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Implementing a Just Energy Transition

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Keynote address to the Fourteenth Vietnam Economist Annual Meeting (VEAM 2023)
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Implementing a Just Energy Transition

How to spend$15.5 billion in the next 4 years?

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Abstract

Vietnam is at a critical juncture in its energy transition. While robust economic growth drives electricity demand, sustainability concerns necessitate a shift to renewable sources. International cooperation can provide vital support through knowledge, technology and finance. However, funding proposals like the Just Energy Transition Partnership (JETP) require balanced evaluation. Transition policies must also incorporate multifaceted notions of justice and adaptively blend planning with market forces. Seizing opportunities while overcoming hurdles demands policy innovation, stakeholder inclusion and evidence-based analysis. With creativity, pragmatism and social responsibility, Vietnam can pioneer an equitable transition that meets development needs cost-effectively. I present an integrated perspective across technical, financial, political and social dimensions, and welcome expert input on charting an optimal pathway during this pivotal moment.

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1. Introduction

Esteemed colleagues, I am honored to discuss Vietnam's energy transition. This critical topic has implications for sustainable development.

I will analyze five key issues. First, Vietnam is at an energy crossroads, needing more electricity yet greater sustainability. Next, while international cooperation is vital, funding proposed in the Just Energy Transition Partnership seems unfeasible, it misunderstands the role of the public and the private sectors. I will then explore how justice requires inclusive policies. Finally, I will assess balancing planning and markets for adaptive governance.

My analysis incorporates technical, financial, political and social considerations, complementing economic perspectives. I hope to enrich discourse on enabling Vietnam's equitable transition to an efficient, clean energy system. I welcome your expert input on opportunities, barriers and breakthroughs serving all citizens.

Economists must engage with other experts to chart an optimal pathway forward. I look forward to our discussion.

2. Vietnam is at the dawn of its energy transition

2.1. Three replies to the Limits to growth debate

Malthus famously questioned the possibility of exponential growth in a limited world. Let us visit three proposed answers: Ecodevelopment, launched at the 1972 Stockholm conference, Sustainable development, launched at the 1992 Rio conference, and Energy Transition.

Ecodevelopment highlights the need for self-reliance and judicious planning to use of local resources with appropriate technologies. The later aspects resonates with Vietnam as a developing country aiming to harness abundant renewable energy potential, using a comprehensive system of national planning. On the other hand, Vietnam’s open economy development strategy, fit with the current globalization era, does not follows ecodevelopment's emphasis on endogenous development.

Sustainable development stresses the need to steer growth and technical progress so that future generation’s can meet their needs. Eradicating economic misery is the first lever to let future generations meet their basic needs. This is in line with Vietnam's growth-seeking policies.

Compared to sustainable development, the transition concept recognizes that the present situation is unacceptable and should be changed urgently. It also carries the idea that societies have done it in the past: the primary energy source has moved from traditional biofuels to coal, crude oil, and natural gas. This paints a clear trend from more carbon-intensive fuels to less, with a logical next step into carbon-free renewable energy.

2.2. Energy transition is already started

Sustainable development has three pilars: social, environmental, economic. The energy transition projects them as an energy trilemma. It asserts that policies must satisfy three goals at the same time: *Energy Security* is the capacity to meet current and future energy demand reliably, with resilience to external shocks. *Energy Equity* is the ability to provide universal access to reliable, affordable, and abundant energy for domestic and commercial use. *Energy Sustainability* avoids environmental harm and climate change impacts.

Vietnam's *energy equity* performance is satisfying. Energy security was ensured under the PDP7 during 2010-2020, but Figure 1 shows that the economic growth rate challenges it constantly – there is a constant need to increase supply. Energy sustainability deteriorated during the last ten years, for example we installed over 20 GW of coal power plants in ten years. Yet the figure also shows that Vietnam is at the dawn of its energy transition: in 2020 Vietnam was the third most active country in the world for Solar PV, for example.

