



EGCO's TCFD & Carbon Neutral Roadmap 2022

Suggestions for Climate Strategy Integration

Date: 27 June 2022



EGCO Group 2030 Climate Strategy

Vision: “Accelerating energy transition towards low carbon society with exceptional innovation”

EGCO Group 2030 Climate Strategy

Resilient Portfolio	Innovative Businesses	Enabling Programs
- Regular assessment and management of climate-related risks and opportunities - Increasing renewable and phasing out carbon-intensive electricity generation - GHG mitigation at existing thermal power plants (including CCS pilot) using best available technologies - Carbon Neutral Roadmap: Phase 1 ‘Readiness Building’	- Increasing low carbon revenue through circular products and energy management services, assisting in Smart City and Grid development - Promoting decentralized renewable generation of SPP and VSPP using EGCO’s expertise in operations and trading - Pursuing downstream opportunities in green mobility and electrification of transport sector	- Enhancing internal climate risk and opportunity management with carbon price - Promoting capacity building and stakeholder engagement to enhance climate performance - Establishing a responsible function for climate-related strategy implementation
Targets: 30% of renewable generation in the portfolio by 2030 10% carbon emission intensity by 2030 to reach carbon neutral by 2050 - Maintain power generated from coal at 20-21% by 2030 - Pilot CCS project in place by 2030	Targets: Annual investment in 3 projects in new businesses	Targets: - Climate function established - Annual monitoring, evaluation and reporting of climate strategy implementation - CDP A-List member - Climate-related KPIs & targets defined - Capacity building and engagement programs developed

Goal 2030: Decarbonizing electricity generation and innovating low carbon businesses

Strategy 1: Resilient Portfolio

Regular assessment of climate-related risks and opportunities and implementation of response measures to ensure business resilience

Transition Risks and Opportunities

Assessment (Scenario Analysis) Interval: 1-2 years

To mitigate transition risks:

- Set up internal carbon price where the price reflects current or expected carbon pricing in operating and supplier jurisdictions
- Engage with high-risk suppliers for carbon pricing to reduce impact
- Demonstrate clear and strong efforts to reducing carbon intensity and emissions, such as limiting new fossil-based plants and increase investments for renewable technologies and plants

To capture transition opportunities:

- Feasibility studies for low-carbon technologies such as CCS, renewable energy, battery/energy storage, and nature-based solutions, including how they may be integrated with current and future EGCO business strategy as part of Carbon Neutral Roadmap
- Develop Environmental Attribution Certificates (EAC)
- Conduct analysis on the readiness of blue or green hydrogen in operating and planned jurisdictions at present and in upcoming years
- Continue engaging with key stakeholders and policy makers to encourage transition to low carbon society

Physical Risks

**Assessment (Monitoring) Interval: Quarterly
Assessment (Scenario Analysis) Interval: 3-4 years**

For existing assets:

