

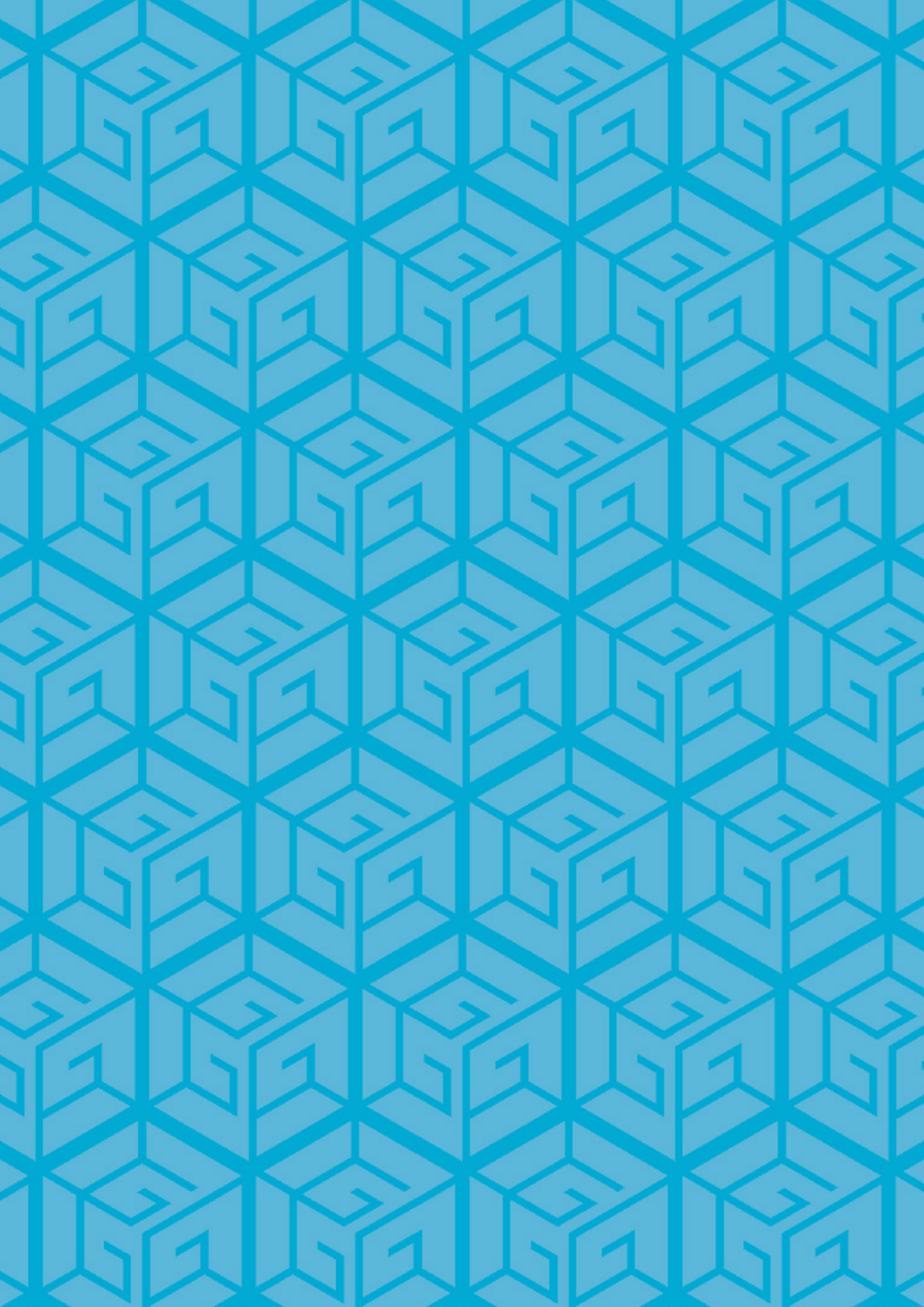


GGGI

Thailand Country Planning
Framework (CPF)

2022-2026





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Foreword

From 2014 to 2021, GGGI worked with the Royal Thai Government to catalyze the green transition in the Thai industrial sector. Building on the previous cycle, GGGI aims to expand its support from the green industry to also include the sustainable waste management and green building themes. The program has distinctive direct alignment with Thailand's Bio-Circular-Green (BCG) Economic Model. The BCG is promising post-pandemic growth strategy and a practical mechanism to promote sustainable development under the Twenty-Year National Strategy (2017-2036) and to tackle climate challenges and contribute to Thailand's 2nd updated Nationally Determined Contribution (NDC) 2021– 2030 and the Carbon Neutrality target by 2050 and the Net Zero Emission target by 2065.

We arranged a consultation with the Royal Thai Government in June 2022, and trust that the Country Planning Framework (CPF) 2022–2026 captures the drivers and aspirations of BCG, as perceived by the policy makers. Hence, the CPF narrative focuses on “physical green infrastructure” for waste management, green building, and green industry sectors. The climate action is a cross-cutting programmatic solution to mobilize green investments through the formulation of green growth policies, strengthening national mechanisms, institutional capacity building and climate finance mechanisms, including carbon pricing. In essence, Thailand program is a practical Green Cities program. The circularity, resource efficiency, methane mitigation and innovation enhancements are the key drivers. GGGI will use its climate finance expertise and tools such as blended finance to unlock domestic private sector capital for the green investments.

Referring to the Bangkok Goals on BCG Economy endorsed at the 29th APEC Economic Leaders' meeting in November 2022, Thailand is in a good position to promote regional cooperation and climate diplomacy as a regional hub. Thailand's public and private sectors in Thailand have successfully applied several BCG applications that highlight best practices and are concrete examples of the green growth in action. GGGI is well placed to support BCG implementation, investments and knowledge sharing among other ASEAN countries under our regional projects.

Lastly, on behalf of GGGI, I would like to sincerely thank the Royal Thai Government, especially, the Office of Natural Resources and Environmental Policy and Planning in supporting the development of the Thailand CPF 2022–2026. I hope that the CPF will lay a foundation for GGGI and RTG cooperation in driving sustainable future and promoting green growth in Thailand and in the ASEAN and Asia- Pacific Region.



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Dr. Frank Rijsberman

Director General

Global Green Growth Institute

Foreword

The Office of Natural Resources and Environmental Policy and Planning (ONEP), as a national focal point on climate change and the United Nations Framework Convention on Climate Change (UNFCCC), has worked closely with domestic and international partners to drive policy actions on climate change. ONEP is also committed to developing measures and mechanisms to promote access to climate change funds both domestically and internationally as well as support the transition to low- emission and sustainable development, including supporting policies in relation to Bio-Circular-Green Economy (BCG) model, which is the national agenda.

Thailand has announced its intention to enhance Thailand's greenhouse gas reduction implementations which includes the Carbon Neutrality target by 2050 and the Net Zero Emission target by 2065. To ensure that we can achieve these targets, ONEP has enhanced cooperation with partner agencies from public and private sector including international organizations to formulate climate change policies, such as Climate Change Master Plan 2015–2050, 2nd updated Nationally Determined Contribution (NDC) 2021 - 2030, NDC Roadmap on Mitigation 2021–2030, relevant NDC sectoral plans, and the revised Long-Term Low Greenhouse Gas Emission Development Strategy (LT-LEDS).

One of the key elements in driving domestic operations to achieve these goals is the creation of national and international cooperation networks, such as strengthening the cooperation of government agencies and building relationships with partner countries including partnerships with international organizations which has knowledge and expertise at the international level and plays an important role in connecting and intensifying international cooperation.

In the past, ONEP and GGGI has worked together to establish a strong green growth foundation for Thailand. Throughout the first two years of GGGI's presence in Thailand, GGGI provided support to ONEP in developing a practical and implementable greenhouse gas reduction roadmap for the Thai industrial sector. To further assist the Royal Thai Government in accomplishing its development objectives, under the Country Planning Framework (CPF) for 2017 to 2021, GGGI primarily focused on catalyzing the green energy transition in the Thai industrial sector.