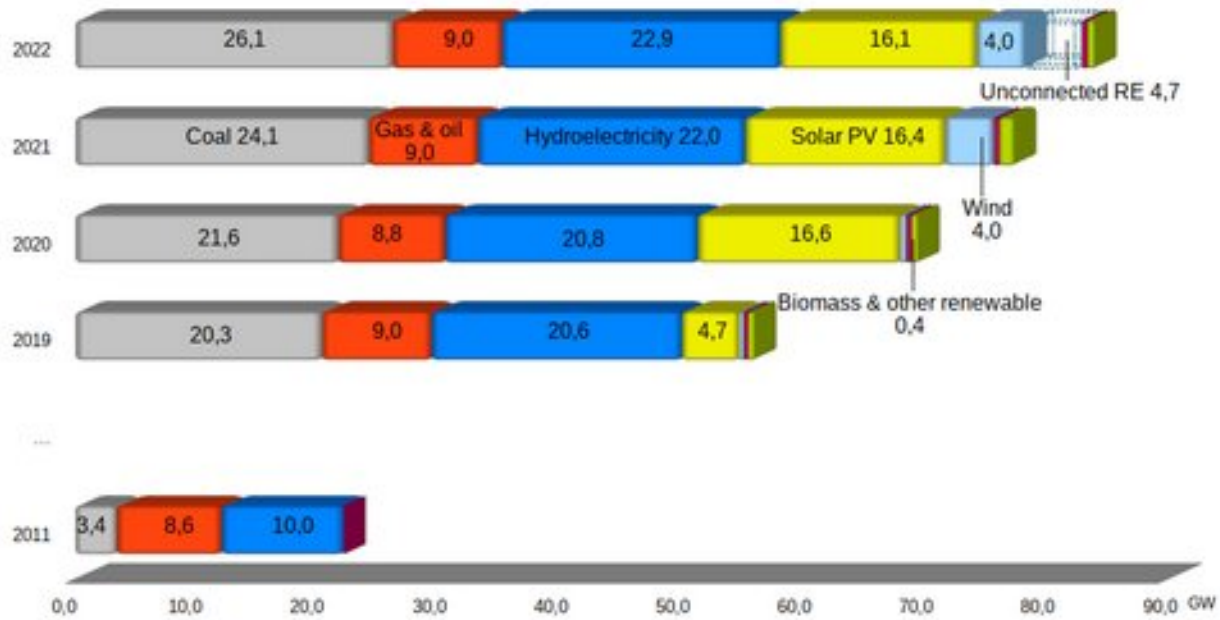

Figure 1: Electricity production capacities installed in Vietnam.

2.3. Challenges ahead

In May 2023, Vietnam introduced its Power Development Plan 8, or PDP8, describing how we'll manage our electricity needs over the next ten years, with the vision of having zero net carbon emissions by 2050.

The plan says we stop building new coal power plants, and instead, we're going to start using imported Liquefied Natural Gas, or LNG. This new plan is a breath of fresh air for the clean energy industry, after a challenging two years. It sets high goals for wind energy, both on land and at sea. It also encourages people to generate their own solar power and boost our local green economy. It promotes hydroelectricity and gas, which can adapt well to the variability of solar and wind power.

But we have some big challenges ahead of us. First, the power sector needs to invest $13.5 billion each year. Second, we need to make sure our electrical grid can handle the growing demand. Third, we're hoping to produce more gas locally, but that might be too optimistic. It's also uncertain how many of our planned LNG power projects will attract investors. On top of all that, buying fuel from other countries is tricky because prices can change a lot.

So, we need to work with other countries to overcome these hurdles. A successful partnership could help us use more renewable energy and reduce our CO2 emissions. At the same time, we need to improve our own laws to make it easier to invest in renewable energy projects. This includes projects like power generation at a local level, offshore wind farms, and floating solar panels. In order to attract private sector involvement, we have to make our power market more appealing.

In short, Vietnam is at the dawn of its energy transition. Our new Power Development Plan 8 is aligned on the promise to use zero carbon by 2050, with a focus on wind and solar power. But we face big challenges like finding enough money, improving our power network, and dealing with buying fuel from abroad. To overcome these, we plan to work with other countries, in line with our open development strategy.

3. International cooperation cooperation on energy: both trade and aid work

3.1. From global talks to more operational multilateral approaches

Global agreements are good to talk, coordinate on common goals, set transparency goals.

The Paris Climate Agreement provides a gateway for Vietnam to tap into global knowledge networks, collaborate in research programs, and gain access to funding, all targeted toward clean energy goals. Vietnam has made strides in this direction, with Prime Minister Pham Minh Chinh pledging in Glasgow on November 1, 2021, that the country will achieve net-zero greenhouse gas emissions by 2050. Furthermore, Vietnam has committed to the Global Coal to Clean Power Transition Statement, a promise to transition away from unabated coal power generation by 2030, and signed on the US and EU-led Global Methane Pledge. These commitments demonstrate Vietnam's resolve toward sustainable energy practices.