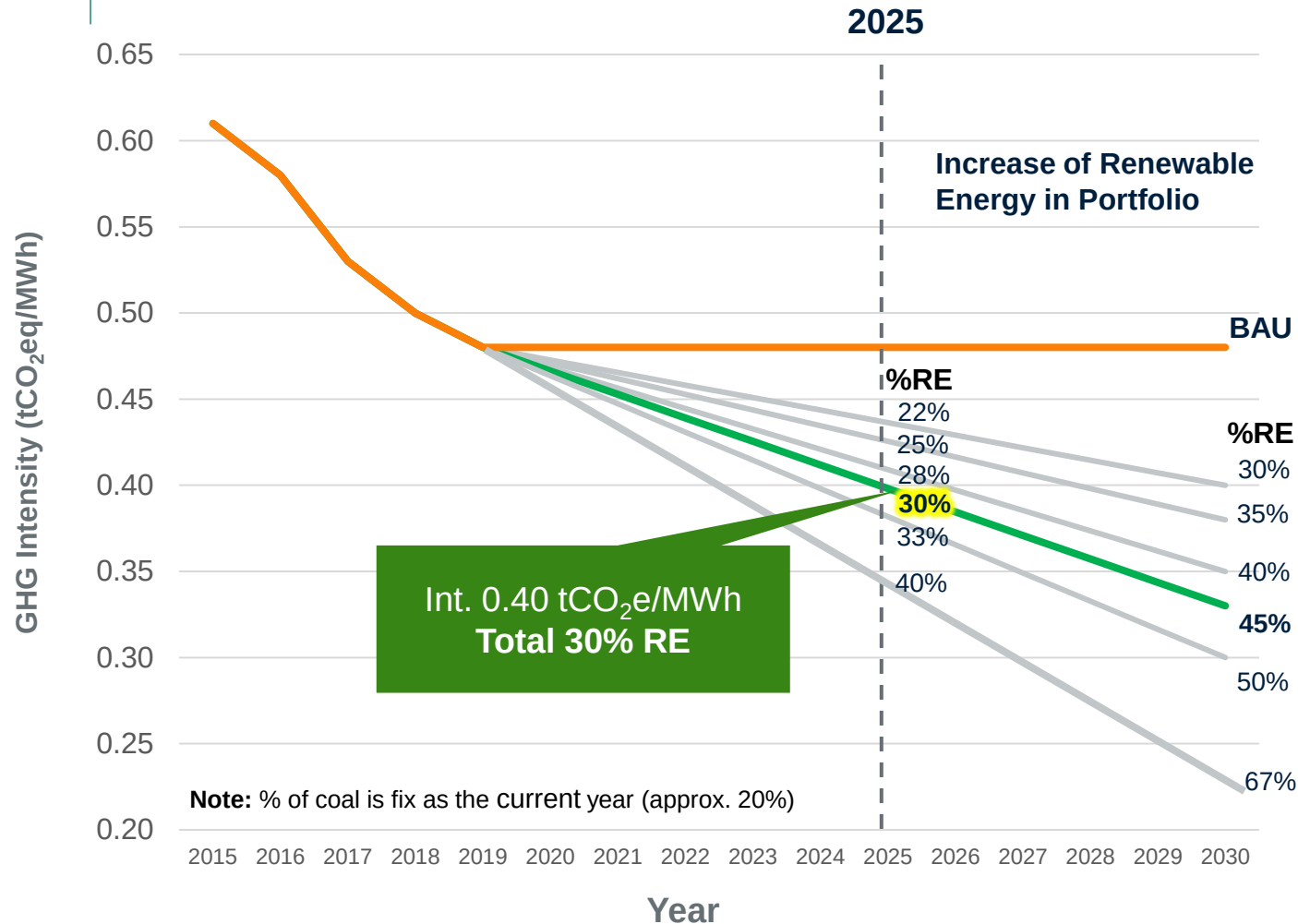
- Deeper-dive site specific physical climate risk assessments focusing on 'hotspot' hazards/assets;
- Consider changing exposure to relevant hazards in emergency response plans for each site;
- Consider appropriate insurance products (e.g. parametric insurance) to cover damages/ losses due to potential natural hazards at given location;
- Implement or follow a monitoring mechanism with the national or regional meteorological agencies for early weather warning systems;
- Regular employee training plans for evacuation of relevant sites

For new projects:

- Conduct due diligence during site selection for new assets.

Strategy 1: Resilient Portfolio

Increasing the mix of renewable energy in portfolio is necessary to align with SDS



As part of EGCO's drive for a resilient portfolio, EGCO Group should increase the portion of renewable energy to lower the overall GHG emissions, targeting a 30% share of renewable installed capacity by 2030.

This can be achieved by phasing out coal-fired power plants, maintaining natural gas capacity, and increasing renewable energy generation through solar, hydro, wind, geothermal, and biomass power plants, as well as increasing efficiency of power generation across various climate and other environmental aspects.

To facilitate this, EGCO seeks to upgrade existing facilities to be in line with Best Available Technologies (BAT) standards. The increase in renewable electricity share and investment in CCS will also mitigate anticipated regulatory risks associated with climate change while also capturing new opportunities in the power generation sector. EGCO is also exploring opportunities related to hydrogen.