Through stakeholder consultation processes including 18 Thai government agencies involved in the green growth develop and climate change, ONEP together with GGGI has developed Thailand CPF 2022–2026, considering country's priorities and key relevant policies. The new CPF will focus on the climate action, waste management, green buildings, green industries, and cross-cutting issues, particularly those of gender equality and social inclusion. The targeted outcome is to increase productivity and competitiveness, while decreasing environmental footprint as highlighted in Thailand's BCG economic model.

Finally, on behalf of ONEP, we would like to congratulate GGGI for launching the Thailand CPF 2022– 2026. It is our belief that the collaboration between ONEP and GGGI will lead the country to meet its country development vision in the next cycle.



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Dr. Phirun Saiyasitpanich

Secretary-General

Office of Natural Resources and Environmental Policy and Planning

Ministry of Natural Resources and Environment

Acronyms and Abbreviations

BAU	Business as Usual
BCG	Bio-Circular-Green
BioCNG	Bio-Compressed Natural Gas
CCS	Carbon Capture and Storage (CCS)
CPF	Country Planning Framework
EESL	Energy Efficiency Services Limited
ESCOs	Energy Service Companies
GCF	Green Climate Fund
GHG	Greenhouse Gas
GOPs	Global Operational Priorities
ICAT	Initiative for Climate Action Transparency
IGA	Investment Grade Audit
ITMOs	Internationally Transferred Mitigation Outcomes
LT-LEDS	Long-Term Low Greenhouse Gas Emission Development Strategies
MRV	Measurable, Reportable and Verifiable
MSMEs	Micro, Small and Medium-Sized Enterprises
MSW	Municipal Solid Waste
MW	Megawatt
NDCs	Nationally Determined Contributions
NEP	National Energy Plan
NESDP	National Economic and Social Development Plan
ONEP	Office of Natural Resources and Environmental Policy and Planning
PEA	Provincial Electricity Authority
PV	Photovoltaics
RTG	Royal Thai Government
SDGs	Sustainable Development Goals
SEP	Sufficiency Economy Philosophy
SMEs	Small and Medium Enterprises
TAPEE	Thailand's Auto Parts Supply Chain Development through Energy Efficiency
T-CEFF	Thailand Circular Economy Financing Facility
UMIC	Upper Middle-Income Country
UNEP-CCC	United Nations Environment Programme Copenhagen Climate Centre
UNEP DTU	United Nations Environment Programme and Danish Technical University
UNFCCC	United National Framework Convention on Climate Change

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Executive Summary

GGGI's Country Planning Framework (CPF) is a 5-year in-country delivery strategy that identifies GGGI's contribution to green growth in member and partner countries in alignment with GGGI's Strategy 2030. The Thailand CPF 2022–2026 is directly aligned to the key national policies and priorities including Climate Change Master Plan and the Bio-Circular-Green (BCG) Economic Model and it supports Thailand's Nationally Determined Contributions (NDCs). The CPF is formulated to accelerate climate-resilient and inclusive green growth with tangible green investment mobilization targets.

In 2017–2021, GGGI primarily focused on catalyzing the green energy transition in the Thai industrial sector. GGGI demonstrated workable concepts and business models for industrial energy efficiency and e-waste management. The program produced mitigation benefits of 1,600,000 tCO₂eq with initial investment commitment in place and generated 220 green jobs, while directly supporting the adoption of green business practices in 220 micro-, small, and medium enterprises. In addition, GGGI developed innovative financial model for energy service companies and SMEs, leading to secured USD 21 million for energy efficiency for small and medium enterprises. GGGI is currently implementing a 2-year program on biogas upgrade to higher value green fuels such as Bio-Compressed Natural Gas (BioCNG).

Building on the previous cycle, extensive consultations, and the use of GGGI analytical tools such as the Green Growth Index, several green growth challenges to Thailand were identified. To address these challenges, the CPF identifies GGGI's in-country comparative advantages and determines priority green projects where Thailand can make significant environmental, social, and economic impacts. GGGI's green growth model promotes decoupling of economic growth from the resource use, which is directly aligned with Thailand's BCG approach.

Over the next 5 years, GGGI Thailand's program aims to directly support reductions of GHG emissions up to estimated attributed 18.4 million tCO₂eq and the creation of almost 4,000 green jobs through interventions in waste management, green buildings, green industry, and climate action.

Programmatic Solution 6: Waste Management. Solid waste management is an increasing challenge in Thailand due to lack of private sector investments. GGGI aims to mobilize investment while promoting the BCG Economic Model in high-value waste management sector activities, such as green energy and fuels. Doing so will reduce GHG emissions by 12.0 million tCO₂eq and create over 3,000 green jobs.

Programmatic Solution 8: Green Buildings. With a large construction industry, buildings in Thailand pose several challenges including project implementation and scalability under new national building standards, reliance on air conditioning, and inadequate at source waste management infrastructure.

GGGI aims to assist in the transition towards enhanced circularity, starting from formulation of the strategies and designs of appropriate policy and regulatory frameworks and catalytic investments which will reduce GHG emissions by 1.8 million tCO₂eq and create 300 green jobs.

Programmatic Solution 10: Green Industries. GGGI aims to help increase productivity and competitiveness of the Thai industrial sector under Thailand 4.0 policy, while decreasing its environmental footprint, by mobilizing finance for the cleaner production and promoting sustainable energy practices which will reduce GHG emissions by 3 million tCO₂eq and create 500 green jobs in industrial sector.

GGGI's support for Thailand will center in the Climate Action Programmatic Solution 2 and investment driving green growth. The approach combines a wide range of investment products, mechanisms, and policies that fund and support projects in the waste management, green industry, and green buildings sectors. GGGI will also implement a methane emission reduction project across agriculture, waste, and energy sectors aiming to reduce GHG emissions and enhance adaptation to climate change.

Green finance represents a paradigm shift away from business as usual and has profound implications for Thailand's recovery from the pandemic. GGGI Thailand supports blended green finance designs by pooling

both ongoing and new green infrastructure projects from the priority sectors under the pre-defined funding umbrella. The blended design supports domestic financial intermediaries through wholesale funding, reconciliation and risk sharing on the portfolio level with an aim to unlock domestic private sector capital to the green growth. The total target for GGGI green investment mobilization in 2022–2026 is USD380 million.

GGGI assists Thailand in developing its own carbon pricing policies as well as facilitates its participation on the emerging global carbon markets under the cooperative approaches by the Article 6 of the Paris Agreement. GGGI provides advice to Thailand in the institutional capacity on how to design the policies, green finance taxonomies, and carbon pricing which can generate the much-needed incentives channeling investments in support of the low carbon development.

In summary, GGGI Thailand's program aims to incentivize reduction of resource inputs, waste generation, pollution and GHG emissions in an alignment with the key government policies. Thailand is an upper middle-income country with the limited bilateral development assistance. Therefore, the program has a regional scope as knowledge and investment hub to enhance BCG model in ASEAN region under the regional GGGI projects.



Chapter 1: Introduction

1.1 GGGI’s Strategy 2030 and global operational priorities and programmatic solutions

The GGGI Strategy 2030 sets out GGGI’s long-term ambitions to help its members to achieve environmentally sustainable and socially inclusive economic growth as fully aligned with the Paris Agreement and the UN Sustainable Development Goals (SDGs). To achieve the objectives of Strategy 2030, GGGI will focus on the delivery of the following Programmatic Global Operational Priorities (GOP): 1) catalyzing and accelerating access to climate finance and green investment for members’ public and private sectors; 2) supporting GGGI members in strengthening policy planning, regulatory frameworks, and institutional capacity to achieve green growth outcomes; 3) achieving a sustainable and circular bioeconomy while securing healthy natural systems; 4) making cities and communities sustainable, liveable, and resilient through supporting green jobs, services, and green infrastructures; and 5) accelerating progress in eradicating poverty and gender inequality through GGGI’s country programs. To support implementation at the country level, Programmatic Solutions have been identified for each GOP, as presented in Figure 1.