However, the effectiveness of global agreements is limited by the lack of enforcement with a binding international law. An example is the Clean Development Mechanism (CDM), a Kyoto Protocol provision aimed at reducing greenhouse gas emissions. Without a powerful overseer, the global market for certificates that prove reduced emissions has been flooded with low-quality ones, undermining the system's trustworthiness and effectiveness.

In response to these challenges, there has been renewed interest in small coalition approaches, a model where a handful of countries take the lead in addressing environmental issues. The G20 has outlined the concept of 'Country Platforms.' These are voluntary initiatives at the national level that promote cooperation among development partners. They are based on shared strategic visions and priorities for implementing the Sustainable Development Goals by 2030.

ASEAN cooperation is especially significant as the potential creation of a regional electricity super grid could substantially reduce electricity costs and enhance network stability. These initiatives highlight the immense value and potential benefits of active participation in multilateral agreements for Vietnam's energy transition.

Regarding the energy transition, Vietnam actively participates in two platforms: the Vietnam Energy Partnership Group (VEPG), affiliated with the MOIT, and the broader Just Energy Transition Partnership (JETP). These platforms have mainly involved Western development partners.

3.2. Bilateral cooperation is where the action is

Vietnam's energy sector has enjoyed fruitful bilateral cooperation with various development partners worldwide. To the west, France, Germany, Denmark, the UK, the US, and the EU have been dynamic partners. The East includes contributions from Japan, South Korea, and China. The fruits of cooperation are evident in several aspects, best illustrated by examples:

- Capacity Building: France has fostered talent in the Vietnamese energy sector through initiatives like the PEF fellowship program that funded over 800 Vietnamese students' education in France since 2003. The University of Science and Technology of Hanoi, housed within the Vietnam Academy of Science and Technology, is another result of French cooperation. The Clean Energy and Sustainable Development lab, which I helped start there, exemplifies the research capacity built via France's support.
- Technical Assistance: The EU's Technical Assistance Facility program, along with Germany, assisted Vietnam in crucial areas like constructing a national energy data system, promoting rooftop solar, and developing renewable energy regulations based on EU models.
- Development Aid: The EU pledged over 400 million euros in non-repayable budget support for Vietnam's energy transition and green growth efforts. For example, 22 million euros were approved for disbursement in 2023.
- Preferential Loans: The French Development Agency (AFD) provided a 70 million euro credit in 2021 to expand the Hoa Binh hydropower plant at better terms than what Vietnam could obtain on international financial markets.

By sharing knowledge, co-developing human capital, providing targeted technical help, and offering financial assistance, cooperation partners tangibly advance Vietnam's energy transition. Expanding such collaborations can accelerate the shift to clean energy.

3.3. A JETP $15.5 billion deal with G7+ to accelerate the energy transition

Vietnam's journey towards a sustainable energy sector picked up pace at COP26, with negotiations leading to the signing of the Just Energy Transition Partnership (JETP) agreement in Brussels on December 14, 2022. This deal sees the G7+ countries, and Vietnam united in a shared commitment: to pivot towards a net-zero trajectory for our power sector development (Ha-Duong, 2023a). Besides Vietnam, G7+ countries also signed JETPs with South Africa, Indonesia, Senegal and more may come.

In our JETP, G7+ countries pledged to mobilize a substantial $15.5 billion, split equally between public and private sectors. From the public sector, $7.75 billion will be offered at terms more attractive than those found on private capital markets. The remaining half will be raised by the "Glasgow Financial Alliance for Net Zero (GFANZ)," a consortium of private financial institutions.

In return, Vietnam commits to significant milestones for 2030. Power sector CO2 emissions will peak at 170 Mt, instead of 240 Mt in 2035. We commit to limiting our coal power capacity to 30.2 GW, down from a 37 GW previous goal. In addition, we envision that renewable sources, including hydroelectricity, will provide at least 47% of our electricity production that year.

Seven months after this declaration, we've seen both triumphs and trials. Our Power Development Plan 8 is aligned with our sustainability goals, setting a clear and promising roadmap for the future. However, there is not much time left to prepare and discuss the Resource Mobilization Plan, due in November 2023. On a positive note, the renewable energy sector, though facing initial hiccups, is regaining hope, becoming a more central player than ever in our energy landscape.