Action Plans: Near-term 2022 – 2030 [Readiness Building]



Anticipated 16.3 Mt CO₂ has been removed by CCS and 8 Mt CO₂ is offset in this decade



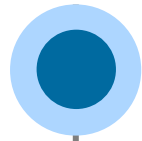
Anticipated 14.2 % increase in generation capacity compared to 2022 base year



Absolute emission 12.87 Mt CO₂

CCS

Carbon Credit



2022 - 2024

- **Capacity building**



Capture Readiness analysis and conduct a study on EGCO's assets for use in CCS retrofit planning

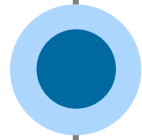


Promotion of CCS regulatory framework with industry partners and the government

- **Research** carbon market options
- **Establish** measure-offset-document-validate routine



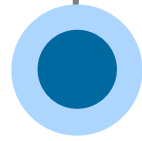
Purchase carbon credits to prevent increase in emissions in the next few years prior to the beginning of CCS retrofit



2025 - 2027



First CCS retrofit **pilot project** begins in 2025 and becomes operational in 2027.



2028 - 2030



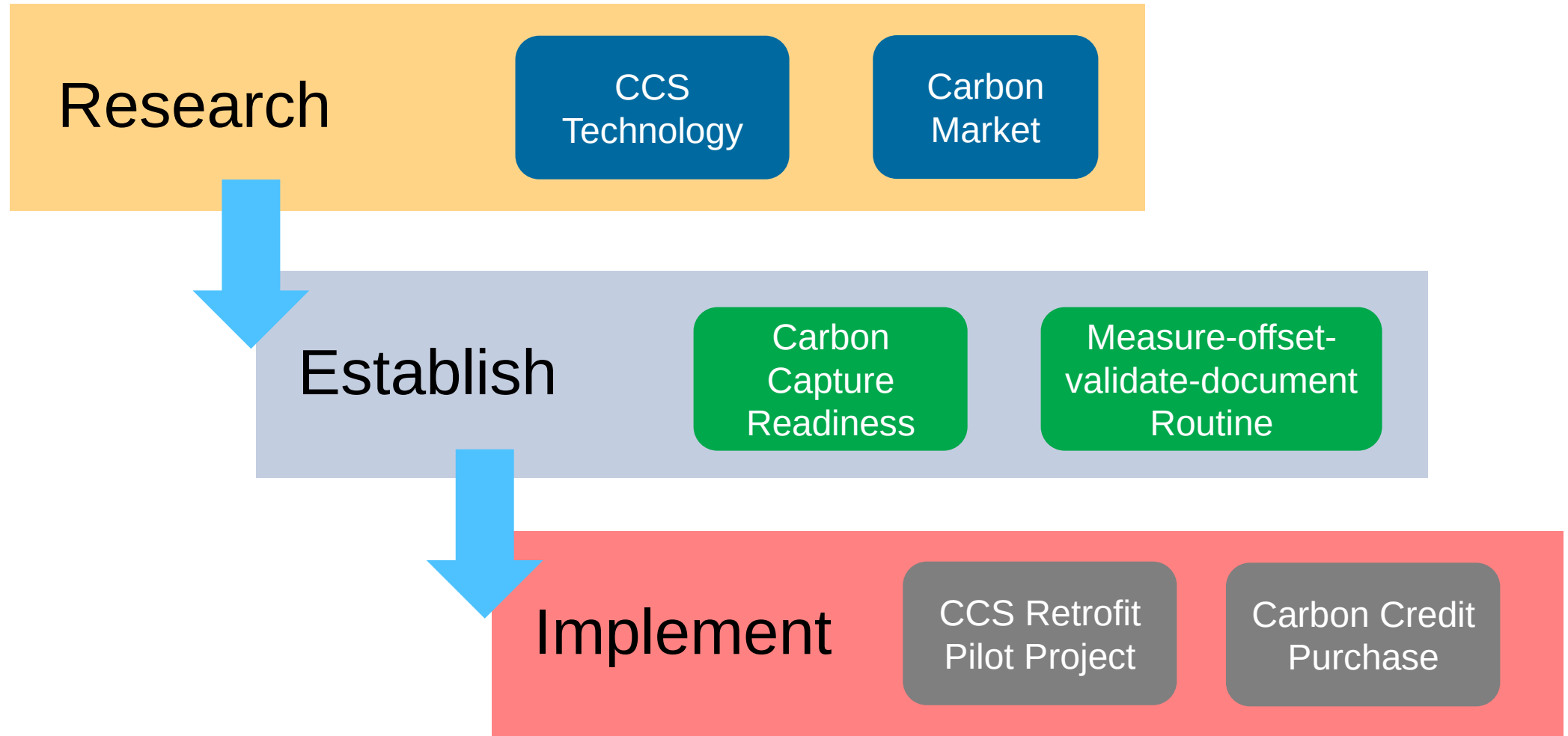
Two more plants are retrofitted with CCS by the end of 2030.

