

# Innovating New Incentives Mechanisms for Energy Transition Projects

Final Report Dissemination

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All policy options made in this report are based on desk study, literature review, as well as consultations with stakeholders and should be subject to further analysis prior to deciding whether to adopt or implement them. Some of the findings are changes to existing mechanisms and not completely new. The effectiveness of any policy measure is subject to a wide range of factors, including effectiveness of implementation, and the combination of measures adopted. The authors of this report therefore cannot be responsible for the ultimate outcome of such measures.

# About this project

## Objectives

**Drive investment in renewable energy (“RE”) and expedite the early retirement or phase-down of coal-fired power plants (“CFPPs”)** in Indonesia, aligned with the Government of Indonesia (“GoI”)’s National Long-Term Development Plan (“RPJPN”) targets and Net Zero Emission by 2060. The targets will be achieved by identifying effective incentives, and removing disincentives, to RE adoption while balancing applicability and economic viability.

## Outcomes

**Formulate suitable incentive mechanisms, and the removal of disincentives** for the following categories:

- RE development
- CFPPs early retirement; and
- Coal phase-down projects

## Outputs

- **Analysis of incentive and disincentive regulations** related to energy available in Indonesia
- **Analysis of appropriate incentive and disincentive mechanisms** to speed up energy transition

## Objectives

Deliverable 6

- **Consolidates the findings and outputs** of the project.
- Provide an **integrated narrative across all project deliverables**, summarising regulatory gap analysis, international best practices, policy measures & action plan, impact & sensitivity analysis
- Provide **actionable** guidance for accelerating RE development, supporting early retirement of coal-fired power plants, and promoting coal phase-down

Overall Approach

Existing Analysis

International Benchmarks

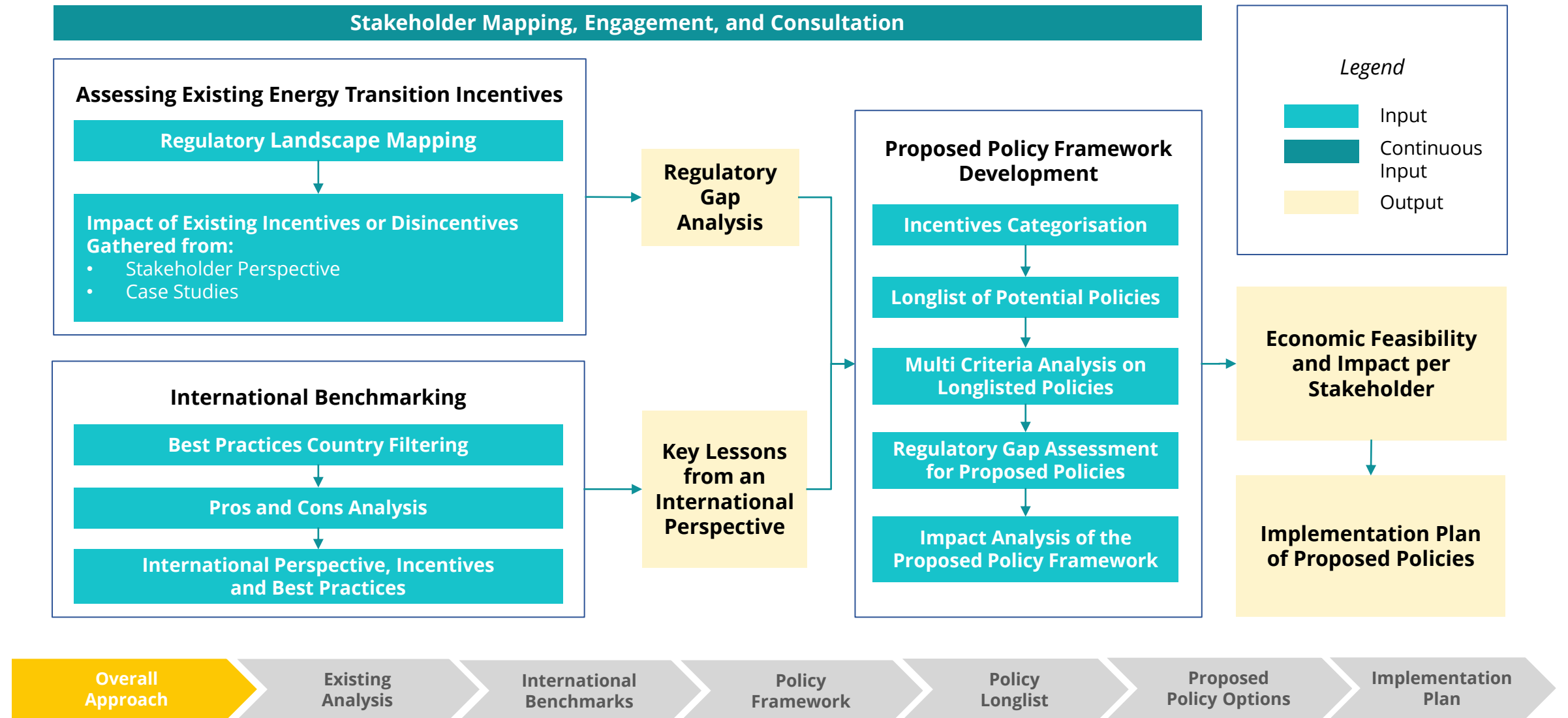
Policy Framework

Policy Longlist

Proposed Policy Options

Implementation Plan

To address the multifaceted challenges of energy transition and policy development, the project adopted a **three-part structured methodology**