In summary, international partnerships are essential levers to accelerate innovation, share risks, mobilize finance, and build capacity for Vietnam's energy transition. Strengthening cooperation across various levels — bilateral, multilateral, intellectual— can maximize the benefits of a global effort toward a sustainable energy future. It can only be recommended to foster collaboration among scientists, lawyers, and policymakers from all countries.

4. Fundmatching ODA and FDI is not justified

The PDP8 show that the power sector expansion needs over 13 billion USD per year. The JETP pledges to bring in 15.5 billion USD for the next 3-5 years, which is about four billion USD annually. Thus the JETP proposes that G7+ countries finance one third of the sector's short term capital needs. This a plausible ambition, since these countries are the among the richest in the world.

The JETP proposes that half of the 15.5 billion USD will be mobilized as official support by the development partners, and half by a consortium of private actors. I argue this is not justified.

4.1. The public sector will not finance the PDP8, especially not by debt

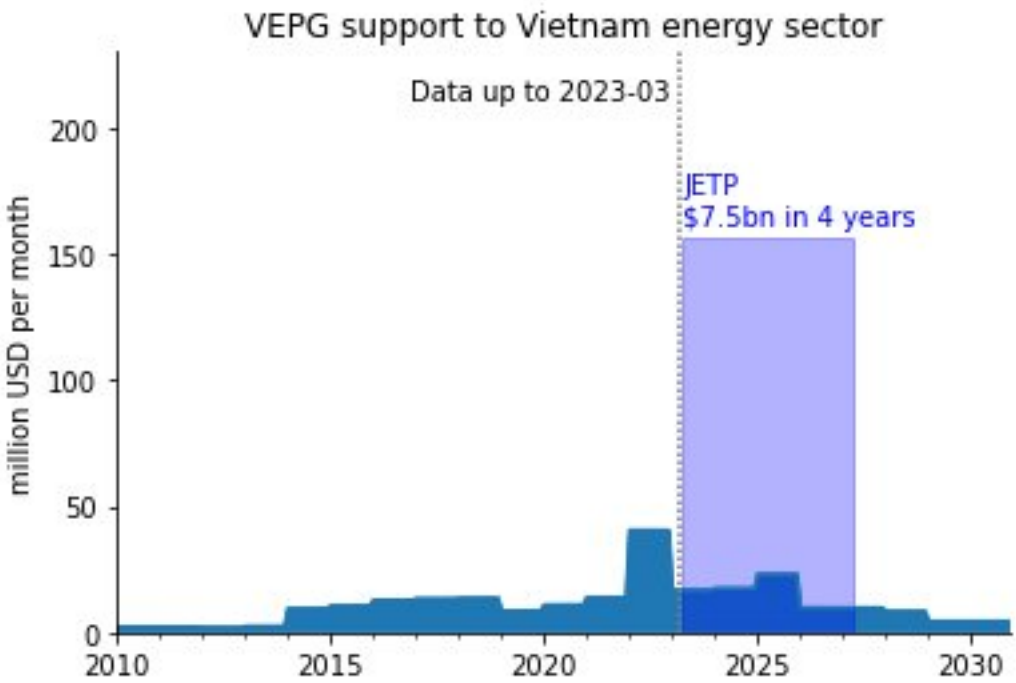

Figure 2: Official development assistance to Vietnam's energy sector

Figure 2 shows that the JETP goals would require multiplying the average support to Vietnam's energy sector more than five times. This is in terms of commitment, the multiplier is even larger in terms of amounts disbursed.

The reasons why this is not realistic is that the public support part of JETP is going to be mostly loans, not grants. Vietnam has less priority to receive grants than low-income countries, and the rich countries have been slow to increase the funding they allocate to climate cooperation. Yet Vietnam has a strict fiscal discipline, particularly regarding external public debt.

It is a national security risk for a receiving country to allow a single source of foreign capital to finance, therefore, own a significant share of its energy system. One answer is to use the JETP size and time horizon for corporate financing, as opposed to traditional ODA project financing. EVN could negotiate green bond emissions to finance the power grid development. The principle of borrowing from the World Bank and ADB to build critical infrastructure is well established. It fits conceptually with the JETP architecture: the public sector constructs the transmission lines, and the private sector invests in the power generation capacities. However, EVN bonds, even if not formally State guaranteed, increase the national debt and can only be used only in moderation.

There are also ongoing discussions to promote distributed solar PV. These are urgent, can be a first step to adopt energy efficiency measures and energy storage. ODA delivered through the banking sector can support these measures.

