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CASE for Southeast Asia

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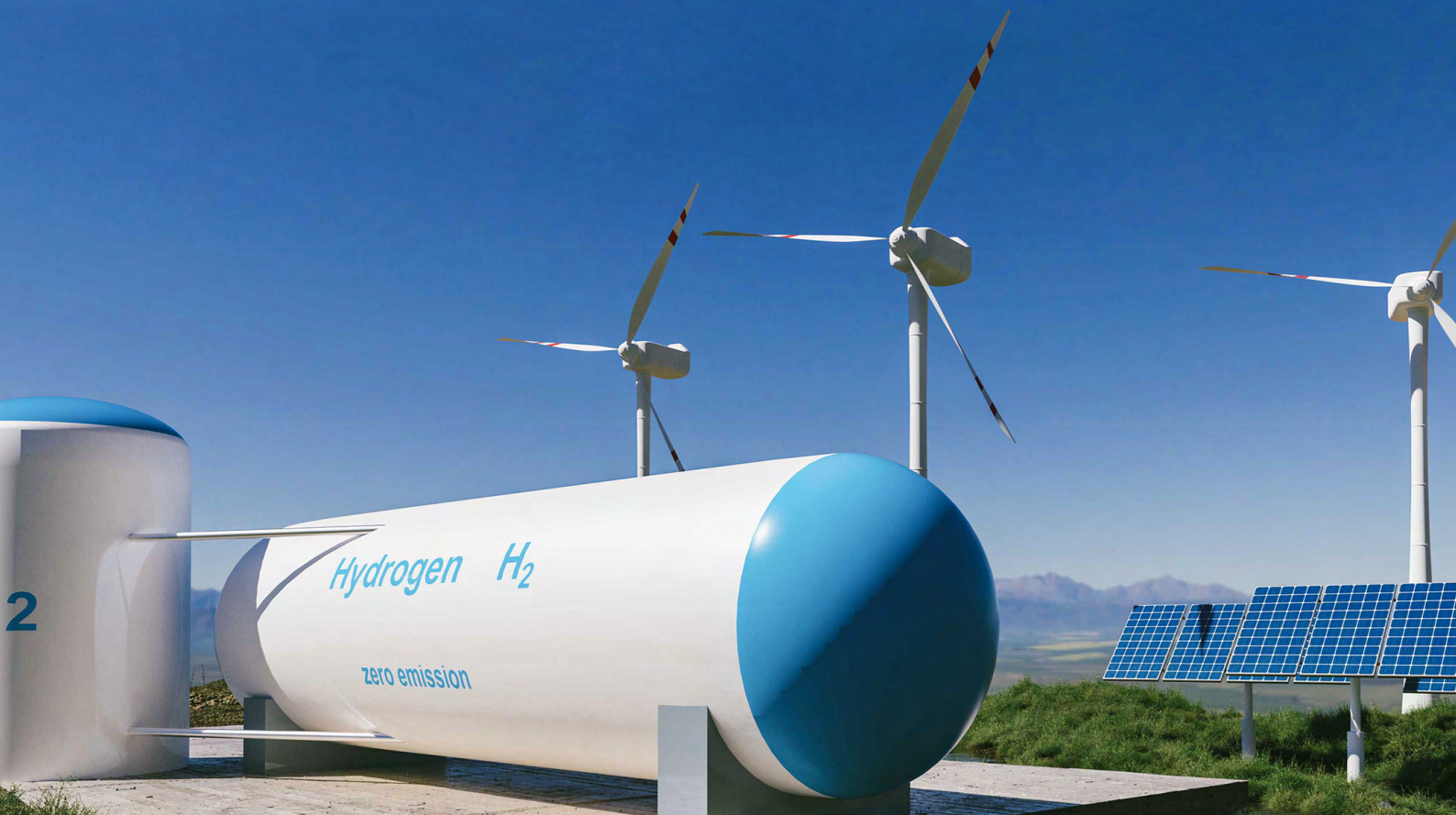
## CASE Insights:

# A Closer Look at Decarbonisation Instruments for Clean and Affordable Electricity in G20 Countries



# Imprint

CASE Insights: A Closer Look at Decarbonisation Instruments for Clean and Affordable Electricity in G20 Countries

**In the context of CASE**

The regional programme, "Clean, Affordable and Secure Energy for Southeast Asia" (CASE), is jointly implemented by GIZ, and international and local expert organisations in the area of sustainable energy transformation and climate change: Agora Energiewende and NewClimate Institute (regional level), the Institute for Essential Services Reform (IESR) in Indonesia, the Institute for Climate and Sustainable Cities (ICSC) in the Philippines, the Energy Research Institute (ERI), Thailand Development Research Institute (TDRI) in Thailand, and Vietnam Initiative for Energy Transition (VIET) in Viet Nam. These organisations have set the objective of changing the narrative for energy transition. In Indonesia, CASE is anchored to the Ministry of National Development Planning/National Development Planning Agency (Bappenas) – Directorate of Electricity, Telecommunications and Informatics, and jointly implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and the Institute for Essential Services Reform (IESR).

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## Key Take-Aways

Long-term solutions for a sustainable and resilient economic recovery post COVID-19 pandemic can be facilitated through green stimulus instruments. To understand the decarbonisation commitments and instruments that are being implemented concurrently with pandemic recovery measures in G20 countries, the Clean, Affordable and Secure Energy (CASE) for Southeast Asia held an expert sharing session with the 3rd G20 Development Working Group Side Event, focusing on Indonesia, South Korea, South Africa, and Germany. Some key take-aways from the discussion are:

1. All four countries have set NZE targets: Germany by 2045, South Korea and South Africa by 2050, and Indonesia by 2060. These NZE targets require an implementable roadmap with clear institutional roles and responsibilities, proper identification of financial and technical support, and a sensible timeline to materialise.