Figure 1: Programmatic Solutions

GLOBAL OPERATIONAL PRIORITIES	PROGRAMMATIC SOLUTIONS
GOP 1 Catalyzing and accelerating access to climate finance/ green investments for Members’ public and private sectors	PS 1 Green Investments (green bankable projects, investment proposals, NFVs, green and climate instruments, carbon-focused engagements)
GOP 2 Supporting our Members in strengthening policy, planning and regulatory frameworks and institutional capacity to achieve green growth outcomes	PS 2 Climate Action (inclusive green growth plans, LT-LEDS, NDC support, MRV system design, climate diplomacy)
GOP 3 Achieving a sustainable and circular bioeconomy while securing healthy natural systems	PS 3 Climate Resilient Agriculture (solar irrigation, RF application in agri-value chain, resilient cropping practices, resource conservation)
	PS 4 Sustainable Forests (REDD+, landscapes financing mechanisms, innovation of natural capital markets)
	PS 5 Coastal Resilience (mangroves as ecosystem for livelihoods, aquaculture, marine issues fisheries, flood protection and pollution)
GOP 4 Making cities and communities sustainable liveable and resilient, supported through green jobs, services and green infrastructure capital markets innovations	PS 6 Waste Management (circular economies, urban and agricultural waste, wastewater, FSM, waste to resource)
	PS 7 Sustainable Mobility (e-mobility, non-motorized transport)
	PS 8 Green Buildings (green urban infrastructure norms/standards/policies, energy efficiency in residential & commercial buildings)
	PS 9 Solar PV (energy transition access and productive use solar water pumping, solar PV auctions, rooftop, utility scale plants, storage)
GOP 5 Accelerating progress in our country programs in poverty eradication and gender equality	PS 10 Green Industries (green industrial parks, green supply chains, EE in SMEs, labelling and standards)
	Cross cutting in all programmatic solutions

PS11 Carbon Pricing
(Carbon policy design, carbon trading through institutional strengthening, transaction structuring and knowledge sharing)

1.2 GGGI's Operation in Thailand

Since 2014, GGGI has collaborated with the Royal Thai Government (RTG) to establish a strong green growth foundation for Thailand. In early 2016, Thailand, with the Cabinet's approval, became a GGGI Member country. Housed in the Office of Natural Resources and Environmental Policy and Planning (ONEP) under the Ministry of Natural Resources and Environment, GGGI proactively supports the RTG in the transition to a green economic development pathway.

1.3 CPF Objectives and Strategic Relevance to Thailand's Green Planning Process

The GGGI CPF for Thailand, covering the period 2022– 2026, is developed with the following key drivers:

- **Impactful Programs.** A five-year country strategy with a clear set of objectives improves GGGI's ability to deliver quality, inclusive green growth support to its government partners. The CPF serves as a framework for all projects by GGGI in-country that deliver measurable strategic attributed and contributed outcomes.
- **Government Ownership and Commitment.** The CPF is designed to ensure that government's national development priorities remain at the center of GGGI's projects.
- **Stronger Partnerships and Resource Mobilization.** The CPF ensures continuity of results, articulates GGGI's comparative advantage, and demonstrates a clear and compelling pathway to impact.
- **Internal integration.** The CPFs build on in-house discussion and analysis between the different divisions. The process brings together country offices and a cross-selection of experts in headquarters, regional and other country offices, to discuss and agree a common programmatic direction for the next five years and ensure a "ONE GGGI" approach to delivering the CPF.
- **The CPF is a living framework and GGGI will be responsive to new opportunities for transformational change and requests from the Government of Thailand that may fall outside the prioritized areas in this document.**

1.4 GGGI Thailand Results and Evaluations (2017-2021)

GGGI closely collaborated with RTG to establish a strong green growth foundation for Thailand. Throughout the first two years of GGGI's presence in Thailand, GGGI provided support to ONEP in developing a practical and implementable greenhouse gas (GHG) reduction roadmap for the Thai industrial sector.

To further assist the RTG in accomplishing its development objectives, under the Country Planning Framework (CPF) for 2017 to 2021, GGGI primarily focused on catalyzing the green energy transition in the Thai industrial sector. The program produced mitigation benefits of 1,600,000 tCO₂eq with initial investment commitment in place and generated 220 green jobs, while directly supporting the adoption of green business practices in 220 micro-, small, and medium enterprises (MSMEs). The program mobilized green investment of approximately USD 21 million and contributed to the operationalization of the first SME-only National Energy Efficiency Program with securing investment in energy efficiency for small and medium enterprises (SMEs).

GGGI has also conducted and published GGGI Thailand Country Program Evaluation Final Report. Key recommendations focus on issues around stakeholder engagement in project selection and design for building and maintaining long-term relationships as well as having a clear long-term owner of all key stakeholders for sustainability.

The following description shows the outcome statements of the CPF 2017-2021 with its key achievements.

Strengthening Green Growth Policies

- i. GGGI provided policy advisory and capacity development services to the Nationally Determined Contribution Roadmap on Mitigation 2021–2030, a practical and implementable roadmap in three selected sub-sectors of the Thai economy which demonstrates a large-scale focus. This was a first of its kind roadmap developed in Thailand to assist in the implementation of its Climate Change Master Plan 2015–2050 and its GHG reduction commitment under the Nationally Determined Contribution (NDC).
- ii. To help the Government of Thailand reach its 2nd updated NDC targets of reducing GHG emissions by 30-40% from projected BAU levels by 2030, GGGI completed in 2017 the NDC Action Plan for the Industrial Sector. The NDC Action Plan for the Industrial Sector outlines priority subsectors and emission reductions measures, potential implementation mechanisms and key elements of relevant agencies functions, institutional structures, as well as other essentials to the NDC implementation in the sector including a monitoring, review, and verification framework.
- iii. GGGI collaborated with the UNEP DTU (currently UNEP-CCC) to enhance the efficiency of Thailand's existing MRV system for Climate Change Mitigation.

Access to Financing for Green Growth Investments

- iv. GGGI provided technical assistance to the Thailand's Auto Parts Supply Chain Development through Energy Efficiency (TAPEE) Program. It is designed to reduce barriers to energy efficiency investment in the SME auto parts sector to increase investments in green infrastructure projects.
- v. GGGI conducted walk through energy audits in 220 SMEs across different sectors to aggregate demand. Based on these audits, financial and business models were developed to engage Energy Service Companies (ESCOs) and the Provincial Electricity Authority (PEA). The Indian state-owned ESCO, EESL, expressed interest based on the energy audits and proposed business models and PEA agreed to implement one of the options recommended by GGGI. EESL is committed to invest USD 21 million in energy efficiency projects in Thailand's SME sector.
- vi. Two green project proposals were developed in the form of Investment Grade Audit (IGA) reports. The IGA was based on preliminary utility assessments and customer requirements. The actual investment was USD 2 million.
- vii. GGGI and ONEP, which is the National Designated Authority to the Green Climate Fund (GCF), secured grant (USD 0.34 million) from the GCF for a readiness project to strengthen the country in accessing international climate finance.

Institutional Capacity Improved

- viii. For the GHG Roadmap, GGGI jointly with ONEP organized six capacity building activities for 450 targeted stakeholders from government, academia, the private sector, civil society, and international organizations from August 2014 to July 2016. To strengthen the capacity of the targeted industrial subsectors as well as to obtain feedback on their priorities and needs, the project organized a series of three capacity building workshops in Samut Sakhon, Chonburi, and Krabi province, where most of the industrial sectors of focus are located, in May (frozen seafood) and two in June (auto parts and palm oil) 2016.
- ix. The 2018–2019 GCF readiness support for Thailand strengthened the country engagement with GCF and helped build capacity of public and private sectors actors to design implement climate change project.



Chapter 2: Country Overview, National Goals and Targets

2.1 Country Overview

Thailand, the second-largest economy in Southeast Asia, has been transitioning from an agriculture-based economy to a more industrialized one since the export-led economic boom it experienced in the late 1980s. Thailand’s economic growth was initially driven by relatively cheap labor and light industry, such as computer electronics manufacturing and assembly, but gradually shifted to more advanced manufacturing industries and services. Since its graduation to Upper Middle-Income Country (UMIC) status in 2011, the RTG has turned its focus to escaping the “middle income trap” to sustain its economic growth and low poverty rate, while at the same time achieving greater income equality and economic modernization.