The disbursement of public investment funded by official development assistance (ODA) in localities in the first six months of this year has reached only 7.6% of the year's target, according to the Ministry of Finance (MoF). It is hard to believe that the energy sector ODA could be increased by 500%.

4.2. Foreign direct investment is larger

The JETP $7.75bn public support pledge was based on diplomatic comparisons with what other countries got, as much as an assessment of the sectors needs and the feasibility. Then the 7.75 billion USD from the private sector is just a placeholder number based on matching numbers.

Looking at how much the foreign countries invest in Vietnam's electricity sector, Figure 3, we see that the numbers can exceed 8 billion USD in one year. Capital costs for power plants are no less than 1 billion USD for 1 GW, and the unit size of a coal power plant is 1.2 GW. FDI during the period shown was mostly directed to CO2 emitting electricity generation technologies, so the JETP still entails significant changes compared to the past. Note also that the numbers include investment from all countries, including China who is not part of the JETP pledge.

Suppose that total investment from G7+ countries in Vietnam's renewable energy sector over 2023-2025 exceeds 13.5 billion USD, while ODA only sums to 2 billion USD. Would we call the JETP a success then? We should. A leverage ratio of public funds greater than 1:1 is better from everybody's point of view. The JETP is not a pot of money but an international declaration. It only says that G7+ countries and Vietnam want to go somewhere together. The high-level agreement sets an objective and leaves it up to the executive levels of the administrations to implement the details.

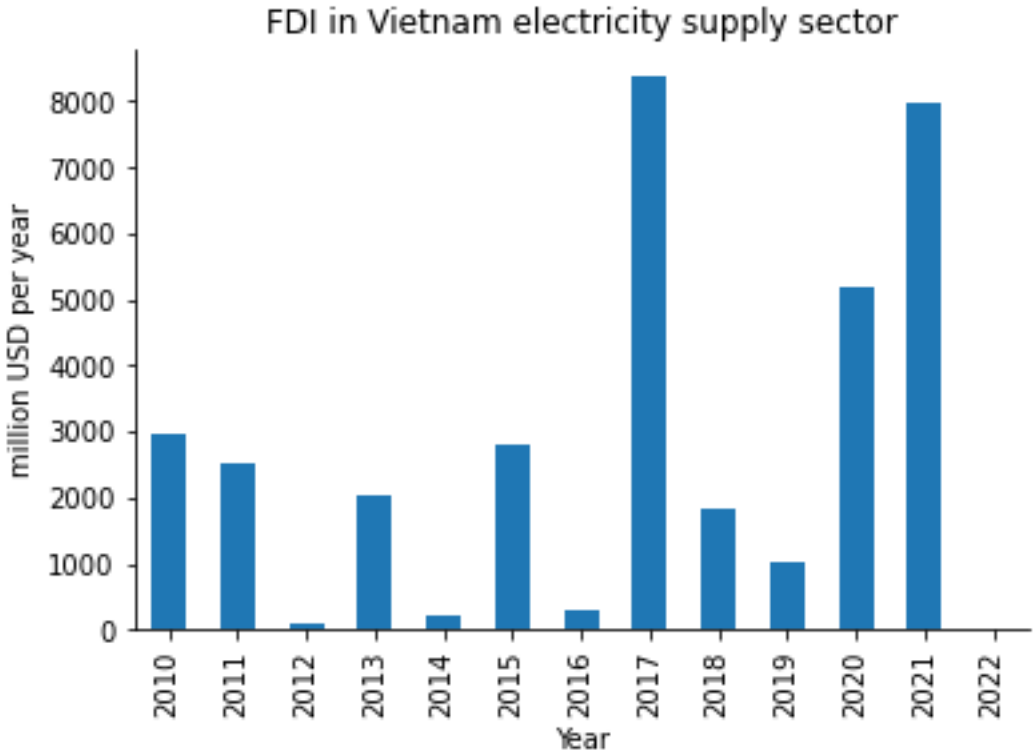

Figure 3: Registered foreign direct investment in Vietnam electricity supply.