# The regulatory **gap analysis for RE development** identified constraints such as cost or finance barriers, PPA complexity, permitting hurdles and incentive gaps

Challenges	Detailed Explanation
<b>RE Development</b>	
Unattractive <b>RE tariffs</b> and challenges in financing RE projects	The <b>ceiling tariffs</b> under PR 112/2022 <b>are lower than required for commercial feasibility</b> , financing RE projects is high-risk, fiscal incentives are underutilised due to complex conditions and unfamiliarity among developers.
Challenges in <b>Power Purchase Agreement (“PPA”)</b> negotiation and risk allocation	The <b>process of negotiating PPAs</b> , governed by certain MEMR regulations, <b>places unmanageable risks on developers</b> , the <b>lack of standardised PPA templates</b> complicates finance raising and causes delays.
Challenges in <b>RE procurement, licensing</b> , and acquiring <b>PSN status</b>	The procurement process <b>lacks transparency and accountability</b> , leading to project delays, frequent cancellations and financial losses for participants. This includes a lack of clarity in project PSN status.
<b>right-to-match for developer-initiated prospective RE projects</b> that have commenced early site work/feasibility studies	Implementing a <b>right-to-match mechanism</b> for developer-initiated RE projects would encourage upfront investment by developers and support a smoother transition to renewable energy projects. This mechanism allows developers who have completed early site work, such as exploration, surveys and research, to match the best price offered in a tender and improve their chances of winning.
Lack of <b>comprehensive guidelines</b> for feasibility studies	There is a <b>need for detailed instructions for feasibility studies</b> to provide certainty and support to prospective business actors. Current provisions lack specificity in feasibility study requirements for business licensing.
Legal and procedural certainty required to operationalise the Energy Transition Platform under <b>MoF Regulation 103/2023</b>	<b>The processes for administering fiscal incentives, evaluating the Energy Transition Platform’s policies and management, and defining SMI’s reporting and document-signing requirements remain unclear.</b> This uncertainty leaves gaps that hinder effective, transparent, and accountable operations and reduces developers’ confidence in accessing financing.
Challenges in the <b>implementation of tax incentives</b>	Existing <b>tax incentives</b> aimed at increasing investment in RE projects are <b>often underutilised</b> due to complexities and the risk of penalties from incorrect usage. Regulatory barriers further limit the effectiveness of tax incentives.



**CFPP early retirement and coal phase-down** are hindered by weak carbon pricing/trading, contractual barriers to early termination, regulatory gaps (including absence of biomass DMO requirements), and continued regulatory support for coal (such as price caps)

Challenges	Detailed Explanation
<b>CFPP early retirement and coal phase-down projects</b>	
Challenges in implementing a <b>carbon pricing mechanism</b> to support <b>CFPP early retirement and coal phase-down</b>	Indonesia currently <b>lacks an approved methodology to measure emission reductions</b> from initiatives such as CFPP early retirement and coal phase-out actions.
Challenges in <b>early termination</b>	PR 112/2022 <b>does not specify</b> who bears the costs of early retirements, leading to legal uncertainties about how IPPs can be compensated for the resulting losses. Additionally, reducing PLN's asset value poses legal and compliance risks.
Absence of implementation regulations regarding <b>biomass domestic market obligations</b>	<ul style="list-style-type: none"> <li>The government <b>requires biomass suppliers</b> to prioritise domestic needs before exporting, but the MEMR has not determined domestic market obligation figures.</li> <li>Co-firing in coal power plants carries risks such as <b>prolonging coal dependency</b>, limiting overall emissions reductions, and creating supply chain challenges for biomass or ammonia, such as deforestation.</li> </ul>
Favourable <b>coal prices</b> for conventional power plants	Currently, <b>CFPPs are considered more competitively priced</b> compared to RE. Therefore, RE incentives can be increased while simultaneously reducing incentives for CFPPs, allowing RE to become more competitively priced.
Ineffective <b>carbon trading system</b>	There is a need to <b>streamline the process to obtain greenhouse gas emission reduction certificates</b> to encourage trading in carbon credits.



# Energy transition projects were further examined through deep dives into **a selection of ongoing projects as case studies** to contextualise the impact of incentives and disincentives

Data collection was conducted through **one-on-one interviews** with the relevant operators, along with **desktop research**. **Key lessons to be implemented** from each case study are outlined below.