2. Sustained assistance from the government—rather than punitive measures—is required to initiate a fossil fuel phase-out, and to foster innovations in renewable energy, which may be done in a stepwise approach. Some examples discussed in this CASE Insights include Germany's hard coal exit reverse-auctioning mechanism, and South Africa's carbon tax.

3. Decarbonisation instruments should shift investments away from fossil fuels and toward a low-carbon economy, and may be used to generate revenues to finance green infrastructure, whilst facilitating a just and affordable energy transition.


## Overview

The Group of Twenty (G20) countries are the world's largest and fastest growing economies, with an approximate 90% share of global GDP, and are responsible for nearly 84% of the global greenhouse gas emissions from fossil fuel combustion[i]. It was noted that the G20 countries have yet to implement sufficient and concrete incentives to achieve the commitments made under the Paris Agreement and accordingly, the Net-Zero Emissions (NZE) targets.

With the 17th G20 Presidency in 2022, Indonesia aims to 'Recover Together, Recover Stronger,' through inclusive health, digital-based transformation, and sustainable energy transition. Accordingly, the G20 Development Working Group raised the issue of a 'green and blue' economy, through low-carbon and climate-resilient development, to strengthen recovery from the pandemic, which includes clean energy[ii]. These focus areas are highly relevant, due to the shared global goal of a swift economic recovery post COVID-19 pandemic. This could not be achieved only by implementing short-term stimulus, but also through long-term solutions that are sustainable and resilient.

This CASE Insights builds upon the key take-aways regarding how decarbonisation efforts have been sustained despite the pandemic in G20 countries, focusing on selected cases in Indonesia, South Korea, South Africa, and Germany. These lessons are derived from, but not limited to, the lessons learned from the 3rd Development Working Group Side Event organised by the Clean, Affordable and Secure Energy (CASE) for Southeast Asia titled National Development Policymaking on Decarbonisation to Achieve Clean and Affordable Electricity. This side event was held on 8 August 2022, with speakers Tharinya Supasa (Agora Energiewende), Jadhie J. Ardajat (Kementerian PPN/ Bappenas of Indonesia), Seungchan Chang (Korea Energy Agency), Sharlin Hemraj (National Treasury of South Africa), and Anne Baguette (Federal Network Agency of Germany).

# Power system decarbonisation should be mainstreamed in national development plans with clear mandates for implementable actions

As laid out previously, the G20 countries emit substantial greenhouse gasses, resulting in a global push to set country-based NZE targets and a commitment to phase out the use of, and subsidies for, fossil fuels, especially coal (shown for selected countries in Table 1). Such measures to reduce the use of fossil fuels in the power sector have been stipulated in each country's development plan, and priorities set contingent upon the country's respective circumstances.

| | | Indonesia | South Korea | South Africa | Germany |
|---|---|---|---|---|---|
| Current context in 2020 | GHG emissions ($MtCO_2$) | 1,050.41 | 570.7 | 433.6 | 585.3 |
| | GHG emissions per capita ($tCO_2$ per person)[a] | 3.9 | 11 | 7.4 | 7 |
| | SDG7: % Electrification ratio | 99.45 | 100 | 84.39 | 100 |
| | % share of coal in electricity generation | 65.93 | 29.55 | 87.70 | 25.46 |
| | % share of RE in electricity generation | 12.73 | 7.5 | 7.06 | 45.53 |
| Climate and energy commitments | GHG reduction commitment on NDC | 31.89% below the BaU scenario by 2030[b] | 40% below 2018 levels by 2030 | Annual GHG emissions of 350-420 $MtCO_2e$ by 2030 | 55% below 1990 emission level by 2030[e] |
| | Coal phase-out target | 2050[c] | 2050 | NA | 2038 |
| | NZE target | 2060 | 2050 | 2050 | 2045 |
| Decarbonisation instruments | Carbon pricing mechanism | Carbon tax and ETS[d] | K-ETS | Carbon tax | EU ETS |
| | CFPP early retirement mechanism | Through Energy Transition Mechanism (ETM) | Targets to retire 30 aging CFPP by 2034 | Through Just Transition Transaction (JTT) | Compensation and reverse auctioning |

***Table 1*** *Country snapshot*

*Source: Bappenas, 2022; Ministry of Environment and Forestry, 2022; KEA, 2022; National Treasury of South Africa, 2022; Federal Network Agency, 2022; UNFCCC, n.d.; IEA, n.d.;*

*Notes:*

[a] *GHG emissions data for South Korea, South Africa, and Germany are retrieved from IEA[iii], whilst data for Indonesia are retrieved from Ministry of Environment and Forestry[iv] and Central Statistics Agency[v] 2021 data.*

[b] *Indonesia's business-as-usual (BaU) scenario uses 2010 as the base year. On top of its NDC commitment, Indonesia aims to peak its power sector GHG emissions by 2030.*

[c] *New CFPP construction is discouraged and can only be operated until 2050, except those that meet several conditions. Indonesia signed the Global Coal to Clean Power Transition Statement at COP26, and will consider accelerating coal phase-out by the 2040s, contingent upon international assistance.*

[d] *The Indonesian carbon tax is imposed on coal-fired power plants in the first phase, and set to enter into force in April 2022, but postponed to a later date. Indonesian ETS is expected to be mandatory by 2024.*

[e] *Target submitted by the European Union on behalf of the EU member countries.*

Indonesia, for example, has set its greenhouse gas emission reduction target for 29% below the BaU scenario, to be achieved in 2030 (and 41% with international support) in its first NDC[1]. Most recently, **Indonesia submitted its Enhanced NDC, wherein it increased its ambition to reduce emissions by 31.89% (and 43.20% with international support)**[vi]. In 2021, the government updated its NDC and published the Long-Term Strategy for Low Carbon and Climate Resilience/LTS-LCCR 2050, to achieve NZE by 2060. Mitigation actions in the energy sector consist of five primary activities, including the increased share of renewable energy and energy efficiency. Other major activities within the energy sector specified by Indonesia's NDC are low carbon-emitting fuels, clean coal technology and gas-powered plants, as well as post-mining reclamation.