4.3. Execution gets the political win

The JETP timeline is very tight. The JETP will support Vietnam to "*develop [...] long-term legal framework for the green transition of its economy, including through the use of pricing and regulatory instruments, which will include but is not limited to making improvements to the regulatory framework to facilitate investment into renewable energy and energy efficiency and to strengthen the electricity grid in Việt Nam...*" The key to near term success is to finalize the regulatory reforms already started. They include:

- Advancing the maturity of electricity markets. Many Fortune 100 companies now are interested to buy Green electricity, but EVN does not have that option on its menu. The “Direct Power Purchase Agreement” mechanism will allow solar and wind projects to sell at a higher price than EVN would pay.
- Renewable energy auctions. Providing a fixed feed-in-tariff to renewable electricity projects is costly for EVN. Organizing the competition between developers will lower electricity costs, and is an opportunity to direct the new projects where they are most needed.

- Large offshore wind. CAPEX for far offshore wind projects are about 3 billion USD per GW (Ha-Duong, 2023b), and a typical project has several 500 MW phases. As the PDP8 aims for 6 GW installed in 2030, reaching FID and engaging funds for the first phase of four projects during the JETP phase is desirable – here is 6 billion USD of FID.
- The discussions on involving the private sector in the electricity network developments may take more time than available in this JETP framework. They may be relevant for a second phase.

Vietnam's energy policy agenda also includes a long-term legal framework for carbon markets and emission reduction certificates trading nationally and internationally. The JETP does not mention carbon markets or forestry, it prioritizes increasing renewable energy production. Nevertheless, it is important to think ahead how the investments made and contracts signed today will fare with a higher price of carbon.

In summary, the JETP has ambitious goals for ODA and FDI that are achievable through regulatory reforms to enable renewable energy investment. Multiplying ODA fivefold is unlikely, but FDI can provide billions annually. The priority is reforms for direct purchase agreements, auctions, and offshore wind to facilitate major projects. Success means concrete progress enabling investment and financial close of renewables, even if literal ODA targets are unmet. A long-term framework for carbon markets is also crucial. The next section examines justice and equity in Vietnam's transition.

5. Justice in the energy transition

A just transition seeks to distribute the burdens and benefits of change equitably. Considering workers in fossil fuel industries, communities in energy poverty, and nations impacted by climate change and barriers to development, justice must be rooted in fairness, inclusivity, and respect for human dignity. Understanding justice through different perspectives enriches our understanding and helps us create an inclusive transition.

5.1. Justice is a multifaceted concept.

At this point, I want to dive deeper into the theme of justice within the context of the Just Energy Transition Partnership (JETP). To frame this discussion, I will borrow the framework offered by Wang and Lo (2021), who identified five distinct perspectives on the idea of a just transition:

1) Labor-oriented concept. This perspective traces the idea back to the 1970s, when heavily polluting industries in the United States began their inevitable decline. Rather than resisting environmental regulations, the Oil, Chemical, and Atomic Workers Union (OCAW) sought ways to support workers through retraining and community support programs. This perspective helps us understand that just transitions can facilitate conversations about managing the social implications of necessary environmental changes and the potential of creating green jobs.

2) Integrated Framework for Justice. This perspective views the just energy transition as a fusion of environmental, climate, and energy justice. Environmental justice recognizes that disadvantaged communities often bear the brunt of environmental degradation. Climate justice highlights the unequal distribution of past, present, and future responsibilities concerning climate change. Energy justice tackles energy poverty and the trade-offs between energy, CO_2 emissions, and development.

3) Theory of socio-technical transitions. This perspective perceives the energy transition as a socio-technical shift, where niche innovations can destabilize the socio-technical landscape and even alter the prevailing socio-technical regime. When the means of electricity production go to the people, the role of the State Owned Entreprise changes.

4) Governance strategy. This perspective focuses on the institutional structures, governance, and social relations that underpin the energy transition. It highlights the importance of coalition-building, effort-sharing, and understanding the tension between the urgency to act and the need for inclusive decision-making processes.

5) Public perception. This perspective concerns public perceptions, acceptance, and support of low-carbon energy projects and policies. Research in this area often aims to uncover the factors influencing stakeholders' attitudes.

Each perspective provides a unique lens to understand the nuances of the term' justice' in JETP, demonstrating that the term is not merely a buzzword but a multifaceted concept that embodies different meanings for different people. This multiplicity is not a hindrance but an asset. It enables us to unite under a common cause and collectively navigate the intricacies of a just

5.2. South Africa early JETP report

The value of these perspectives is demonstrated vividly in the case of South Africa. This country's energy transition faces considerable challenge: the national electricity company is in deep financial and governance trouble, the power generation system is coal-based, the

power plants are very old and not well maintained. The power outages have officially reached the level of "national catastrophe".