## PLTU Jateng 2 Adipala

- CFPP located in **Cilacap, Central Java**
- Fully owned & operated by **PT PLN IP**
- Installed capacity of **660 MW**

- 1 **To account for retrofit costs** in **PLN's budget** to support higher co-firing utilisation.
- 2 **Prioritise co-firing CFPPs** in the merit order for electricity purchase.
- 3 Improve **access to high-quality coal** for higher co-firing implementation.
- 4 Increase **government incentives** to utilise abundant local biomass.

## Cirata Floating Solar PV Plant

- **Floating solar PV** power plant in **West Java, by Indonesia and the UAE**
- Capacity of **145 MW & 192 MWp**

- 1 The project benefited from a **right-to-match scheme where developers can match the best price** offered by tender participants during the tender process, which improves its chances of winning the project.
- 2 Enhance **PSN designation benefits** by further streamlining procurement & permitting.
- 3 Expand tax incentives and relax compliance on **Local Content Requirement ("TKDN")**.

## Wind Farm Project

- Wind power plant with capacity **over 70 MW**

- 1 Clarify the applicability of **tax allowances** intended to promote renewable energy investment, particularly due to minor technical compliance issues.
- 2 Simplify **exemption processes to prevent import duties and fines** on machinery and components.

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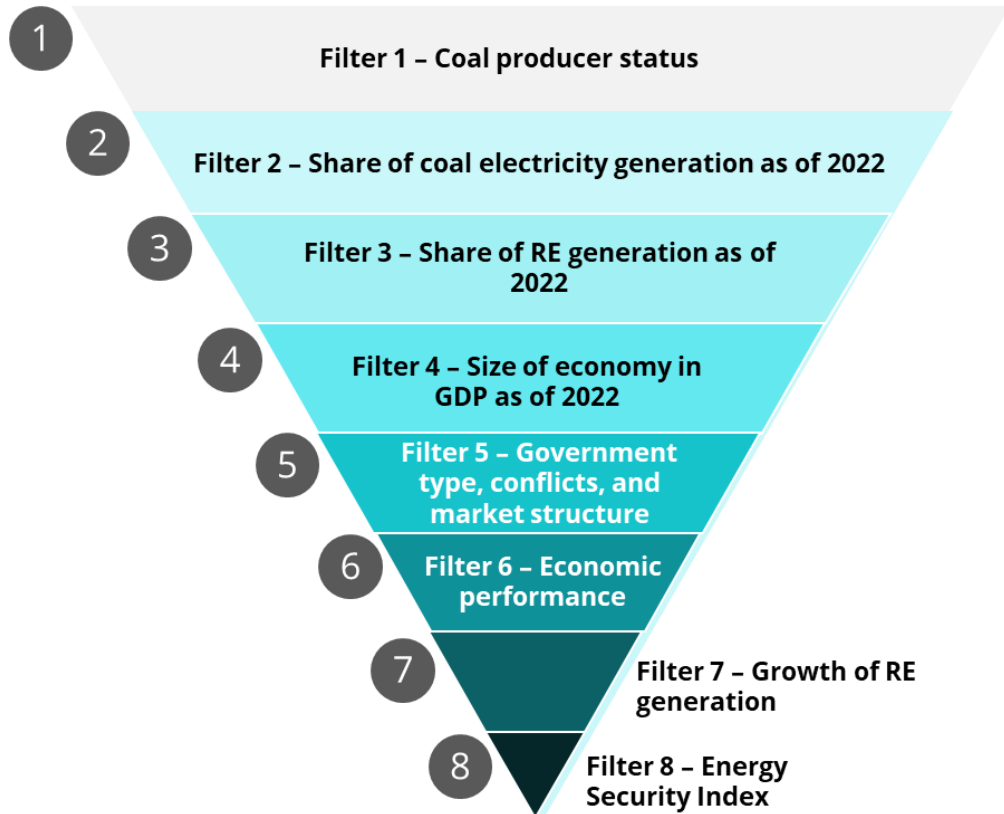
Proposed Policy Options

Implementation Plan

# In-depth analysis of **international best practices** and **lessons learned** from selected countries

Examines **how other countries were able to accelerate their energy transition**, including RE development, CFPP retirement, and other feasible mechanisms potentially adaptable to Indonesia's context of incentive mechanisms and the removal of disincentives.