**The Indonesian government had previously issued several energy policies supporting renewable energy and incorporating similar objectives in its National Development Plan**. Whilst the NDC committed to an additional RE capacity of 20,923 MW in electricity generation, and another 15,483 MW of solar rooftop and off-grid RE by 2030, in Annex III of Indonesia's latest Medium-Term National Development Plan (RPJMN 2020-2024), the country targets an additional capacity of 9,050.2 MW of installed RE power plants throughout the 5-year period, bringing the target for total share of RE power plants to 19 GW, or 19.8% by 2024[vii]. In another document, the General Plan for National Energy, Indonesia targets an RE share of 23% in the primary energy supply, or around 33% for RE power plants (45.2 GW) by 2025[viii]. This would mean Indonesia will increase RE power plant capacity by 2.5-fold during the period 2024-2025.

Reflecting on Indonesia's current electricity generation mix, where coal still dominates with a 65.93% share, whilst renewables are lagging at 12.73% or around 11 GW[ix], Indonesia would need a significant breakthrough to boost its renewable electricity. In its effort to foster its RE manufacturing industry development, the RPJMN has also specified a minimum percentage of local content for NRE projects, ranging from 35% for geothermal projects, to 70% for hydropower projects by 2024[x]. Through local content requirements, goods and services procured from domestic markets are mandatory and imports of such are strictly controlled.

[1] A Nationally Determined Contribution (NDC) is a non-binding document in which United Nations country member elaborate its greenhouse gas emission reduction targets, along with the corresponding climate mitigation and adaptation measures.

In September 2022, Indonesia promulgated Presidential Regulation 112 of 2022 on Acceleration of Renewable Energy Development for Electricity Supply, which sets several conditions to discourage coal-fired power plant development and to increase investment in the renewable energy sector[xi]. This Presidential Regulation further stressed the importance of local content requirements, by mandating the Ministry of Industry to improve domestic capacity in manufacturing quality products for NRE projects, setting import quotas for NRE components, verifying local content fulfilment, and developing a roadmap for industries supporting the power sector[xii].

Though local content requirements can be used to boost the domestic manufacturing industry and foster economic growth, they may pose a risk to renewable energy development and target achievement if the domestic capacity to produce cost-competitive goods is limited due to technology gaps between the domestic and international markets. Financial and technical support for renewable energy research and development will be crucial to close these gaps and advance domestic innovations.

Overall, Indonesia's political will to make such commitments is key, and these targets would require an implementable roadmap with clear institutional roles and responsibilities, proper identification of financial and technical support, and a sensible timeline to materialise results. As an effort to address this, the Ministry of National Development Planning/ Bappenas, through the Directorate of Electricity, Telecommunications and Informatics, together with CASE Indonesia are committed to pave the way toward net-zero emissions via power system decarbonisation by means of Long-Term Energy Scenario (LTES) modelling.

## Government's assistance is imperative for energy transition and renewable energy development

Similar to Indonesia, South Korea has stated its emission reduction targets, and mainstreamed its sustainable energy goals via its national development plan. Korea's Renewable Energy 2030 Plan envisions a 20% share of renewable energy by 2030, and the 2040 target is elaborated in the 3rd Basic Energy Plan[xiii]. Through its submission of the 2050 Carbon Neutral Strategy to the UNFCCC in December 2020, **Korea stated its intention to significantly decrease power generated from coal by harnessing technological innovation and industrial decarbonisation**.

Furthermore, the Korean government is fostering the growth of its NRE manufacturing industry through the Ministry of Trade, Industry and Energy. The Korean Standard certification has been mandatory since 2015, by means of the Industry Standardisation Act for manufactured NRE products, whereby the Korea Energy Agency (KEA) acts as the country's certification body for the NRE industry. In its process, KEA collaborates with 19 testing laboratories for NRE product certification, to further boost its domestic NRE research and development capacity. **Korea's NRE manufacturing industry yielded an estimated sales of KRW25.4 trillion (USD18 billion) in 2020[xiv], and it has remained a major exporter of silicon solar cells to the United States since 2019[xv].** There are around 250 'Korean Standard'-certified renewable energy manufacturers, which primarily manufactured PV equipment, followed by parts and equipment for wind and biodiesel power plants. Sales by these suppliers are generally dominated by PV components[xvi].