Thailand now aims to create higher value-added industries, as defined in the BCG economic model, which can increase the value of production while achieving cohesive social and environmental impacts. The BCG economic model focuses on activities that generate a large margin between the final price of goods or services and the cost of the inputs used to produce it, thus creating higher value-added products and services for businesses. With the plan to advance competitiveness through Thailand 4.0, the country is poised to enhance its resource utilization and cost savings through sustainable waste management, green fuels and energy efficiency measures in factories and buildings.

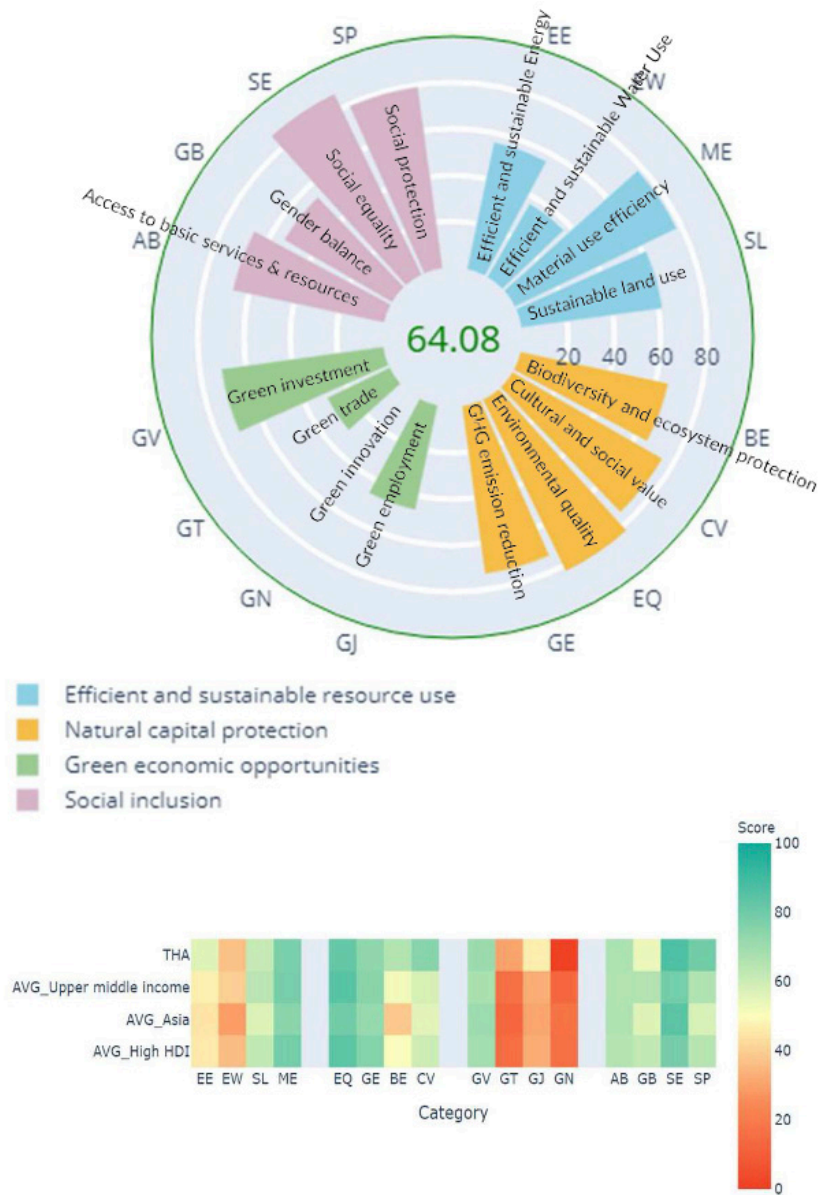
Figure 2 Thailand at a glance

Indicator Name	Data	Year	Source
Total population (millions)	69.8 million	2020	World Bank
Area (sq. km) (thousands)	510,890	2020	World Bank
Urban population growth (annual %)	1.7	2020	World Bank
Urban population (% of total)	51	2020	World Bank
GDP per capita, PPP	18,236.2	2020	World Bank
World Bank income group classification	UMIC	2020	World Bank
Poverty headcount ratio at national poverty lines (% of population)	0.1	2019	World Bank
Unemployment Rate (% of population 15+)	1.1	2020	ILOSTAT
Proportion of informal employment in non-agricultural employment (%)	-	-	-
Inflation, consumer prices annual %	-0.8	2020	World Bank
Net ODA received (% of central government expense)	-0.3	2019	World Bank
Human Development Index (Rank)	79	2020	UNDP

Indicator Name	Data	Year	Source
Gender Inequality Index (Rank)	79	2020	UNDP
CO2 emissions (metric tons per capita)	3.7	2018	World Bank
Forest area (% of land area)	38.9	2020	World Bank
Agricultural land (% of land area)	43.3	2018	World Bank
Agricultural, value added (% of GDP)	8.6	2020	World Bank
Arable land (% of land area)	32.9	2018	World Bank
Renewable energy consumption (% total final consumption)	22.65	2015	World Bank
Fossil fuel energy consumption (% of total)	79.8	2014	World Bank
Renewable internal freshwater resources per capita (cubic meters)	3,244	2017	World Bank
Renewable internal freshwater resources, total (billion cubic meters)	225	2017	World Bank
Annual freshwater withdrawals, total (% of internal resources)	26	2017	World Bank
Sanitation facilities (% of population with basic access)	99	2020	World Bank
Access to safely managed sanitation (% of population)	26	2020	UN Water
Environmental Performance Index (Rank)	78	2020	Yale
Global Competitiveness Index (Rank)	38	2018	WEF
Gini coefficient	34.9	2019	World Bank
ND-GAIN Adaptation Index (Rank)	67	2021	ND GAIN

GGGI's Green Growth Index provides policymakers with a metric to measure the green growth performance of a country. It measures country performance in achieving targets including Sustainable Development Goals, the Paris Climate Agreement, and Aichi Biodiversity Targets for four green growth dimensions – efficient and sustainable resource use, natural capital protection, green economic opportunities, and social inclusion (see Figure 3.)

Figure 3: Green Growth Performance in 2021¹



Thailand must address the growing environmental and climate impacts caused by its rapid economic development and it has not fully tapped into its green economic opportunities, which is revealed as the relatively weakest green growth dimension. Thailand scores a total 64.08 points with highly mixed results ranging from high scores in Access to Basic Services, Social Equity, Environmental Quality and Material Use Efficiency and lower scores in the Green Innovation and Green Trade segments. Unlocking innovation and trade to sustain economic growth offer very good opportunities². Green Innovation is the area where Thailand also lags in a regional comparison. The Green Innovation gap in particular is notable given Thailand’s ambitions to pursue a more value-added economic model as this would be driven by an active innovation ecosystem.

2.2 Key Challenges

Thailand faces some of the highest levels of climate- vulnerability in the world. It is prone to natural disasters such as floods, droughts and rising sea levels and has a low adaptive capacity. Thailand has extremely high

¹ Green Growth Performance Keys are shown in Annex 2

² Thailand's Venture Capital/GDP stands at 0.03 compared to 0.53 in Viet Nam, 2.67 in Indonesia and 6.70 in Singapore (White Start Capital, SEA Venture Capital Landscape 2020)

exposure to flooding (ranked 9th globally), including, riverine, flash, and coastal flooding. Thailand also has exposure to tropical cyclones and their associated hazards (ranked 27th)³. Drought exposure is also significant (ranked 29th). At the same time, Thailand is facing green growth challenges in areas such as energy security, energy access, investment & financing, and institutional mechanism which are linked to the needs to promote green growth in climate actions, waste management, green buildings and green industries.

Despite significant progress made, Thailand continues to face challenges in gender equality and social inclusion. 64% of the workforce is in informal employment (2018)⁴; Thai women also undertake over three times as much unpaid care work as men, exacerbating challenges to decent work conditions (2015)⁵. With a rapidly aging demographic, the country will need enhanced job opportunities, particularly for the youth as well as women; Thailand's female labor force participation rate is estimated to be 59%, whereas the male participation rate is 75%⁶, indicating a persisting need for more inclusive and just models of growth.