## I. Filtering Approach



## II. Pros and Cons Analysis

### A. Qualitative overview of general attributes:

Regulatory landscape	System of governance
Electricity market structure	State capacity

### B. Quantitative considerations for RE development, CFPP early retirement and coal phase down:

#### Renewable Energy Development

RE tariff	RE demand	Smart grid
Procurement capability	Supply chain	

#### CFPP Early Retirement and Coal Phase Down

Coal non-reliance	Compensation scheme	Co-firing
Discouragement of CFPP operations	Just considerations	
Decrease in CFPP generation capacity		



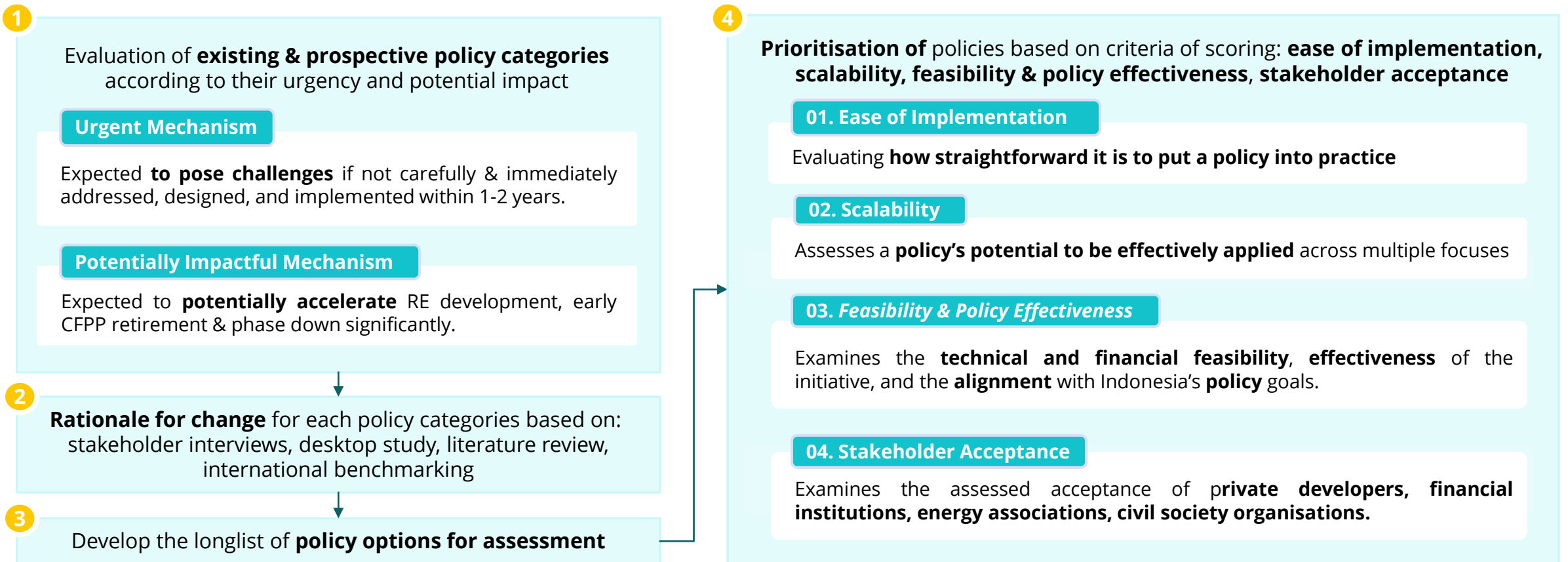
# Country filtering identified **Slovakia** and **India** as key references; their lessons can guide Indonesia's adoption of global best practices to accelerate its energy transition

Country	Lessons Learned Adapted to the Indonesian Context
India	<ul style="list-style-type: none"> <li>India utilises Renewable Purchase Obligations (“RPOs”), which Indonesia can adopt through two options:               <ol style="list-style-type: none"> <li>Requiring predetermined consumers <b>to purchase electricity generated from clean sources at a certain level.</b></li> <li><b>Mandating RPOs</b> through the purchase of <b>Renewable Energy Certificates (“RECs”)</b> from PLN.</li> </ol> </li> <li>Indonesia can adopt India’s practices of <b>publishing model PPAs and using reverse auctions with transparent online procurement for utility-scale tendering</b>, which could drive growth in the RE sector in India</li> <li>Indonesia can implement <b>transmission waivers</b> to lower RE project costs through direct subsidies and grants</li> <li>Drawing on <b>India’s Production-Linked Incentives (PLI)</b>, Indonesia can tailor performance-linked incentives and complementary policies</li> <li>To reach 5% biomass utilisation as in India, Indonesia could introduce strong <b>financial incentives, subsidies, and financing access, clarify tariff/pass-through rules</b>, invest in storage, transport, and distribution to ensure <b>reliable biomass supply and quality</b>, and secure <b>long-term procurement contracts</b> to stabilise the market.</li> </ul>
Slovakia	<ul style="list-style-type: none"> <li>Indonesia can <b>phase in carbon pricing once foundational RE incentives are in place</b>, earmark proceeds for RE premiums, grid upgrades, and efficiency, and pair it with complementary policies while managing loss of investment and affordability risks.</li> <li>Drawing on Slovakia’s coal-subsidy phaseout, Indonesia should <b>set early timelines, engage unions, local governments, and communities, and deploy concessional finance.</b></li> <li>Following Slovakia, Indonesia can incorporate <b>land use planning into its roadmap</b>, with the aim to ensure that decommissioned sites are effectively utilised for sustainable development, potentially boosting local economies and supporting national energy objectives.</li> </ul>