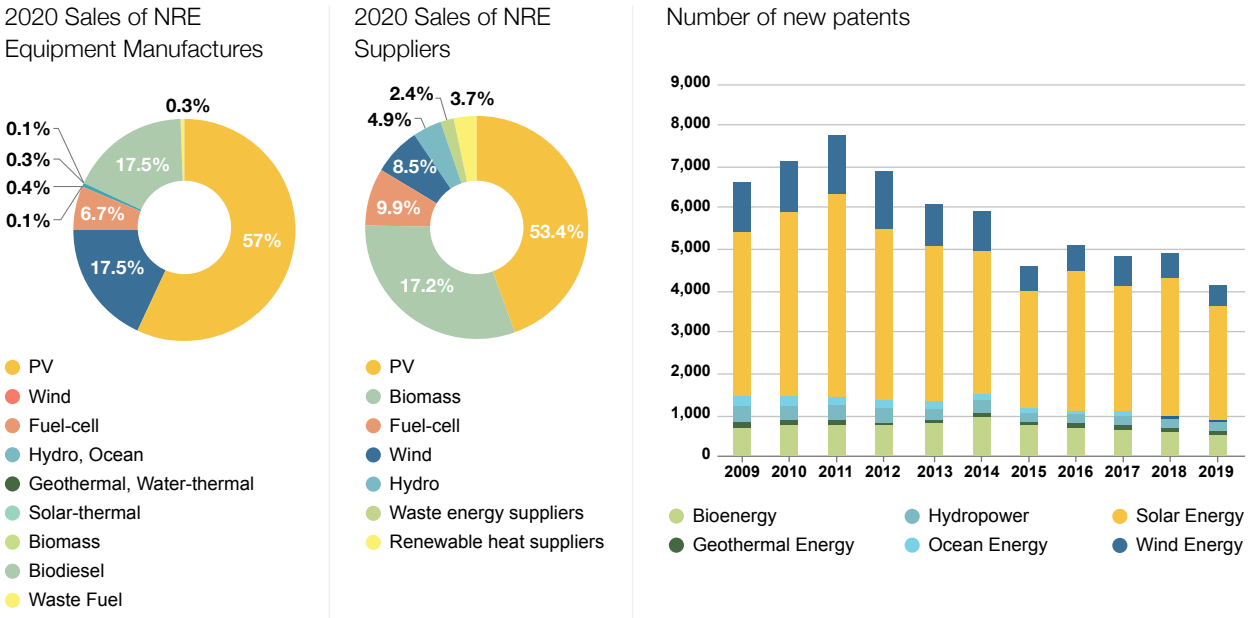



***Figure 1***
*Statistics for South Korea's sales and patents in NRE*

*Source: KEA, 2022 and IRENA, 2021*

Albeit lacking local content requirements as found in Indonesia, Korea's attention to low carbon technology innovation is evident through its allocations for renewable energy technology research. The cumulative renewable energy patents in South Korea increased by 57,200, from 2009 to 2019[xvii]. The most growth was seen in 2011, where South Korea added around 7,715 new patents in renewable energy, before it declined and stagnated from 2015 (Figure 1). South Korea's renewable energy employment (primarily in manufacturing) reached 12,200 jobs in 2020, where solar PV-related jobs accounted for 7,500[xviii].

Power system decarbonisation may likewise create new markets for resource recovery, where rare metals (e.g., nickel, lithium, cobalt) are collected and recycled from PV components and batteries. The government's focus on bolstering its NRE industry has not ceased due to the economic strains of the pandemic. In May 2020, the Korean New Deal was announced by the Korean government, which set the goal to create 659,000 jobs through the 'Green New Deal,' which includes projects like "promoting renewable energy use and supporting a fair transition," and "laying the foundation for green innovation via the R&D and financial sectors," among others[xix]. According to the Global Recovery Observatory, **Korea allocated USD1.4 billion to clean research and development investment, by means of low-carbon manufacturing investment**, which was relatively larger than Germany's (USD0.34 billion)[xx].

Several factors have hindered renewable energy development in South Korea, such as its topography, absence of trans-border interconnections, and low social acceptance of renewable energy. The primary reason behind the public's unfavourable opinion is due to the belief that solar and wind turbine farms may alter the natural landscape of their surroundings[xxi]. To address this, the Resident Participation Project aims to create regional NRE industries, in collaboration with residents and regional authorities, by requesting resident concessions and pre-emptive conflict prevention on the introduction of NRE, through informative dialogues and communications. Moving further, renewable business models for energy projects are expected to be revised to facilitate the active participation of the residents, by including a revenue-sharing mechanism.

Overall, South Korea's ambition to foster the domestic NRE research and manufacturing industry, clear institutional roles and processes for NRE product certification, along with continued assistance in terms of R&D financing and resident participation, are the key measures that work synergistically to aid South Korea's renewable energy development.

# A clear roadmap for decarbonisation is needed to provide a strong signal for coal phase-out

On the journey to decarbonising the power sector, not only is governmental assistance and stakeholder engagement for NRE development needed, but also for phasing out fossil fuels. In this effort, Germany has established a coal exit commission (officially known as the Commission on Growth, Structural Change and Employment), which recommends a pathway for a coal exit by 2038, or ideally by 2030 (Figure 2), by means of a society-wide process. The rationale and decision-making processes for Germany's coal exit are elaborated in an issue of CASE Insights published in April 2022[xxii]. That CASE Insights outlined **Germany's implementation of two mechanisms to decommission its coal-fired power plants: 1) fixed compensation payments for lignite power plants, and 2) auctioning for hard coal and small lignite power plants.**