Renewables



Achieve goal to increase renewable power generation ratio in portfolio to 30% by 2030.

Next steps 2022 - 2024



Strategy 2: Innovative Businesses

Innovative businesses are new sources of revenue that help EGCO Group achieve economic success while aligning with the ultimate goal of B2DS. The diversification is vital to capture emerging market opportunities in power sector.

Business 1: Circular Product Services

Providing access to benefits of the equipment without owning it

Based on circular economy concept, this business allows customers to enjoy the benefit of equipment while EGCO Group takes care of its functionalities throughout lifetime and takes responsibility on its end-of-life management. For example, instead of selling solar PV, energy storage, smart meter, charging station, this business provides clean electricity, backup energy service, energy usage information and access to power for customers.

Business 2: Comprehensive Outsource Service for SPP/VSP

Capitalizing on EGCO Group's expertise in energy production and management system to accelerate energy transition

With the rise of decentralized power generation, EGCO Group can be a trusted expert who helps SPP and VSP in all steps from project development through operation and trading. Moreover, high market share of power plant operation service in the same area can further give EGCO an opportunity to generate income through secondary services such as energy supply aggregator.

Business 3: Energy Management Service

Transforming clients with smart technology

Assisting smart cities, industrial estates, commercial buildings, factories and residential estates in holistic energy management including energy efficiency improvement, renewable energy generation and consumption, sector coupling with green electrification, micro-/smart grid formation and overall cost reduction. All of these with the help of smart technology. This business can be developed in conjunction with Circular Product Services and will grant a strategic position for Green Mobility business for EGCO Group.