# Identifying and prioritising policy incentives or the removal of disincentives that **could further support** Indonesia's energy transition

## Prioritisation Process to Develop the Proposed Policy Framework



For each policy category, **several options were developed** based on stakeholder interviews, desktop studies, literature reviews and international benchmarking. The proposed policy options were then selected according to the highest **multi-criteria analysis score**

RE Tariff Adjustment	Procurement, Power Purchase Agreement (“PPAs”), Licensing, Tender & National Strategic Project (“PSN”) Status Standardisation & Streamlining	Supporting the Development of Electricity Infrastructure	Domestic Market Obligation (“DMO”) & Domestic Price Obligation (“DPO”) Adjustment	Encouraging CFPPs Early Retirement	Co-Firing Incentives
Online auction for bidders to provide the lowest tariff	Revisiting <b>project allocations</b> between PLN Group and IPPs to offer greater flexibility	<b>Accelerating grid modernisation</b> (smart grid) to integrate and manage a higher share of RE sources	Improving RE competitiveness through adjusting or eliminating the Coal DPO and mitigating short-term impacts of increased electricity prices for lower-income households	<b>Facilitate System Stability through RE Development with Privilege for RE replacement generation, supporting potential revenue continuity</b>	Encouraging <b>sustainably sourced biomass</b> utilised in co-firing
Adjusting ceiling prices	Standardising tender processes, and establishing and socialising clear guidelines on PSN status for RE projects	Developing transmission lines in proximity to designated RE plant clusters to help minimise connection losses		Clarifying <b>carbon credit revenue</b> calculations to help developers avoid emissions	Encouraging flexibility in biomass pricing for co-firing
Providing a <b>premium payment</b> (subsidy from Government to Independent Power Producers (“IPPs”) to mitigate increase in electricity tariffs	Providing <b>land technical data clarity</b> in PLN tender documents for RE projects	Improving <b>national land registration</b> for more comprehensive coverage	Encouraging <b>coal exports</b> and increasing export royalties	Setting <b>guidelines for PPA restructuring</b> for early retirement/reduction of CFPP share initiatives	
Implementing <b>Feed in Tariffs</b> for electricity generated from renewable energy sources	Limiting <b>price negotiation process</b> between tender winners and PLN	Introducing <b>transmission charge in electricity tariffs</b> and adding waivers for priority projects		Introducing <b>auctions for CFPP early retirement</b> with a declining ceiling price to compensate and incentivise IPPs to early retire their CFPPs	
	Improving <b>technical details</b> in tenders to enable bidders calculate tariffs more accurately	Scaling up the <b>Geothermal Risk-Sharing Fund</b> for geothermal power projects		<b>Removing fossil fuel subsidies</b> (including coal) to better reflect the cost to produce electricity to increase RE competitiveness	
	<b>Partial bidding mechanism</b> , allowing bidders to submit bids for less than the total capacity offered	Reintroducing <b>net metering policies</b> that credit consumers for surplus energy exported to the grid			

Legend  
 Policy Category  
 Policy Options  
 Proposed Policy Options



For each proposed policy option, the **rationale for change** considered various factors to propose the best-fit incentives or removal of disincentives (1/2)

Policy Category	Rationale for Change	Potential Solutions from International Perspectives
<b>RE Tariff Adjustment</b>	Stakeholder consultations reveal that the <b>ceiling tariffs</b> under PR No. 112 of 2022 need to be <b>adjusted</b> , since it may fall short for commercial feasibility, potentially deterring developers & financiers	<ul style="list-style-type: none"> <li>Bulgaria, China and India provide valuable insights, such as the importance of <b>long-term price certainty, transparency, government adaptability, risk mitigation</b> and <b>competitive bidding processes</b> to enhance investor confidence.</li> <li>India's transition from closed bidding to reverse auctions shows how <b>transparent, competitive procurement can reduce tariffs</b>, foster innovation, &amp; attract large investment.</li> </ul>
<b>Procurement, PPAs Licensing, Tender and PSN Status Standardisation and Streamlining</b>	<b>Standardising tender processes</b> by enhancing transparency and streamlining procedures in RE procurement process is essential to address current uncertainties, while establishing and socialising <b>clear guidelines on PSN status for RE projects</b> are also needed.	<ul style="list-style-type: none"> <li>Lessons from India and Slovakia highlight the importance of <b>competitive and transparent procurement processes</b> and the utilisation of <b>fiscal incentives</b>, such as tax holidays and excise duty exemptions</li> <li>Independent agencies, such as the Solar Energy Corporation of India ("SECI"), surpassed its 50 GW mandate, issuing 113 GW via transparent tenders. 's publicly accessible tender details, standardised PPAs, and structured procurement show leadership and transparency boost adoption and confidence.</li> <li>releases <b>draft PPAs</b> that developers can use for reference during the Request for Selection ("RfS") process, which are then adapted based on bidding outcomes. Model PPAs for specific procurements are available <b>during tenders and are publicly accessible</b>.</li> </ul>
<b>Supporting the Development of Electricity Infrastructure</b>	Indonesia plans to enhance <b>electricity infrastructure &amp; develop transmission lines</b> , including <b>minimising connection losses</b> , although challenges persist due to regional supply-demand mismatches & insufficient grid integration capacity for RE sources.	<ul style="list-style-type: none"> <li>Lesson can also be learned from <b>India</b>, which improved its ability to manage high solar PV penetration by <b>waiving inter-state transmission charges</b> and <b>incentivising domestic solar PV manufacturing</b> through the PLI scheme. The scheme promotes high-efficiency solar PV module production and reduces import dependence, lowering project costs and enhancing financial viability.</li> </ul>