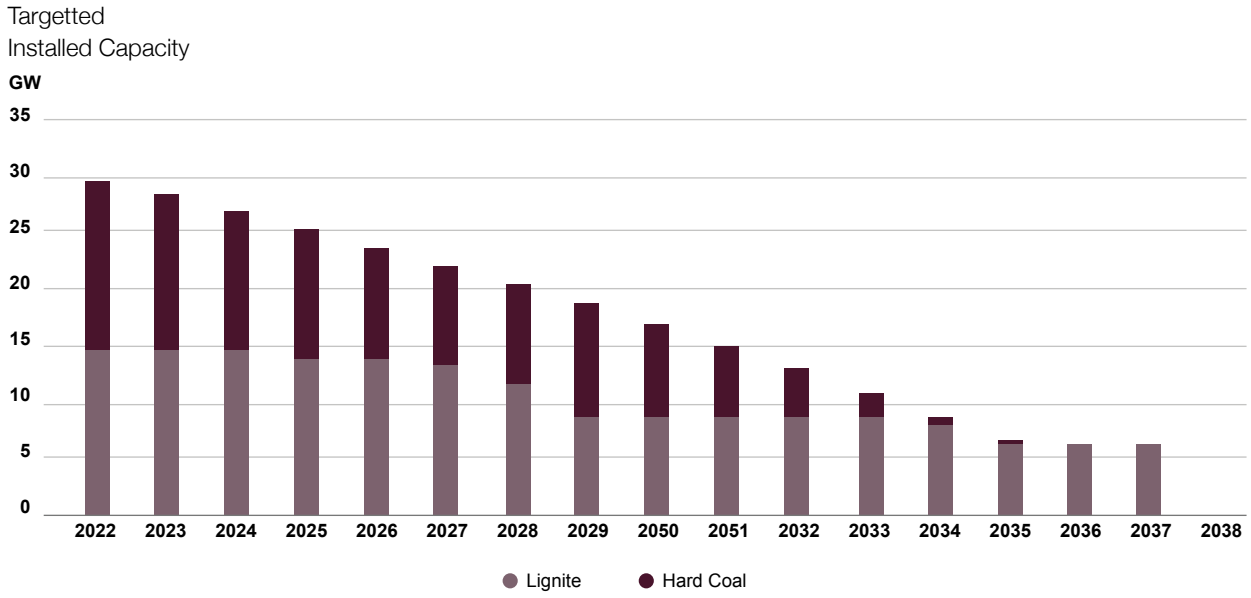



***Figure 2***
*Germany's capacity reduction path for its coal exit strategy*

*Source: Federal Network Agency, 2022*

Germany's hard coal auction mechanism follows a carrot-and-stick approach, in which **it carries out tendering procedures for a compensated decommissioning (carrot), followed by a mandatory administrative order without compensation (stick)**. This mechanism is regulated by the Coal-Fired Power Generation Termination Act, or 'Coal Exit Act' (*Kohleverstromungsbeendigungsgesetz* or 'KVBG'). The Coal Exit Act mandates the German Federal Network Agency (*Bundesnetzagentur* or 'BNetzA') to administer a reverse auctioning mechanism for hard coal by publishing information on the upcoming auction rounds, evaluating the bids, determining the clearing orders, and announcing the results[xxiii].

## Germany's Tendering Mechanism Design[xxiv]

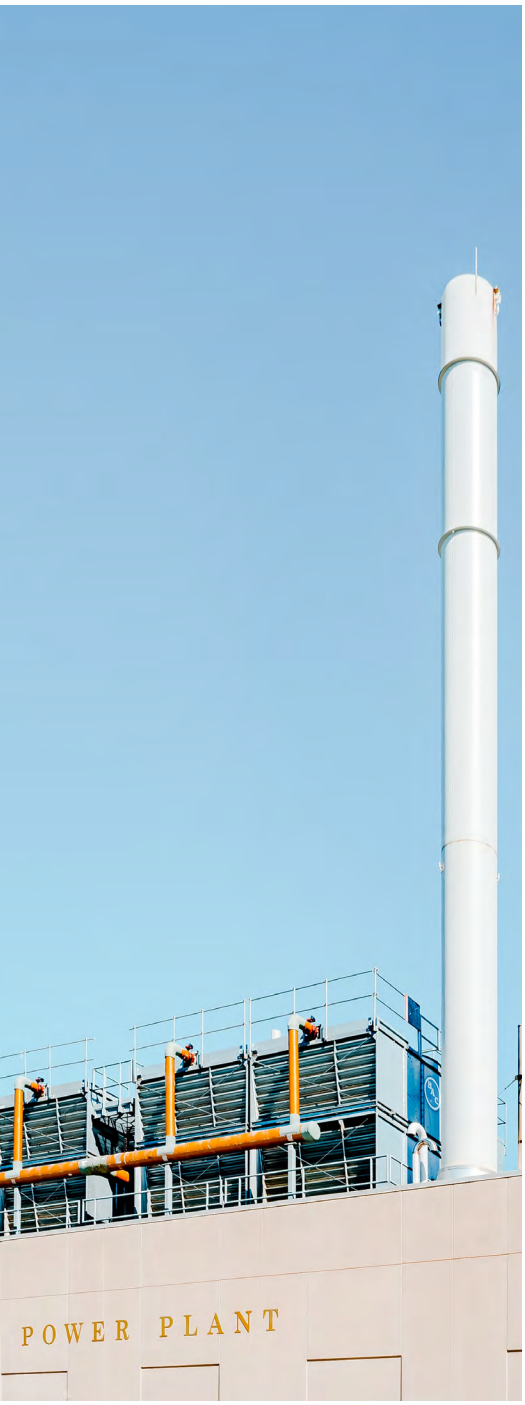
As laid out previously, Germany has set its coal exit targets to be achieved by 2038. Accordingly, a timeframe for coal power plant phase-out, along with its annual decreasing target, was set for both lignite and hard coal (Figure 2).

Using this annual target and the state of coal capacity in a given year, the tender volume, described as capacity to be decommissioned by the target year in Megawatts, is established for each bidding date. In the KVBG, the German government had established the maximum price of each target year with a declining compensation value. Power plant operators who wish to participate in the auction rounds will then propose their bids (stated in € per MW capacity). BnetzA will then rank these bids based on the bid value divided by the annual historical carbon dioxide emissions of the coal plant to get the cost per ton of carbon dioxide.