While national poverty has considerably decreased over the years, marginalized groups, including ethnic minorities and disabled people remain most vulnerable to economic, environmental, and social challenges. It is estimated that 80% of the poor live in rural areas (2014), and the highest incidence of poverty is among children and elderly populations.

Thailand's waste management challenges are solvable. In 2021 at least 24.98 million tons of MSW were generated in the country, a decline of 1.54% from 2020. Waste recycling has improved over the years, from 3.45 (2008) to 7.89 million tons (2021). There are approximately 2,168 landfills in the country, including 2,021 landfills that are considered improperly managed⁷. Organic waste accounts for 64% of the waste composition and is not valorised, which leads to the formation of high levels of landfill gas.

As a result, 2.3% of total annual GHG emissions came from solid waste disposal sites in 2016⁸. Actors in informal waste management contribute significantly to GHG emissions reductions. Informal collection and recycling of plastic waste in Bangkok enables the government to save 500 million baht (\$15.8 million) per year, which is greater than the average spending for waste collection between 2011 and 2013⁹. However, these informal actors are low-paid and they work in unsafe and hazardous conditions, often marginalized from decision-making as well as social welfare and labour protection opportunities across the value chain.

In Thailand, the buildings sector accounted for 20.9% of final energy consumption in 2018 (7.8% for the commercial and 13.1% for the residential). The government intends to reduce its GHG emissions by up to 25% (conditional) from the projected BAU level by 2030. Under Thailand's NDC Roadmap on Mitigation 2021-2030, the building sector, through energy efficiency measures in commercial and public buildings, aims to contribute one million tCO₂ reduction by 2030. The National Energy Plan is under review and will include an expanded scope and increased standards for building energy performance. The growth of ESCOs – which can support the country's energy ambitions – is constrained by a lack of sufficient certified verifiers in the country and a lack of a consistent framework for computing energy savings. These gaps limit the scale of ESCO contracts and access to commercial financing. The government has emphasized supportive actions to overcome the above-mentioned constraints which are increasing energy efficiency target measures such as capacity development of certified verifiers, and establishing Building Energy Codes, Energy Efficiency Resource Standards and ESCO businesses.

The industrial sector is crucial for economic development, consumes most energy resources, and is expected to be the major GHG reduction contributor under the NDC framework. Therefore, the de-carbonization of energy intensive industrial sectors is important. The effective deployment of renewable energy, energy

3 European Commission (2019). INFORM Index for Risk Management

4 World Bank. 2021. Informal Economy Database.

5 ILO. 2018. Care work and care jobs for the future of decent work.

6 World Bank estimates.

7 Pollution Control Department 2021, Situation Report on Municipal Solid Waste Management Site in Thailand in 2021, pcdnew-2022-08-18_03-17-27_336926.pdf

8 Office of Natural Resources and Environmental Policy and Planning 2020, Thailand Third Biennial Update Report to UNFCCC, https://unfccc.int/sites/default/files/resource/BUR3_Thailand_251220.pdf

9 UNESCAP. 2019. Closing the Loop: Innovative partnerships with informal workers to recover plastic waste, in an inclusive circular economy approach

efficient technologies, fuel switching options coupled with mandatory policy actions to reduce specific energy consumption (SEC) in this sector will be critical for achieving the green growth goals. The manufacturing industry is the main engine of the Thai economy, contributing to 40% of GDP with more than one third of the country's total energy consumption and 27.9% of the country's GHG emissions.

A significant general barrier to green finance is a lack of investment-ready or bankable projects. Despite an increasing demand for green investment projects, many projects do not meet the private sector investment criteria and, as a result, the required finance is not flowing to green projects. Private sector sees the projects as having high implementation risks, and the domestic financiers have limited technical capacity to support first-in-line catalytical investments.

2.3 Policy Landscape

Building on GGGI's previous interventions, the CPF 2021-2025 aligns with relevant government policies in the areas of green and inclusive growth:

2.3.1 Sufficiency Economy Philosophy (SEP)

The "Sufficiency Economy" philosophy, initiated by His Majesty the late King Bhumibol Adulyadej, provides the country with an overarching development framework that is based on moderation and ethical behavior. The Sufficiency Economy Philosophy has three pillars¹⁰ moderation, reasonableness, and risk management, which forms the foundation for sustainable development in Thailand, and is expected to lead the country toward prosperity, and economic, social, and political stability, over the next twenty years¹¹.

2.3.2 National Strategy 2018 - 2037

The strategy is the country's first national long-term strategy developed pursuant to the Constitution. It will be pursued to ensure that the country achieves its vision of becoming "a developed country with security, prosperity and sustainability in accordance with the Sufficiency Economy Philosophy" with the goal of achieving happiness and well-being for all Thai people. The six strategies that make up the national strategy are: (1) National Strategy on Security; (2) National Strategy on Competitiveness Enhancement; (3) National Strategy on Developing and Strengthening Human Capital; (4) National Strategy on Social Cohesion and Equity; (5) National Strategy on Eco-Friendly Development and Growth; and (6) National Strategy on Public Sector Rebalancing and Development.

2.3.3 The Thirteenth National Economic and Social Development Plan (2023-2027)

A five-year NESDP serves as the basis for fiscal budget planning and allocation, and guidance for detailed planning and implementation by relevant ministries and downstream organizations. The NESDP serves as the pathway for future plans to achieve targets stated in the Twenty-Year National Strategy (2018-2037). The 13th NESDP emphasizes on efficient and effective consumption and production, the environment and ecosystem, solving environmental problems, and GHG emissions reduction toward carbon neutrality by 2050.

2.3.4 Thailand 4.0

To escape from the "middle-income trap", the Royal Thai Government initiated the Thai Economy 4.0, which presents the key steps in Thailand's economic transition toward the value-based economy.

¹⁰ Chaipattana Foundation, "Philosophy of Sufficiency Economy,"

¹¹ National Economic and Social Development Board, "The Twenty-Year National Plan" and "Sustainable Development Goals", 2016, and "the Thirteenth NESDP", 2022

2.3.5 Bio-Circular-Green Economic Model

Bio-Circular-Green Economic Model or BCG was introduced by the research community and promoted by the Thai government as a new economic model for inclusive and sustainable growth. The BCG model capitalizes the country's strengths in biological diversity and cultural richness and employs technology and innovation to transform Thailand to a value-based and innovation-driven economy. The model also conforms with the SDGs.

At regional level, the Leaders of the 21 APEC member economies endorsed the Bangkok Goals in 2022 on the BCG Economy providing comprehensive framework to further APEC's sustainability objectives. Leaders advance the goals in a bold, responsive and comprehensive manner, merging existing commitments with new aspirational ones.

2.3.6 Climate Change Master Plan (2015 – 2050)

Thailand's Climate Change Master Plan (2015-2050) is committing the country to sustainable low-carbon growth and climate resilience by 2050. The plan will be implemented through integrating plans, directions, and measures in all sectors at both national and sub-national levels. The plan aims to mitigate GHG emissions and ensure the country's adaptability to climate change.

2.3.7 Nationally Determined Contribution

Thailand's Intended Nationally Determined Contribution (NDC) was submitted to the United National Framework Convention on Climate Change (UNFCCC) in 2015. Thailand's NDC was formulated based on key national plans and approved by the Cabinet with a ratification of the Paris Agreement in September 2016. Thailand's 1st updated NDC was submitted in October 2020 and aims to reduce 20% of GHG emissions compared with projected BAU emissions by 2030 estimated at 555 MtCO₂eq. Thailand submitted the 2nd updated NDC to the 27th Conference of the Parties of the UNFCCC (COP 27) in November 2022. It aims to reduce 40% of GHG emissions compared with projected BAU emissions by 2030 with 30% from its domestic effort and 10% from sufficient international support.