For each proposed policy option, the **rationale for change** considered various factors to propose the best-fit incentives or removal of disincentives (2/2)

Policy Category	Rationale for Change	Potential Solutions from International Perspectives
<p><b>Removing the DPO for Coal</b></p>	<p><b>Reevaluating the DPO</b> offers Indonesia an opportunity to <b>improve the competitiveness of RE development</b>, as the current policy allows coal to be sold at below-market rates, influencing PLN's decision-making and complicating RE adoption.</p>	<ul style="list-style-type: none"> <li>A key lesson from <b>Slovakia</b> is the importance of announcing subsidy removals well in advance, providing sufficient time for stakeholder management, planning and preparation for the transition.</li> </ul>
<p><b>Encouraging Early Retirement of CFPPs</b></p>	<p>Reevaluating <b>early retirement policies</b> for CFPPs in Indonesia is important to <b>ensure system stability</b> and address uncertainties around cost responsibilities, the absence of a roadmap for the early retirement of CFPPs, regulatory gaps in transitioning to renewables (such as through <b>right-to-match</b>), and the need to improve national carbon trading mechanisms for better utilisation of carbon credits.</p>	<ul style="list-style-type: none"> <li>Slovakia's strategy for CFPP early retirement and phase-down <b>utilises the EU ETS to diminish coal competitiveness</b> and provides financial and planning support for transitioning regions.</li> <li>Lesson can also be learned from <b>Germany's</b> Coal Exit Act ("KVBG"), which uses <b>pay-as-bid auctions</b> for CFPP retirements with a declining ceiling price to reduce costs and incentivise early exits.</li> <li><b>USA's coal phase-out</b> strategy focuses on retiring older, less efficient CFPPs and provides advantages to those who build RE replacement projects, such as tax credits for clean energy production and loan guarantees to catalyse capital investments.</li> </ul>
<p><b>Co-firing Incentives</b></p>	<p>To effectively <b>utilise co-firing in CFPPs</b>, it is crucial to address coal dependency, supply chain issues &amp; reduction in power plant efficiency. Implementing a universal mandate, ensuring a sustainable biomass supply can enhance adoption while <b>addressing the need for flexibility increase in biomass PPA pricing</b>.</p>	<ul style="list-style-type: none"> <li>A key lesson from <b>India's</b> CFPP early retirement and phase-down efforts is the effectiveness of biomass co-firing incentives, which highlight the importance of comprehensive financial support, regulatory clarity, supply chain infrastructure development and long-term procurement contracts to reduce coal reliance and achieve higher co-firing targets.</li> </ul>