To illustrate, consider the following simplified case for two plants, both participating for a decommission target year of 2023 (maximum price of EUR116,000 per MW). Plant A and Plant B submitted their bids, along with information on their capacity and verified $CO_2$ emissions from the past three years:

| Plant | Capacity (MW) | Bid (€/MW) | Annual emissions ($tCO_2$) | Abatement cost (€/$tCO_2$) | Rank | Payment (€) |
|---|---|---|---|---|---|---|
| Plant A | 200 | 75,000 | 6,000 | 12.5 | 2 | 15,000,000 |
| Plant B | 10 | 105,000 | 15,000 | 7 | 1 | 1,050,000 |

As can be seen, Plant B ranked first despite having a lower capacity and setting a higher bidding price per MW, due to its carbon-intensive nature (1,500 $tCO_2$/MW), making its abatement cost lower than plant A. Through this ranking mechanism, the German auctioning process would prioritise less efficient plants with a higher carbon emission for retirement. Admittedly, several other factors that are not mentioned come into play in real-world practice, like grid factor adjustment, multiplier years, and measures for over- or undersubscription, among others.




As of August 2022, lignite power plant operators have decommissioned as much as 10 GW of lignite plants, and the German government had allocated EUR690 million (or approximately USD690.2 million) for compensation payments. Over the course of 4 years, beginning in 2020, the compensation will be incrementally decreased with each round (rounds 1-4). The government will then implement a hybrid approach between tenders and administrative orders (if undersubscribed) for the following 3 rounds (rounds 5-7), with the tendering procedure to end by 2026. Finally, the administrative orders will be effective in their entirety in round 8 (2027-2038). **Germany's coal exit pathway, along with its roadmap for tendering procedures and administrative orders, gives certainty to more than 50 lignite plant operators and incentivises them to bid for an early decommissioning.**

The process of German coal phase-out is not without impediments, especially due to the energy crisis caused by the Russo-Ukrainian war. In the German coal region of North Rhine-Westphalia (NRW), the decommissioning of two lignite power plants, initially planned for a shutdown in 2022, is set to be postponed until 2024[xxv]. However, the state of NRW is committed to phase out coal-fired power plants by 2030 — or 8 years ahead of the initial 2038 plan. The largest energy supplier in NRW, known as RWE, has also committed to investing in renewables and hydrogen power plants to accelerate the coal phase-out target. It is thus important to overcome the energy crisis by ensuring flexibility in decommissioning targets and guaranteeing energy security, whilst still committed to keeping long-term coal phase-out targets.

On top of the tendering process and fixed compensation, Germany also has several complementary policies in place to encourage fossil fuel phase-out[xxvi], including the implementation of carbon pricing. The carbon pricing mechanism in Germany follows that of the European Union Emissions Trading System (EU ETS), which enables power plants in Germany to trade carbon allowances based on their emissions — those that need more allowances will buy from those that do not surrender all of their emission allowances. With a declining supply of allowances, and increasing price per $tCO_2$, the EU ETS will disincentivise investments in coal-fired power plants.

# Carbon pricing may be utilised to complement coal phase-out policies

Similar to the EU ETS implemented in Germany and other EU countries, South Korea and South Africa also have their own carbon pricing mechanisms in place. These mechanisms will allow the social costs of emissions to be captured within the cost component to produce goods and/or services, including electricity. **Carbon pricing will, in turn, give a signal along the supply chain to encourage business actors and consumers to shift away from carbon-intensive practices and products**. The combination of increasing production costs of, and decreasing demand for high-carbon goods will effectively accelerate fossil fuel phase-out.

Another type of carbon pricing mechanism is the carbon tax, which is being implemented in several jurisdictions across the globe, including South Africa. The South African carbon tax is regulated under the Carbon Tax Act Number 15 of 2019, and came into effect on 1st June, 2019, after a decade-long preparation (Figure 3).