2.3.8 Thailand's Long-term Low Greenhouse Gas Emission Development Strategy (Revised Version)

The revised LT-LEDS outlines key long-term mitigation actions, a climate-resilient development pathway and enabling conditions and partnership building towards Thailand's commitment to reach carbon neutrality by 2050, net zero GHG emissions by 2065 and a pledge to enhance the NDC to reduce GHG emissions by 30-40% in 2030 from the previous target of 20-25%. The main GHG mitigation measures identified in Thailand's LT-LEDS focus on the energy, transport, IPPU (Industrial Processes and Product Use), waste, agriculture and LULUCF (Land Use, Land Use Change and Forestry) sectors.

2.3.9 Draft Climate Change Act

The draft Climate Change Act aims to promote and support economic, social, and environmental development considering the competitiveness of the country through collaborations at domestic and international levels. The draft Act consists of eight important chapters: 1) General: rights of citizens under the law, management budget for legal operations; 2) National Climate Change Policy Committee: composition and mechanism of committees and secretariat office; 3) Climate Change Master Plan: establishment, supervision, monitoring, evaluation, timeframe and review; 4) Data: database, authority, reporting, data management of government agencies and confidentiality of private data, 5) Mitigation: preparation, supervision, monitoring and evaluation, timeframe, and review of country's GHG reduction plan; 6) Adaptation: forecasting and assessing risks

and impacts and National Adaptation Plan; 7) Measures: climate change action, financial support from the environmental fund and fund management; and 8) Penalty provisions: fines and enforcement of the law.

2.3.10 Draft National Energy Plan

The draft National Energy Plan (NEP) 2022 consists of 5 key elements including Power Development Plan, Gas Plan, Oil Plan, Alternative Energy Development Plan and Energy Efficiency Plan. The NEP2022 aims to drive Thailand towards carbon neutrality by 2050. The power development plan aims to promote the increase in percentage of new power plants to be more than 50% renewable energy plant, the use of electric vehicles, grid modernization for decentralization, and prosumer regulation. The gas plan aims to liberalize gas supply to strengthen energy security and balancing LNG supply from domestic production and import from overseas. The oil plan aims to revise the transportation plan and promote a balance of biofuel and EVs. The alternative energy development and energy efficiency plans aim to promote RE consumption and increase energy efficiency. The NEP is expected to be officially announced in 2023.

2.3.11 The draft 2nd National Action Plan on Waste Management in Thailand (2022-2027)

The Pollution Control Department under MONRE drafted the 2nd Plan to be used as the main waste management plan of the country after the National Solid Waste Management Master Plan (2016 - 2021) has ended. The 2nd Plan has important goals as follows:

1) 80% of Municipal Solid Waste will be properly managed, 36% by encouraging waste separation at households and recycling; 2) To promote Waste to Energy which expects to reduce the amount of waste to be improperly disposed (e.g., open dumping, open burning) and landfilled; 3) To increase the use of recycle materials in production lines from recyclable waste e.g., plastic waste and paper, glass, aluminum packaging waste, from 74% – 100%; 4) To reduce food waste to 28% resulting in prevention of odor in landfill sites and reduction of greenhouse gas emissions; 5) Not less than 50% of community hazardous waste will be properly managed; and 6) 100% of Infectious waste and hazardous industrial waste will be properly managed.

2.3.12 Gender Budgeting Action Plan

This Action Plan, which was prepared by the OECD at the request of the Thai Government, recommends that Thailand leverage existing foundations across government to develop gender budgeting. One of these is the national gender equality strategy, in the form of the Women's Development Strategy (2017- 2021). The OECD proposes the path forward for Thailand in relation to gender budgeting which include a strategic framework, tools of implementation and an improved enabling environment.

2.4 Specific Country Goals and Targets

Specific country goals and targets that can be quantified and related to GGGI's operations in Thailand are: Nationally Determined Contribution, draft National Energy Plan, Draft 2nd National Action Plan on Waste Management in Thailand.

2nd updated NDC: reduce 40% of GHG emissions compared with projected BAU emissions by 2030 with 30% from its domestic effort and 10% from sufficient international support.

- NDC Action Plan in the industrial processes and product use: GHG emission reduction measures, including the modification of industrial production processes by clinker substitution and substitution of refrigerant, and in industrial wastewater management by increasing biogas production from industrial wastewater by recycling methane gas. Measures under this action plan are expected to contribute the GHG emission reduction of 2.25 MtCO₂eq in 2030. NDC Action Plan in municipal waste management sector, 2021 –

2030: consists of work plans/activities on municipal solid waste management and municipal wastewater management that have the potential to reduce greenhouse gas emissions. These measures are expected to contribute the GHG emission reduction of 2 MtCO₂eq in 2030¹². Draft National Energy Plan: to promote the increase in percentage of new power plants to be more than 50% renewable energy plant, liberalize gas supply to strengthen energy security and balancing LNG supply from domestic production and import from overseas, promote balance of biofuel and EV, and promote RE consumption and increase energy efficiency.

- “Ministerial Regulation Prescribing Type or Size of Building and Standard, Criteria and Procedure in Designing Building for Energy Conservation B.E. 2563 (2020)”: mandates an energy-efficient design for buildings with a total area in all stories of 2,000 square meters or more, with existing buildings exempted from the regulation. New buildings and the expansion of existing buildings must have an energy-efficient design in accordance with the regulation. The building design must be audited by a qualified engineer.
- Draft 2nd National Action Plan on Waste Management in Thailand: 80% of Municipal Solid Waste will be properly managed and to promote Waste to Energy which expects to reduce the amount of waste to be improperly disposed (e.g., open dumping, open burning) and landfilled.
- Roadmap on Plastic Waste Management 2018- 2030: provides a policy framework to deal with the plastic waste problem in Thailand. The objective is to reduce the use of plastic and increase the use of environmentally friendly materials. It is expected that this policy framework will reduce the volume of plastic waste by 0.78 million tons a year and save thirty-nine billion baht in waste management costs annually.

¹² Office of Natural Resources and Environmental Policy and Planning 2022, Thailand’s Long-term Low Greenhouse Gas Emission Development Strategy (Revised Version), Thailand’s Long-Term Low Greenhouse Gas Emission Development Strategy (Revised version) | UNFCCC



Chapter 3: Programmatic Solutions and Intended Results

3.1 Overview of the Programmatic Solutions

Between May and September 2022, GGGI conducted a consultation process among key Thai stakeholders. The aim was to gather diverse opinions around the country's most pressing challenges, opportunities, plus prioritize sectoral approaches where GGGI is best positioned to make impactful contributions. The consultation process consisted of frequent dialogue with ONEP and a stakeholder consultation workshop attended by 18 government agencies. This process was instrumental in identifying programmatic solutions where GGGI is catalytic and has built track record already, plus identifying emergent areas for support.

GGGI's support for Thailand will focus on climate action and in the investment driving green growth. The selected programmatic solutions are aligned with the four principles of the Thirteenth National Economic and Social Development Plan, namely Sufficiency Economy Philosophy, Resilience concept to reduce vulnerability to changes, Sustainable Development Goals that leave no one behind, and Bio-Circular-Green Economic Model.

GGGI will identify priority investment opportunities with high catalytic value and regional coverage. The development of investment projects includes: (i) upstream origination including project conceptualization; (ii) project design including conduct of pre-feasibility and feasibility studies, environmental, financial and social impact assessment, and investment memorandums; (iii) risk identification and mitigation measures, (iv) structuring and facilitation of project level finance, and (v) identification and mobilization of available project financing from multiple public and private sector institutes including support in green and thematic bond issuances.

3.2 Programmatic Solutions, Strategic Outcomes, and Intermediate Outcomes

Based on stakeholder consultation process and GGGI's analysis on Thailand's green growth performance, the country is facing green growth challenges in areas such as green innovation and green trade due to limited investment ready or bankable projects, limited technical capacity to support first-in-line catalytical investments, limited financial capacity to meet the private sector investment criteria, and high project implementation risks in key areas such as climate action, waste management, green buildings and green industries.