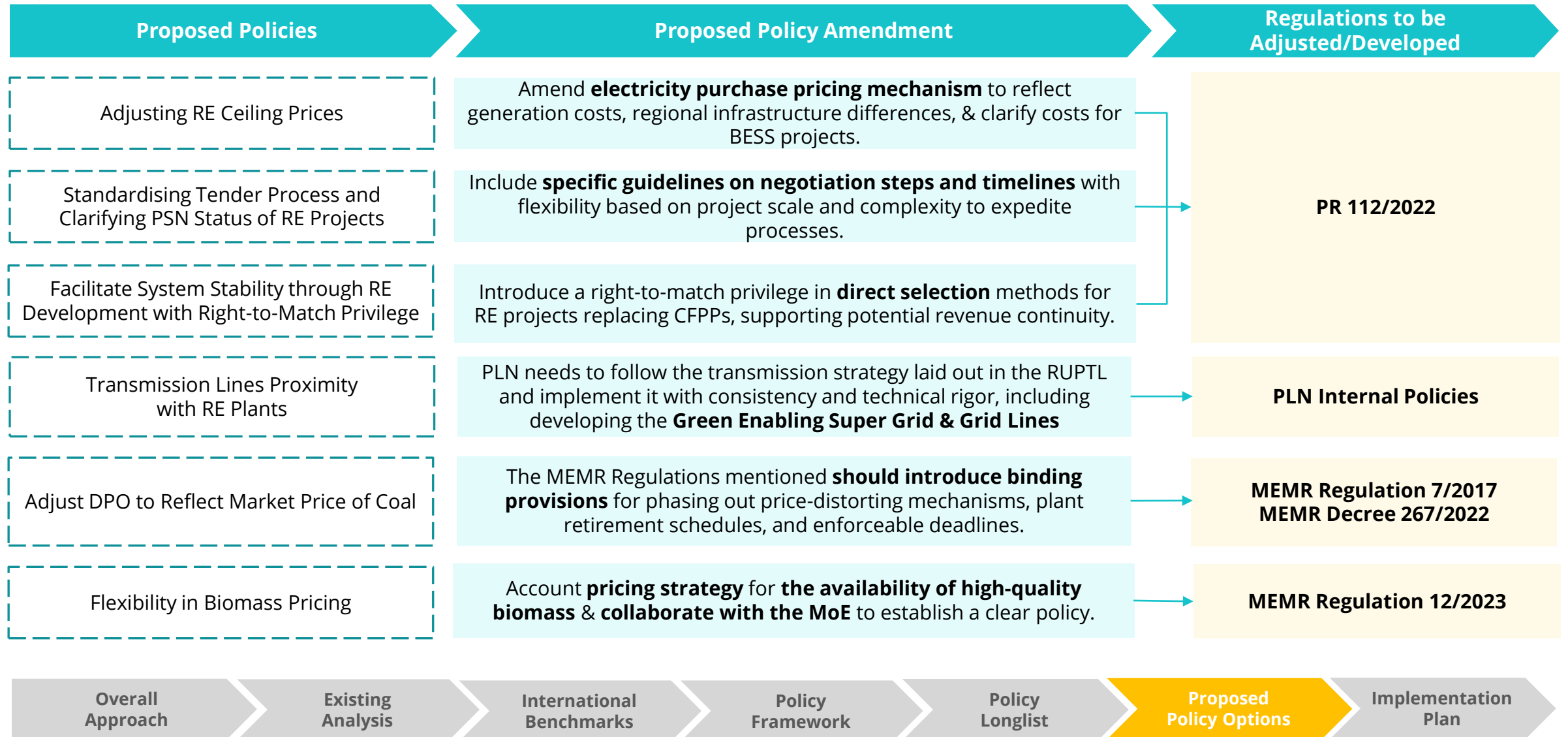
# Combined results from **quantitative analysis** demonstrate a viable RE transition supported by **clear economic gains** and **practical policy levers**.

Method	Aspect Evaluated	Key Results
<b>CBA</b>	Assess the <b>economic costs</b> and <b>benefits</b> of a RE transition by estimating the incremental benefits of implementing a timely energy transition following the RUPTL.	<ul style="list-style-type: none"> <li>• <b>High carbon price case</b> delivers the biggest gains, with <b>net present value of USD 36.6 billion</b>, a <b>benefit-cost ratio &gt; 2</b>, and returns <b>above 10% social discount rate</b>. These metrics show that the project is economically viable.</li> </ul>
<b>Impact Analysis of DPO Price Adjustment</b>	Evaluates how raising <b>domestic coal prices</b> to market levels affects RE competitiveness and increase PLN's decision-making skills, and government subsidies for low-income households.	<ul style="list-style-type: none"> <li>• Raising domestic coal prices makes coal power cost (LCOE) more expensive, making RE more affordable. This may require around <b>USD 451 million annually</b>, to shield low-income households from higher tariffs. This additional subsidy amounts to around 9.5% of the existing yearly subsidies for electricity tariffs provided by the government.</li> <li>• Pricing reforms create <b>fairer competition</b> between coal &amp; RE, while additional royalties from market price could help ease the fiscal burden.</li> </ul>
<b>Impact Analysis of Reduced Domestic Coal Demand</b>	Examines how <b>declining domestic coal use</b> (due to RE growth) and <b>redirecting surplus coal to exports</b> affects revenues and emissions.	<ul style="list-style-type: none"> <li>• Redirecting up to <b>89 million tonnes of coal annually</b> to exports could generate approximately <b>USD 454 million</b> in additional royalties, providing fiscal space to help stabilise electricity tariffs during the transition. On average, the reallocation of coal accounts for 13% of Indonesia's average projected exports per year, calculated using a CAGR of 6%.</li> <li>• This would also avoid around <b>446 million tonnes of CO<sub>2</sub></b> emissions in 2025 – 2034.</li> </ul>