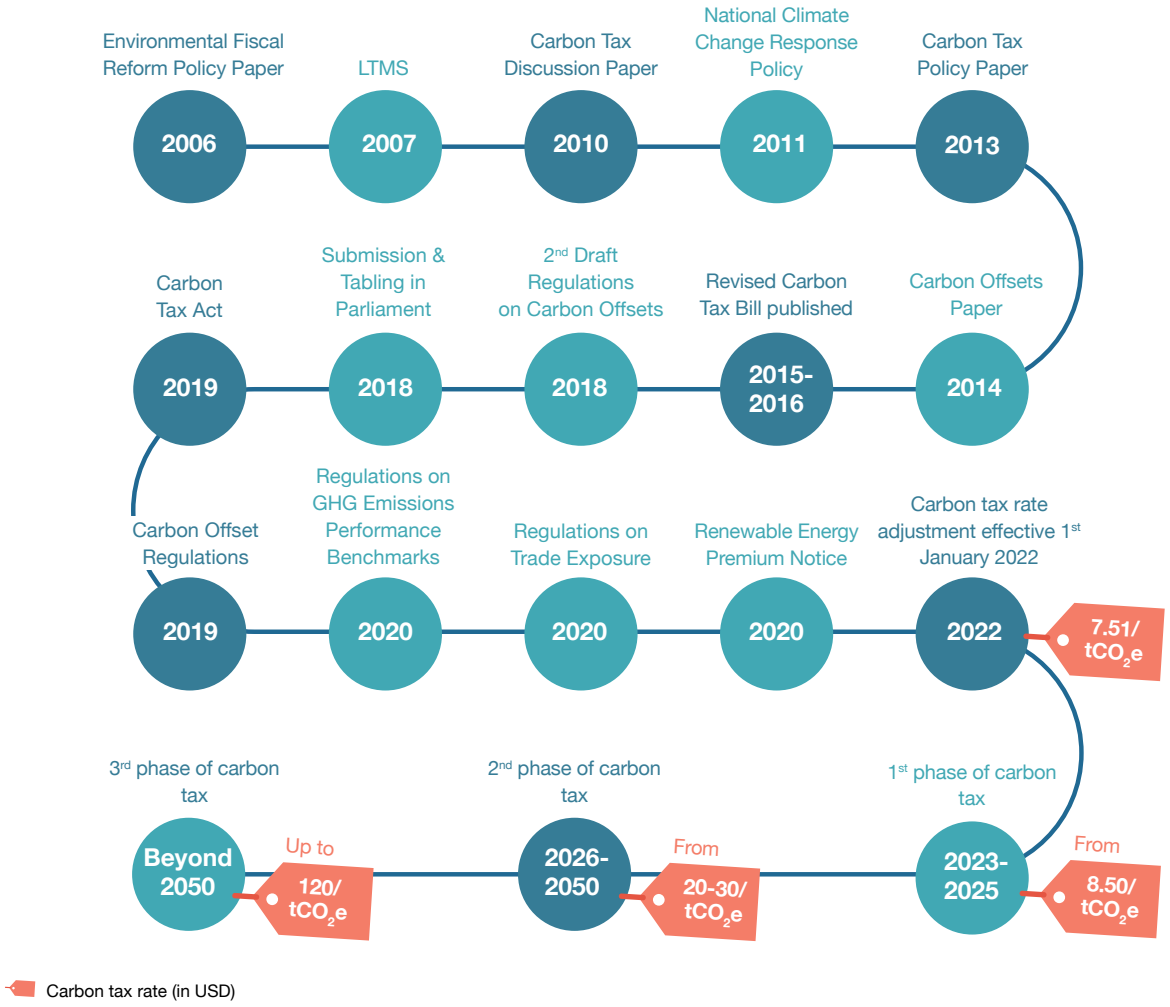



***Figure 3***
*South Africa Carbon Tax Timeline*

*Source: National Treasury of South Africa. 2022. Sharlin Hemraj's presentation at the 3rd G20 Development Working Group Side Event on 8th August 2022.*

**The carbon tax mechanism covers 80% of South Africa's emissions, and is imposed on both stationary and non-stationary Scope 1 emitters in: 1) electricity generation and fuel combustion; 2) industrial processes; and 3) fugitive emissions**. For non-stationary emissions, the South African carbon tax will piggyback onto the fuel tax currently in place as an add-on, since the tax administration system and infrastructure are already in place. Initially, the effective carbon tax rate is set at a low rate of SAR134/t$CO_2$e (approximately USD7.51), which was adjusted to USD8.50, in the 2022 tax period[xxvii]. Tax-free allowances of around 60% are also freely given to taxable sectors. A higher carbon tax rate is proposed to be imposed during the 1st phase (2023-2025), at a minimum of USD1 per year. The South African government intends to considerably increase the carbon price — to USD20 by 2026, USD30 by 2030, and up to USD120 beyond 2050 — whilst gradually reducing the basic tax-free allowances to strengthen the price signals.

### Why was carbon tax chosen over an ETS in South Africa?

In 2010, the South African government considered implementing an emission trading system in the country. However, since the electricity market of South Africa is largely centralized—with Eskom, a state-owned utility company, being the major electricity supplier — there are few market players and limited trading opportunities. This limitation would hinder generating an effective carbon price in the market. Contrary to an ETS, where the carbon price is defined by the market, the carbon tax would provide price certainty over time to influence investment decisions.

In the early phases of a carbon pricing mechanism, it is important for the government to assist business actors with supplementary regulations to ensure compliance. Several complementary policies aimed at encouraging businesses to comply with the South African carbon tax are also in place[2], including:

- **60% basic tax-free allowances**, with up to 90% of combustion-related emissions and up to 95% of industrial process emissions given to companies that reduce their effective carbon tax rate to as low as USD0.37/t$CO_2$e.
- **5% or 10% allowances for carbon offsets to reduce the carbon tax liability**, which is also aimed at incentivising mitigation actions in sectors not covered by the carbon tax (e.g. AFOLU, transportation, and waste). Carbon offsets should be undertaken within the South African border and certified either from Clean Development Mechanism, Verified Carbon Standard, or Gold Standard.

[2] For an extensive list of complementary policies see: https://www.sars.gov.za/customs-and-excise/excise/environmental-levy-products/carbon-tax/

On top of enacting complementary measures, the South African government took existing policies into consideration during the design of the carbon tax. For instance, the electricity generation levy, which subjects non-renewable and nuclear power plants to an environmental levy paid per MWh generated, will burden fossil fuel power plants with double disincentives, when combined with the carbon tax. Payments of this electricity generation levy can thus be credited toward the carbon tax via tax shifting. Through this facility, the government is assured that the carbon tax introduction will be revenue neutral, and will not impact the electricity price. **The revenue generated by the carbon tax will also be earmarked for several social programmes to ensure just transition, such as improved public passenger transportation and enhanced free basic electricity for low-income households**.