Programmatic Solution 2: Climate Action

Climate action is a cross-cutting theme supporting other programmatic solutions and will support the country's climate agenda and enabling conditions particularly in green finance and related taxonomies through the formulation of green growth policies, strengthening national mechanisms, capacities, and institutional

governance. GGGI will support Thailand in blended and concessional green finance mechanisms which will play a vital role in developing and implementing green investment projects, thereby, contributing to the achievement of climate mitigation and adaptation agenda. In accordance with the commitment of linking climate action, sustainable development goals and environmental justice, GGGI will also further focus on green jobs and vocational training support. In addition, GGGI will implement methane emission reduction projects in Thailand and in the ASEAN region. Climate Action via a methane reduction project will attribute to reduce GHG emissions by 1.6 million tCO₂eq and create 162 green jobs.

Furthermore, GGGI will support Thailand to increase climate ambition by enhancing the country readiness to participate in the international carbon market under Article 6 of the Paris Agreement. GGGI will support government to develop the policy and regulatory frameworks needed to participate in markets and increase private sector engagement to implement activities beyond the NDC. GGGI will engage a broad range of stakeholders, including national and subnational government, private sector, academia, and youth to build the enabling environment for carbon trading under Article 6. In addition to country-level support, GGGI will develop global best practice tools and approaches for Article 6 engagement, which will be underpinned by a “Community of Practice for Article 6 Implementing Countries (CoP-ASIC)” convening international experts and practitioners to inform market development.

Programmatic Solution 6: Waste Management

The waste sector has a unique possibility of not only reducing its own environmental impacts, but also, through increased utilization of waste, contribute to other sectors’ emission reductions, such as the provision of green fuels, energy, and raw materials. Guided by an inclusive waste management model, the program will focus on increased recycling and processing final waste streams, with a focus on organic waste, agriculture residues, plastic waste, and hazardous/e-waste. GGGI’s work in the waste programmatic solution area aims at providing integrated solutions to solid waste management based on the circular economy concept in Thailand and in the ASEAN region.

GGGI will aim to identify the best waste-to-resource approach and focus on the development and implementation of viable business models to attract private sector investment. This will increase the flow of private investments for sustainable waste management through sector-specific investment planning, investment project pipeline development, project design and innovative financing instruments. In a partnership with Green Climate Fund GGGI will support investments in the integrated municipal waste management and BioCNG projects that will attribute to reduced GHG emissions of 12 million tCO₂eq and creation of 3,000 green jobs in waste management, waste-to-energy, and biomass-to- energy sector.

Programmatic Solution 8: Green Buildings

Low carbon buildings integrating better insulation, tighter building shells, improved designs, more efficient appliances for heating and cooling and transition to natural refrigerants can significantly reduce GHG in Thailand. Shifting to low carbon materials further provide potential for boosting local employment and industries. Greening can also include waste and wastewater solutions and decarbonizing energy demands through solar PV generation that has the potential to cut building energy use and costs. This also aligns with Thailand Smart City Plan, in particular, smart energy criteria to reduce energy consumption and GHG emissions.

Large buildings in Thailand are mostly debt financed. The financial sector has not systematically started to link the financing of buildings with their carbon performance. This results in a financing gap for developers proposing low carbon buildings. Carbon pricing policies such as taxation of carbon intensive construction could promote green building development and fill the financing gap by lowering the initial cost disadvantage of new building projects. The revenues, in turn, could generate funding needed to address energy performance in the existing building stock.

GGGI will support the green buildings sector in Thailand through its designated entities. The interventions will revolve around Building Energy Code and greening of entire supply-chain including green public procurement. GGGI's forthcoming 5-year regional project – Asia Low Carbon Building Transition (ALCBT) – under which Thailand is a beneficiary country is expected to address an array of issues and challenges. Broadly, in CPF 2022-26, GGGI's support will focus on:

- Eco-friendly, affordable, green and energy efficient buildings
- Green construction system
- Innovative green financing instruments
- Green Building Certification System

GGGI will also seek to catalyse a nationwide sectoral transition towards low carbon buildings with the innovative approach addressing new and renovated buildings. Specific projects are designed in the building sector deploy a right combination of monetary and non-monetary incentives to incentivize the reduction of energy consumption and CO₂ emissions. Green Buildings through a low-carbon building transition project will attribute to reduce GHG emissions by 1.8 million tCO₂eq and create 300 green jobs in energy efficiency sector.

Programmatic Solution 10: Green Industries

In the area of Green Industries, GGGI will focus on fostering the development of new green businesses, and value chains by connecting new dots in Thailand's decarbonization pathway. GGGI will support greening the manufacturing sector in Thailand through activities that reduce resource intensity, new material development and improve the overall circularity in the industry. This programmatic solution strongly links with the waste management interventions as they can provide access to green fuels and energy for offtake by the industrial sector. This also aligns with Thailand Smart City Plan, in particular, the smart energy criteria to reduce energy consumption and GHG emissions as well as smart environment criteria for resource conservation and environmental management and monitoring.

GGGI will develop green industry strategies and/or green industry policies for accelerated climate actions and green recovery, where needed; and ensure its integration into the national development planning. The strategy will facilitate the identification, design, and adoption of enabling policies to incentivize and mobilize green investments for needed circular economy projects in the targeted industries. To support the implementation of the strategy, appropriate institutional mechanisms and technical capacities will be established and built within the key government ministries and agencies.

GGGI's strategy for greening the industrial sector in Thailand focuses on activities in six key areas:

- i. Resource efficiency: Fine-tuning of manufacturing processes to minimize the use energy and water, minimize off-cuts in the sector and minimize the generation of waste.
- ii. Engaging industries to co-design the transition towards enhanced circularity, starting from design, specification, and procurement.
- iii. Contributing to develop a pipeline of industry- specific investment opportunities.
- iv. Strengthen the policy and regulatory environment to provide top-down incentives for investments.
- v. Increased role of concessional and blended finance to support the domestic markets gain the capacity
- vi. Incubation and seed investment support for innovative circular economy SMEs.

The targeted outcome is to increase the productivity and competitiveness of the Thai industrial sector, while decreasing its environmental footprint. Overall, the interventions will enable the country to realize the

Thailand 4.0 development vision in a green and sustainable manner. GGGI's support for green industry projects will attribute to reduce GHG emissions by 3 million tCO₂eq and create 500 green jobs in industrial sector.

Cross-cutting issues in all programmatic solutions

GGGI Thailand will ensure cross-cutting issues, particularly those of gender equality and social inclusion, are explicitly articulated and embedded in outcomes across programmatic solutions and in all policy recommendations for the government. GGGI will ensure relevant stakeholders and marginalized groups are meaningfully engaged throughout the project cycle and devise mechanisms for the equitable distribution of opportunities and benefits resulting from the program. GGGI will enhance green job opportunities, particularly for the youth and women. This will support the Government in achieving its targets and priorities for a just and inclusive green transition.

The selected Programmatic Solutions are designed to support Thailand on the Efficient and Sustainable Energy, Green Innovation and Gender Balance, as identified low-scoring segments in the Green Growth Index 2022. The program is centered around innovative investment mobilization in the key sectors in according to the Guidelines for a just transition towards environmentally sustainable economies and societies for all¹³. The estimated attributed impacts are GHG reduction by 18.4 million tCO₂eq along with other co-benefits such as a creation of green jobs and increase sustainable services in waste sector, as below:

- Programmatic Solution 2: Climate Action via a methane reduction project will reduce GHG emissions by 1.6 million tCO₂eq and create 162 green jobs.
- Programmatic Solution 6: Waste Management through Thailand Circular Economy Financing Facility (T-CEFF) to support the development of integrated municipal waste management projects and BioCNG retrofitting projects will reduce GHG emissions by 12 million tCO₂eq and create 3,000 green jobs in waste management, waste-to- energy, and biomass-to-energy sector.
- Programmatic Solution 8: Green Buildings through a low-carbon building transition project will reduce GHG emissions by 1.8 million tCO₂eq and create 300 green jobs in energy efficiency sector.
- Programmatic Solution 10: Green Industries via green industry projects will reduce GHG emissions by 3 million tCO₂eq and create 500 green jobs in industrial sector.