However, South Africa was the first to sign a JETP, so it is case with the most experience to look at. It offers three critical insights:

1. Inclusive representation is possible. The President chaired South Africa's Presidential Climate Commission (PCC). It includes ten ministers and 21 members from all sectors of society, including environmental activists, community leaders and trade union representatives. The just transition can serve as the foundation for a broad governance coalition, bringing together disparate organizations, each playing a critical role in advancing the movement.
2. Precipitation is a problem. In the context of a JETP implementation plan prepared urgently, transparency was hindered by lack of coordination among government agencies and stakeholders' representatives. With insufficient stakeholder engagement, transparency and accessibility, it was difficult to ensure equity and gain implementation support. Meaningful engagement of marginalized communities posed a challenge due to preexisting mistrust and lack of access.
3. Participatory governance is demanding. Including community advisory boards and multi-stakeholder roundtables helped incorporate diverse voices in decision-making. However, these forums required significant capacity building and proper resourcing to be effective.

Country platforms are country-specific and require a localized approach. Justice, a concept rooted in social sciences, is as much a social construct as it is technical. South Africa's approach to participatory governance takes its root in the experience of truth and reconciliation commissions, which allowed the country to deal with what happened under apartheid.

5.3. Vietnam JETP specific

The definition of Justice in Vietnam's JETP is best approached as multi-faceted concept, focusing on three aspects: the labor-oriented view, the distributional perspective –national and international-- and participatory governance.

- To ensure a just energy transition, it is crucial to prioritize including vulnerable communities, workers in transitioning industries, and regions affected by the energy transition. This can be achieved by developing and implementing comprehensive social and labor policies that support affected individuals, ensure fair employment

opportunities in the renewable energy sector, and address energy poverty. Conducting thorough impact assessments can help identify and address potential inequities and promote a fair and inclusive transition.

- The JETP relates to the complex issue of developed nations' greater responsibility. Rich countries have used more carbon budget and led technology development. While Vietnamese pay less for electricity, they benefited from falling renewable costs. Despite unmet climate financing pledges, the JETP renews support. However, is it fair to constrain Vietnam's development? The nuances require thoughtful navigation.
- The participatory governance context in Vietnam is very different from South Africa or G7+ countries. Vietnam's justice perspective stems from its unique social structure rooted in the independence struggle. The Vietnam Fatherland Front represents civil society through mass organizations like youth, women and science groups. Justice requires giving these groups a strong voice to represent constituents' interests. The VFF enables distinctive top-down and bottom-up participation. Leveraging this can ensure an inclusive transition.

In summary, justice has many facets, including labor, environment, climate, energy, governance, and public perception. Vietnam's context requires a localized approach to participatory governance. Key priorities should be supporting workers, ensuring fair job opportunities, addressing energy poverty, and recognizing historical responsibilities and technology transfer needs between nations. If designed inclusively, the JETP can enable Vietnam's development while also serving climate goals. A thoughtful approach can help Vietnam transition to be both fast and fair.

6. A market-based and flexible plan

The question of how to steer the energy transition through strategic planning, market mechanisms, or a combination of both is central to governance. The debate on economic calculation is a discussion about the feasibility and efficiency of planning an economy centrally versus allowing market forces to guide economic decision-making. It is still going on one hundred years after it started by Mises in 1920. Strategic planning provides a long-term vision, while market mechanisms drive innovation and efficiency. Government regulations and incentives complement market mechanisms, and active control ensures adaptability to evolving conditions.

6.1. Strategic planning

Strategic planning provides a long-term vision, allowing governments to set goals and outline the pathways to achieve them. It's illustrated in Vietnam's PDP8, where it set explicit targets for different power sources in 2030 and 2050 (Ha-Duong, 2023c). This planning form can evaluate policy options, estimate resource needs, and identify infrastructure requirements, thus focusing activities toward a defined objective.

However, the PDP8's preparation illustrates the inherent difficulties of strategic planning. It can underestimate uncertainties, such as the fossil fuel prices volatility, and fail to consider deep transformative scenarios. One of the missions of strategic planning is to consider contingencies, and think in advance. At the inception of the plan, it would have been interesting to ask "what if we adopt the net-zero goal?", "what if the price of fossil fuels is multiplied by ten due to a war in eastern Europe?" and "what if the renewable energy sector vastly exceeds the targets?". Asking such questions, and proposing answers, could have been the result of formal more participatory workshops with the experts.