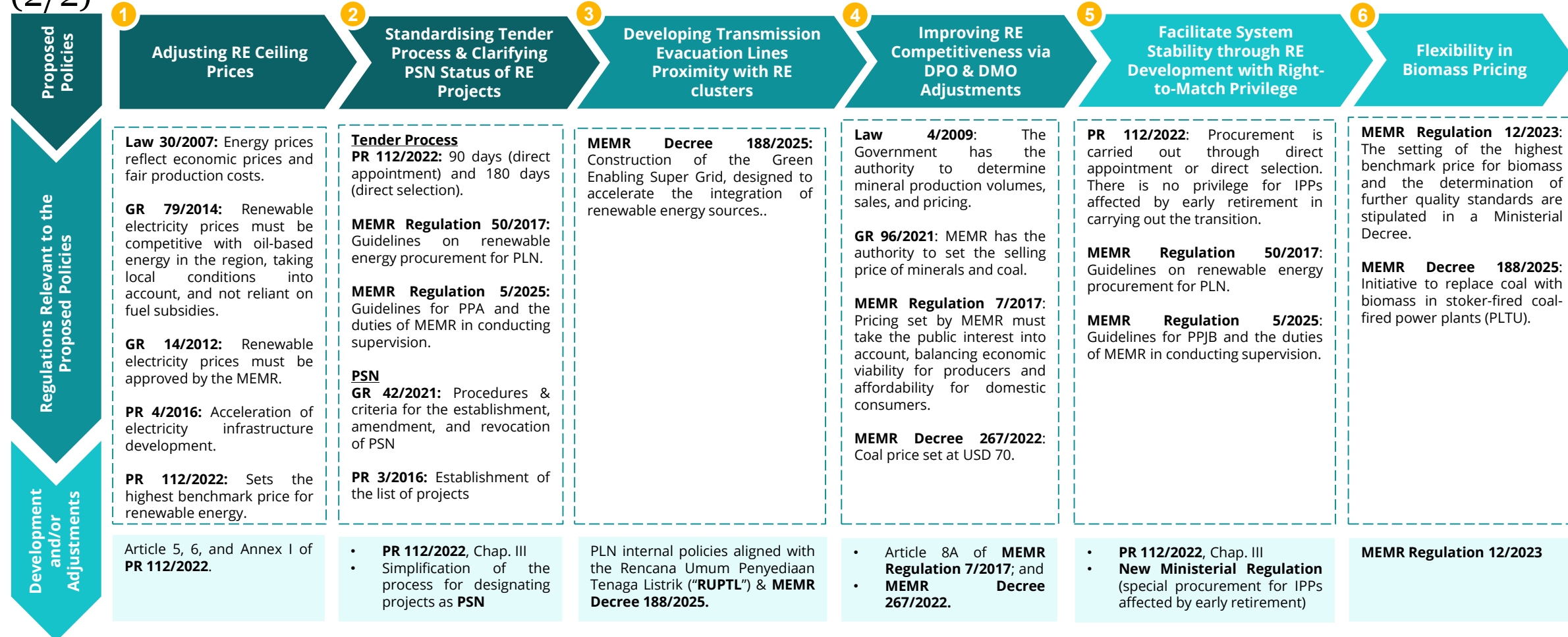
*It should be noted that the models are constructed based on a set of assumptions that aim to simplify complex real-world dynamics. While they provide structured frameworks for analysing economic outcomes, they do not fully account for unpredictable or irrational behaviours exhibited by individuals, firms, or governments. Factors such as behavioural biases, sudden policy shifts, geopolitical events, and market sentiment can significantly influence economic variables in ways that deviate from model predictions. Therefore, the results and forecasts derived from these models should not be considered definitive or universally applicable.*



# Based on the proposed policies, several **regulations need to be developed and/or adjusted** (1/2)



# Based on the proposed policies, several regulations need to be developed and/or adjusted (2/2)



**Note:** After establishing priority options, the implementation plan is drawn up to enhance regulatory effectiveness, whilst adhering to Law 12/2011 and a coordinated approach with stakeholders. Accordingly, amendments to PR 112/2022 may encompass several policies within a single amendment process. Other regulations may be revised concurrently, including the issuance of Ministerial Decrees.



## Complementing the implementation plan, the **RACI matrix** maps stakeholder roles across stages.

R = Responsible, A = Accountable, C = Consulted, I = Informed.

Action Plan	Regulatory Amendments (including new regulations)		Supporting Policy	Role of Stakeholder							
	Presidential Regulation	Ministerial regulation		MEMR	MoF	MoE/ MF	Bappenas	PLN	IPP	Association & Industry	Financial Institutions
RE tariff adjustment: Priority Adjustment on Ceiling Prices	PR 112/2022			R/A	C	-	-	C	C	C	I
Standardising tender process, establishing and socialising clear guidelines outlining PSN status for all RE projects	PR 112/2022			R/A	C	-	C	C	C	I	I
Adjust DPO to Reflect Market Price of Coal		MEMR Regulation 17/2017, MEMR Regulation 10/2025		R/A	C	-	-	C	C	C, I	-
Facilitate System Stability through RE Development with Right-to-Match Privilege	PR 112/2022	New Ministry Regulation		R/A	-	I	-	C	C	I	I
Flexibility in Biomass Pricing		MEMR Regulation 12/2023, New Ministry Regulation on Biomass SNI	New Ministerial Decree	R	-	C	-	R/A	C	I	-

*Note:* The proposed policy “Developing Transmission Evacuation Lines Proximity with RE clusters” follows the Rencana Umum Penyediaan Tenaga Listrik (“RUPTL”), no adjustments required.



**Thank You**

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