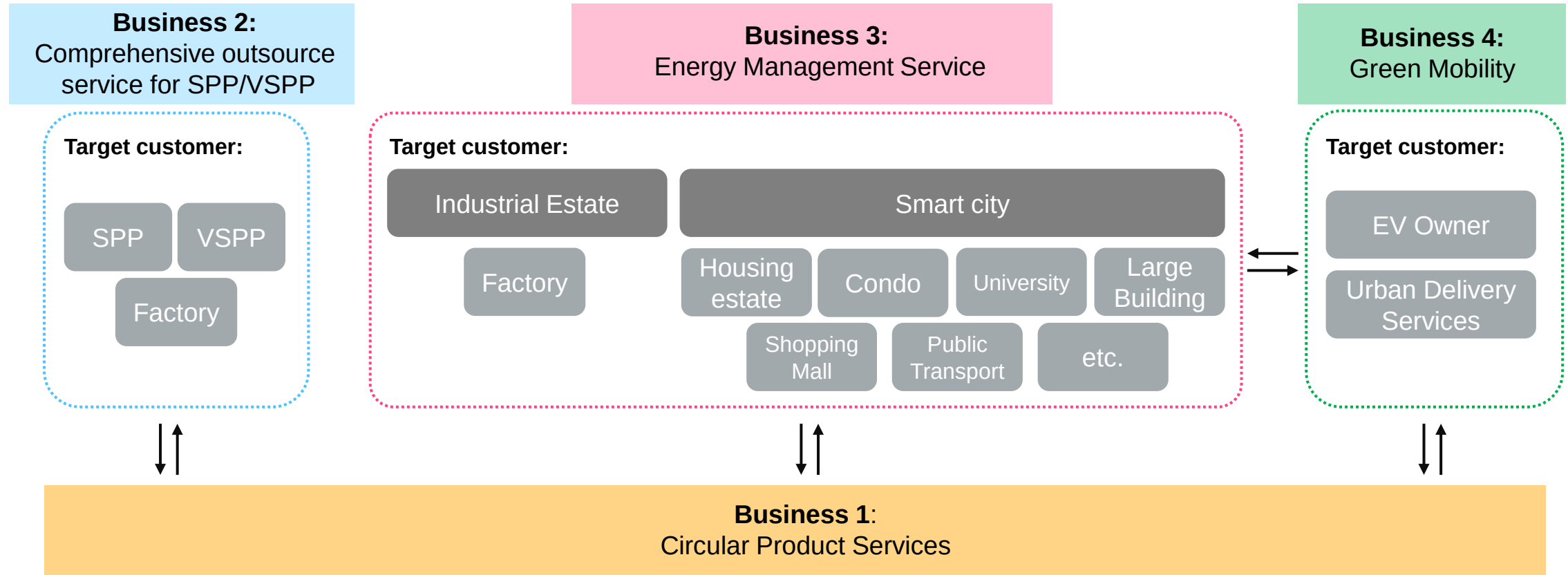
Business 4: Green Mobility

Powering urban private transportation and delivery service

Green Mobility business provides charging system for EV users in urban areas. Two types of charging system are considered, Stationary Smart Charging System where users park and charge their EV, and Swap-and-go System where batteries are exchanged on the spot without the need to wait for charging. This business opportunity can be extended in partnership with urban delivery service. Given the high competition, the success in this business is likely to depend on Energy Management Service business where EGCO Group already presents as the energy manager in smart cities, commercial buildings or residential estates.