Thus, while strategic planning is essential, it must be improved upon. This involves integrating comprehensive data and complete modeling, ensuring flexibility to adapt to changing conditions, broadening the scope of scenarios explored, and promoting stakeholder engagement.

6.2. Market Mechanisms and Competition

Market mechanisms and competition have proven to be effective drivers of innovation and efficiency, essential for scaling clean technologies. The power of market competition is well demonstrated in Vietnam's renewable energy auctions and Build-Operate-Transfer (BOT) power plants, which have spurred cost reductions and accelerated the energy transition.

Yet, market mechanisms also have limits, specially for electricity. The network is a natural monopoly for technical reasons. There is no relation between the short term electricity market price and the income required to invest in long-term capacity development. National critical interests and environmental externalities are not part of the market, leading to an underprovision of domestic clean energy. Information asymmetry between regulators and firms hampers effective regulation. Therefore, while markets allocate resources efficiently, they require government intervention to address their imperfections.

Government interventions, including emission standards, pollution taxes, and regulations, can align market outcomes with sustainability goals. This combination of market

mechanisms and regulation is necessary for Vietnam to continue accelerating its clean energy transition at the lowest cost while addressing social and environmental impacts.

6.3. Government Regulations and Incentives: towards an active governance

Market mechanisms alone cannot adequately internalize environmental externalities such as pollution and greenhouse gas emissions. Therefore, government intervention through regulations and incentives is crucial to accelerate emission reductions and steer investments toward sustainability.

The PDP8 in Vietnam aims to guide the market by specifying renewable energy and energy efficiency targets. In addition, regulations such as emissions standards, performance-based mandates like renewable energy targets, and incentives like feed-in tariffs and innovation funding can help shift investments towards cleaner technologies with positive societal impacts.

However, while these measures are necessary, they must be complemented by market mechanisms to be truly effective. Moreover, policy consistency, credibility, and active governance are critical for the success of Vietnam's clean energy transition. This underscores the need for a comprehensive policy mix that can drive the low-carbon transition.

The rapidly changing energy landscape calls for a dynamic approach to governance. Active governance involves continually adjusting policies, plans, and regulations to meet evolving conditions and stakeholder needs.

The PDP8 in Vietnam aims to incorporate elements of active governance. It employs a monitoring committee to adapt the plan regularly. It explores more market liberalization and innovative finance solutions to facilitate dynamic energy procurement.

However, governments need robust analytical capabilities, strong stakeholder engagement mechanisms, and efficient implementation systems for active governance to work effectively. Willingness to experiment with policy and technology pilots, learning from these initiatives, and then scale up successful approaches through revised plans and regulations are also vital.

In summary, governing the energy transition demands a balanced approach using planning, markets, and adaptive regulations. The PDP8 had limitations, showing the need to improve planning. Markets drive innovation but have imperfections requiring government

intervention. Regulations and incentives steer sustainability, yet need market forces. With rapidly changing conditions, active governance that continually adjusts policies is essential. Vietnam must continue balancing planning, markets, and governance as it advances its transition.

7. Conclusion

Esteemed colleagues, today's discussion confirms Vietnam can accelerate its energy transition. Abundant renewable resources and manufacturing capabilities provide advantages. Analytics and modeling will help devise optimal policies.

However, challenges around regulations, infrastructure, and knowledge remain. Research collaborations and inclusive policymaking are needed to address these gaps.

The PDP8 and JETP provide foundations, but effective implementation and adaptive governance will determine success. With creativity and social responsibility, Vietnam can transition swiftly while balancing costs and equity.

I sincerely thank you for contributing your valuable perspectives on seizing opportunities and overcoming hurdles. Our shared goal is realizing an efficient, clean and just energy future for all citizens through innovative breakthroughs and partnerships. I look forward to our continued discussion.

References

Ha-Duong, M., 2023a. Vietnam's Just Energy Transition Partnership: a background report (No. WP 2023-90), CIRED Working Papers. Centre International de Recherche sur l'Environnement et le Développement.

Ha-Duong, M., 2023b. Technology costs for the first wave of wind farms in Vietnam: Paying extra for better wind nearshore. Energy Sustain. Dev. 74, 309–313. https://doi.org/10.1016/j.esd.2023.04.010

Ha-Duong, M., 2023c. Vietnam's Power Development Plan 8: A bold step towards a net-zero future. Mekong Eye.

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