## Social justice components shall be included in the design of decarbonisation instruments to ensure a just energy transition

**Carbon pricing, be it an ETS or a carbon tax, will have distributional effects**[xxviii] **that should be addressed and ameliorated through several social protection measures, in order to not worsen inequalities**. It was previously stated that a portion of the South African carbon tax revenue is allocated to alleviating potential economic impacts due to the carbon tax implementation, such as potential increases in energy burden[3], or shocks to utility operations. Carbon tax revenue recycling may yield improvements in income distribution, especially when it targets low-income households and vulnerable communities[xxix]. Likewise, the K-ETS and EU-ETS have a mechanism to allocate a certain percentage of revenues for a similar purpose.

In addition to carbon revenue recycling, the government of South Korea has committed to ensuring a fair transition for regions impacted by reduced use of coal and other traditional sources of energy, as a consequence of its Korean New Deal. The impact of job losses that may accompany reduced fossil fuel consumption are expected to be managed through unemployment insurance, job training for emerging sectors, job matching, and social safety-net measures. However, providing social assistance effectively and efficiently would require a proper identification of those sectors or communities most impacted, and thus should receive the aid and by what means.

[31] Energy burden is estimated as the monetary value spent on energy expenses as compared to income of an individual/household in a given time period.

**It is crucial to ensure a consistent and sustained dialogue between the national and subnational levels of government, the affected actors, and the broader stakeholders, using public consultations to identify those in need**. Similar approaches have been implemented in other G20 countries, especially where coal plays a major role in the country's economy, even creating dedicated institutions to work with the community to enable a just transformation, such as the role of Latrobe Valley Authority in Australia[4].

In retrospect, the exact definition of 'Just Energy Transition' itself may vary, but it most commonly consists of decarbonising the energy sector, whilst taking social justice measures into consideration. Even though decarbonisation instruments and pathways have been implemented, and their efficacy can be calculated as emission reductions, as previously shown, the social justice aspects are usually harder to define and measure. The Public Affairs Research Institute (PARI) argues that the current just transition narratives tend to be bound in scope to the impacts of energy transition, in terms of electricity generation transformation, whilst undermining the pre-existing inequality caused by the current energy systems[xxx]. It further pushes the idea that the **just transition narratives will determine how policymakers and society understand the issues at hand, and will consequently affect the range of stakeholders engaged to create just energy transition solutions**.

Whilst just energy transition requires all stakeholders to possess a similar understanding of the complex interrelation of the socio-economic impacts of the energy system and its transition, it is viable through a clear framework, enabled by a series of consultations with stakeholders and a proper identification of effective social protection programmes. Dialogues and planning for just energy transition should also not be detached from the design of various decarbonisation instruments, as these instruments may risk overlooking socio-economic components. All things considered, decarbonisation instruments should shift investments away from fossil fuels and toward a low-carbon economy, and facilitate a just energy transition.

[33] For further information on the just transition process in Latrobe Valley Authority see: https://caseforsea.org/post_knowledge/case-insights-coal-phase-out-germany-and-australias-practical-implementation-to-support-energy-transition-in-indonesia/

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## About CASE

The programme “Clean, Affordable and Secure Energy for Southeast Asia” (CASE) is a regional project focuses on the four largest countries of the region in terms of population: Indonesia, Vietnam, Thailand, and the Philippines. CASE is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH and international and local expert organisations in the area of sustainable energy transformation and climate change: Agora Energiewende and NewClimate Institute (regional level), the Institute for Essential Services Reform (IESR) in Indonesia, the Institute for Climate and Sustainable Cities (ICSC) in the Philippines, the Energy Research Institute (ERI) and Thailand Development Research Institute (TDRI) in Thailand, and Vietnam Initiative for Energy Transition (VIET) in Vietnam. The four countries represent nearly three-quarters of total power generation in Southeast Asia, and account for about 72% of the region’s GDP and for 82% of its population. The energy development of these countries will therefore have a major impact on the ability of the region to meet both development and sustainability goals as well as globally to meet the goal of the Paris Agreement.

Funded by the German Federal Ministry for Economic Affairs and Climate Action (BMWK), CASE aims to support a narrative change in the region’s power sector towards an evidence-based energy transition, in the pursuit of the Paris Agreement goals. The programme makes use of available research initiatives while generating new evidence grounded in local realities that can influence economic managers, power sector decision makers, industry leaders and electricity consumers to support early, speedy, and responsive strategic reforms in the power sector. To reach this objective, the programme applies a joint fact-finding approach involving expert analysis and dialogue to work towards consensus by converging areas of disagreement.

In Indonesia, CASE is working closely with the Ministry of National Development Planning / National Development Planning Agency (Kementerian PPN/Bappenas) – Directorate General of Energy, Telecommunications, and Informatics (KTI) as the political partner.

Furthermore, CASE is an aligned programme of the Energy Transition Partnership (ETP), an alliance of international donors, philanthropies, and partner governments established to accelerate energy transition and to support sustainable development goals in Southeast Asia.

## About GIZ

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is owned by the German government and has operations around the globe. GIZ provides services in the field of international cooperation for sustainable development. GIZ also works on behalf of other public and private sector clients both in Germany and overseas. These include the governments of other countries, the European Commission, the United Nations, and other donor organisations. GIZ operates in more than 120 countries and employs approximately 22,000 staff worldwide.

## About IESR

Institute for Essential Services Reform (IESR) is a think-tank in the field of energy and environment, IESR encourages transformation into a low carbon energy system by advocating a public policy that rests on data-driven and scientific studies, conducting capacity development assistance, and establishing strategic partnerships with non-governmental actors.

## About Bappenas

The Directorate of Electricity, Telecommunications and Informatics under the Ministry of National Development Planning (Bappenas) has the task of coordinating, formulating and implementing policies, as well as monitoring, evaluating, and controlling national development plans in the fields of electricity, telecommunications, and informatics. The Directorate is CASE Political Partner in Indonesia.

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