The Programmatic Solutions will contribute to Thailand country goals and targets such Sufficiency Economy Philosophy (SEP), Twenty Year National Strategy (2018 - 2037), Thailand 4.0, Climate Change Master Plan, Bio- Circular-Green Economic Model, 2nd updated Nationally Determined Contribution.

¹³ International Labour Organization 2015, Guidelines for a just transition towards environmentally sustainable economies and societies for all, Microsoft Word - Guidelines for a just transition - copyrighted.docx (ilo.org)

Annex 1: Impact Pathway Diagram

Programmatic Solutions	Intermediate Outcomes			Strategic Outcomes (Impacts)		
	Policy (Indicator: Policies adopted)	Financing Instruments (Indicator: \$ mobilized)	Investment Projects (Indicator: \$ mobilized)	Estimated Attributed Impacts (SOs and other impacts)	Estimated Contributed Impacts (SOs and other impacts)	Country goals/ targets (SOs and other impacts)
PS2: Climate Action	<p>Increased climate action ambition, including official support for raised mitigation targets</p> <p>Governance frameworks (processes and institutional arrangements) in place for cooperating under Article 6</p> <p>Methane Reduction Plans (MRPs) endorsed</p>		<p>Methane Mitigation and/or Municipal Solid Waste project: US\$ 20m</p>	<p>SO1- GHG reduced: 1.6 million tCO2eq</p> <p>SO2- Green jobs: 162</p> <p>SO6 Enhanced adaptation to climate change: 0.5 million people improved</p> <p>Access to SWM</p>	<p>SO1- GHG reduced: 3.2 million tCO2eq</p> <p>SO2- Green jobs: 324</p> <p>SO6 Enhanced adaptation to climate change: 1 million people improved</p>	<p>Sufficiency Economy Philosophy (SEP) (an overarching development framework that is based on moderation and ethical behavior)</p> <p>Twenty Year National Strategy (2018-2037) (a developed country with security, prosperity and sustainability in accordance with the Sufficiency Economy Philosophy)</p> <p>Thailand 4.0 (value-based economy to escape from middle-income trap)</p> <p>Bio-Circular-Green Economic Model (capitalizes the country's strengths in biological diversity and cultural richness and employs technology and innovation to transform Thailand to a value-based and innovation-driven economy.)</p> <p>Climate Change Master Plan (mitigate GHG emissions and ensure the country's adaptability to climate change)</p> <p>2nd updated Nationally Determined Contribution (GHG Reduction - 30-40% compared with projected BAU emissions by 2030)</p> <p>Draft 2nd National Action Plan on Waste Management (80% of Municipal Solid Waste will be properly managed and promote Waste to Energy)</p> <p>Draft National Energy Plan (New power plants are more than 50% RE, energy security, domestic and imported LNG, balance biofuel and EV, increase energy efficiency)</p>
PS6: Waste Management	<p>2030 Waste Strategy and IMSWM guideline for AMS formulated</p>	<p>Thailand Circular Economy Financing Facility (T-CEFF): US\$ 200m</p>	<p>Biogas BioCNG project: US\$ 10m</p>	<p>SO1- GHG reduced: 12 million tCO2eq</p> <p>SO2- Green jobs: 3,000</p> <p>SO3.3- Increase sustainable service for people in Waste sector : 7 million</p>	<p>SO1- GHG reduced: 24 million tCO2eq</p> <p>SO2- Green jobs: 6,000</p> <p>SO3.3- Increase sustainable service for people in Waste sector : 14 million</p> <p>More than 20% of organic waste and "wet waste" is properly managed</p>	
PS8: Green Buildings	<p>NDC/LT-LEDS enhancement with specific targets of carbon reduction from buildings/cooling</p> <p>Building/building energy code enhancements –government incorporates policy recommendations or commence review of existing regulations.</p>		<p>Low Carbon Buildings Transition project: US\$ 50m</p>	<p>SO1- GHG reduced: 1.8 million tCO2eq</p> <p>SO2- Green jobs: 300</p>	<p>SO1- GHG reduced: 3.6 million tCO2eq</p> <p>SO2- Green jobs: 600</p>	
PS10: Green Industries	<p>Develop green training programs</p>		<p>Green Industry Financing Facility, Fund or project: US\$ 100m</p>	<p>SO1- GHG reduced: 3 million tCO2eq</p> <p>SO2- Green jobs: 500</p>	<p>SO1- GHG reduced: 6 million tCO2eq</p> <p>SO2- Green jobs: 1,000</p>	

Annex 2: Green Growth Performance Keys

<p>1. Efficient and sustainable energy (EE) refers to delivering more services or products per unit of energy used and meeting present needs by using renewable sources to ensure sustainability of energy for future use.</p>
<p>2. Efficient and sustainable water use (EW) refers to delivering more services or products per unit of water used, reducing environmental impact resulting from water scarcity and pollution, and improving water allocation among competing uses.</p>
<p>3. Sustainable land use (SL) refers to delivering more services or products for a fixed amount of land used and without compromising many ecosystem services provided by land.</p>
<p>4. Material use efficiency (ME) refers to delivering more services or products per unit of raw material used and reducing material demand through increased recycling, longer-lasting products, and component re-use, among others.</p>
<p>5. Environmental quality (EQ) refers to properties and characteristics of the environment which may affect the health of human beings and other organisms, including air, water and noise pollution, access to open space, and visual impacts of buildings.</p>
<p>6. Greenhouse gas (GHG) emission reduction (GE) refers to the reduction and removal of CO₂ and non-CO₂ emissions from the atmosphere in order to address climate change.</p>
<p>7. Biodiversity and ecosystem protection (BE) refers to the protection of species, habitats, and ecosystems as well as the services they provide, with protected areas as an important measure to achieve biodiversity conservation.</p>
<p>8. Cultural and social value (CV) refers to the societal value given to natural capital due to its importance to communities and their local culture which encourages sustainable use and protection of natural resources.</p>
<p>9. Green investment (GV) refers to public and private investment that promotes in a direct or indirect manner sustainable resource use, including material, water, energy, and land, and natural capital protection, such as environmental protection and climate action, advancing sustainable development and green growth.</p>
<p>10. Green trade (GT) refers to the competitiveness of a country to produce and export environmental goods that can contribute to environmental protection, climate action, green growth, and sustainable development.</p>
<p>11. Green employment (GJ) refers to employment created and sustained by economic activities that are more environmentally sustainable; contribute to protecting the environment and reduce people's environmental footprint; and offer decent working conditions.</p>
<p>12. Green innovation (GN) refers to product, process, and service innovations, such as energy-saving, pollution-prevention, waste recycling, green product designs, or corporate environmental management that yields environmental benefits.</p>
<p>13. Access to basic services (AB) refers to the general availability of services, such as telecommunications, financial, water and sanitation, and energy services, to people regardless of income and location, and which requires an effective governance at multiple scales due to the local nature of these services.</p>
<p>14. Gender balance (GB) refers to equality based on gender in terms of rights, resources, opportunities, and protection, and the ability to use them to make strategic choices and decision. Women's social and economic empowerment at work, home, and communities increases inclusive growth and reduces poverty.</p>
<p>15. Social equity (SE) refers to a fair and equitable public and social policy, giving equal opportunities to all by a fair allocation of and access to resources that take into account social inequalities. Addressing and embedding equity issues in the design of a policy will lead to sustainable economic growth over the long term.</p>
<p>16. Social protection (SP) refers to programs designed to provide benefits to ensure income security and access to social services, contributing to social equity and inclusive society and reducing poverty and exposure to risks.</p>



Study Visit at ERDI BioCNG Plant in Prachuap Khiri Khan



Meeting with UNESCAP



Meeting with New Zealand Embassy



Meeting with Embassy of Denmark



Meeting with Department of Alternative Energy Development and Efficiency



Meeting with Office of Natural Resources and Environmental Policy and Planning



Meeting with Office of Natural Resources and Environmental Policy and Planning



Meeting with Mekong Institute



Stakeholder Consultation Meeting for GGGI Thailand Country Planning Framework 2022 - 2026



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