transition.

- + Strengthen just transition implementation. The public finance has to allocate a social budget for the transition of jobs from coal to clean or renewable energy. Private finance which has a related program should allocate a budget at a reasonable percentage. One of the approaches can be planned as the Indonesian industrial system is through a tripartite body on Just Transition establishment, or can be technically started by creating the Just Transition centre which the private sector is a part of. Their task can be defined as follow:
- + Mapping the job changes: which company will be closed, what area, how many jobs will be lost or changed.
- + Provide the necessary skills program, including job replacement with proportional measures because it also needs to consider about 2.5 million fresh graduates yearly. The government should be very careful to avoid another gap of unemployment in this regard.
- + Other related programs in a selection and priority scale: social protection, SME initiatives.

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## About the author



**MARIA EMENINTA** is International Department of Konfederasi Serikat Buruh Seluruh Indonesia's (KSBSI) regional program coordinator, ACV/CSC International in Asia, and a national coordinator for Trade unions Committee on Just Transition and has been working with the organisation since 1997. She has also since worked as the Chairperson and General secretary of NIKEUBA Federation, General secretary of ABCW, Auditor of ITUC Asia Pacific and General secretary of WOW Asia.

She has extensive technical experience including trainer of negotiator training, trainer for lobby and advocacy training, International Labour Organisation (ILO) trainer for Start & Improve Your Business (SYB), experience in conducting campaign especially on women (domestic workers, informal economy, migrant workers, young women workers) and child labour. She has participated in the G+20 Rome, Italy 2016, has previously participated in International Labour Conference (ILC) on Committee Global Supply Chain, has been the head organiser for regional workshops on multinational companies and global supply chains, head of National Gender Training of Trainer KSBSI and Badan Penyelenggara Jaminan Sosial Kesehatan (BPJS). She was co-chair Labour 20 (L20) Indonesia 2022, member of Committee Just Transition ILO Conference, Geneve, 2023 and national coordinator for Indonesian Trade Union Committee on Just Transition.

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