Target Groups and Potential Synergies in Innovative Businesses

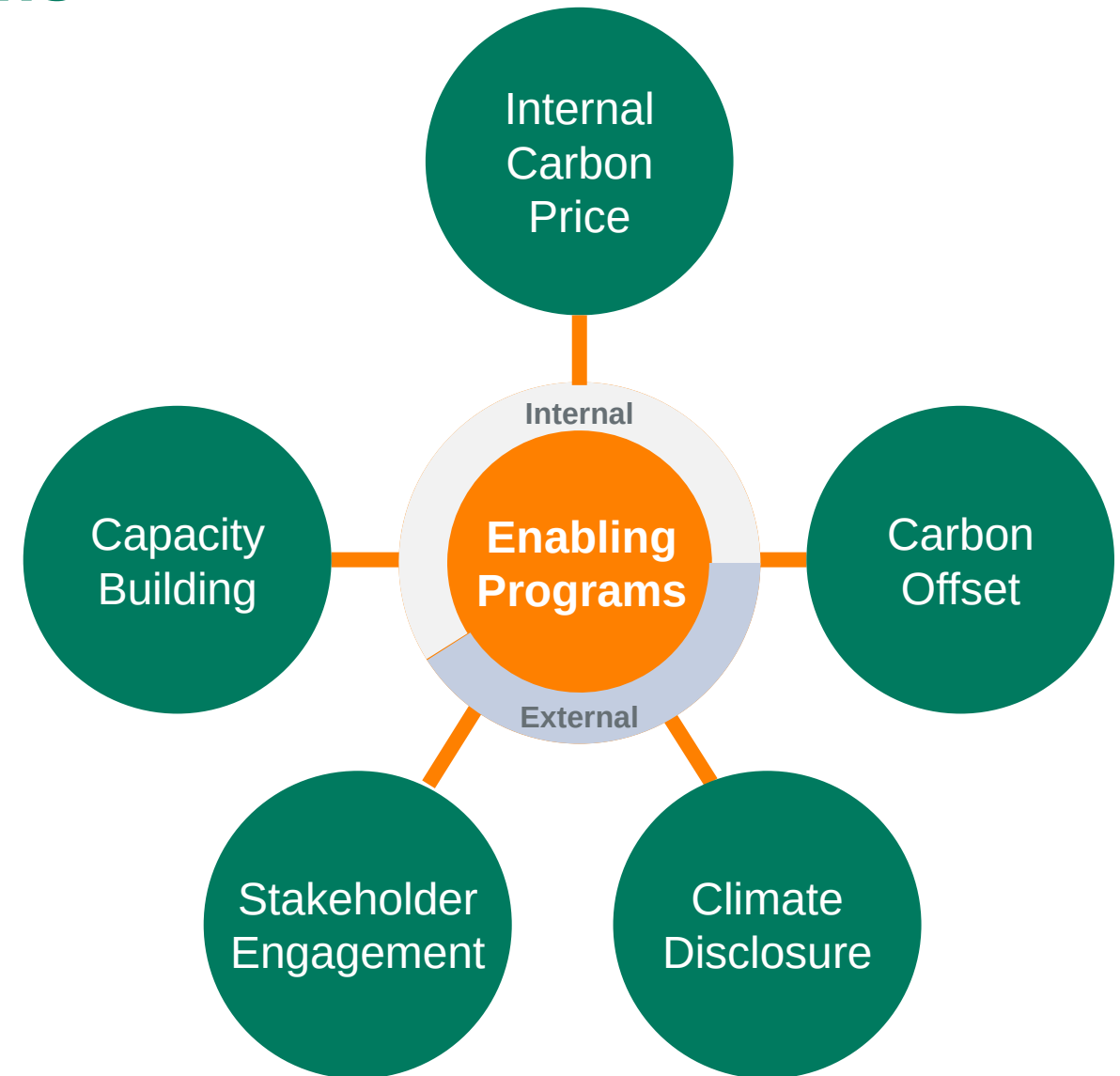
↔ = Potential Synergy



Leading to other future businesses such as 1) Load & Supply Aggregator 2) Businesses based on customer generated data

Strategy 3: Enabling Programs

Six enabling programs are selected to holistically help EGCO Group improve its performance in alignment with stakeholder's expectations and fulfill various components of excellent climate change management.



Description of Enabling Programs (1/2)



Internal Carbon Price

- Carbon price refers to internal assumptions of the price of carbon that companies use as a planning tool to guide capital investment decisions and to help identify revenue opportunities, risks, or as a management incentive to reduce costs
- EGCO Group may begin with the most commonly used carbon price (i.e. shadow price) before evolving into other advanced/company-specific prices such as implicit carbon price and internal fee



Carbon Offset

- Carbon offset refers to verified carbon credits originated by other parties that are purchased in order to compensate company's emissions that do not align with the target
- Carbon offset is a tool to achieve carbon neutrality that is used by many companies worldwide



Capacity Building

- Establishing Climate Function as a new team or a "climate champion" committee from existing relevant functions to spearhead internal climate action and strategy, reporting to Corporate Social Responsibility Committee
- Enhancing employees' knowledge of climate change implications, i.e. risks and opportunities, stakeholder concerns, trends, processes and activities needed to achieve climate targets through climate change capacity development program for EGCO staff to develop business innovation and resilience against evolving market demands.

Description of Enabling Programs (2/2)



Climate Disclosure

- Responding to external stakeholder's expectation on transparency of climate change management
- Attracting ESG and climate investors through TCFD disclosure and high CDP rating
- Having Scope 3 data collection process in place which can be verified and reported annually
- Earning reputation on climate change management through one of the most recognized disclosure scheme by becoming CDP A-List company



Stakeholder Engagement

- Building initiatives with external stakeholders i.e. suppliers, customers and other business partners to lower Scope 3 emissions.
- Participating with Policy makers (i.e. authority, UN), and Trade associations to drive climate agenda
- Funding research institutions to develop innovations in electricity generation, energy efficiency, smart grid and others.

Final Remarks and Limitations

- Proposed strategy and carbon neutral roadmap focuses on reducing emissions of existing assets, high-potential, and (near) future projects, while also incorporating EGCO's current constraints against early retirement of carbon-intensive plants.
- External stakeholder expectations, components in excellent climate change management and proposed targets presented in this final report are subject to evolve over time. **Revision of their adequacy and timeliness is recommended** every two years or less, when a major event or significant change occurs to the company.
- **The physical scenario analysis expanded to cover 25 of EGCO's assets and 84% of EGCO's contracted capacity.** The results of the analysis estimate impact **in the circumstance where EGCO does not have any mitigation plans in place.** Site-specific vulnerability to flood and water stress should be further investigated taking into account existing mitigation measures and local physical and management contexts.
- The transition scenario analysis conducted this year **incorporated both EGCO's operations and value chain.** Nevertheless, **the onset and stringency of climate regulation remain highly uncertain among countries in Southeast Asia and may vary across countries.** Thus, the actual impact on financial performance may be differed from the prediction in this study.