

Green Finance Framework

Global Power Synergy Public Company Limited

2020



Table of Contents

Introduction to GPSC	3
GPSC Business Strategy.....	4
GPSC Sustainability Overview	5
Green Finance Framework.....	9
1. Use of Proceeds.....	10
2. Process for Project Evaluation and Selection.....	11
3. Management of Proceeds	12
4. Reporting.....	12
a. Allocation Reporting.....	13
b. Impact Reporting.....	13
External Review.....	14
a. Second Party Opinion.....	14
b. External Verification	14
Amendments to this Framework	14

Introduction to Global Power Synergy Public Company Limited (GPSC)

Global Power Synergy Public Company Limited (GPSC) is the power flagship of PTT Group. GPSC is committed to establishing energy and public utility security in support of domestic industrial growth. GPSC also pursues opportunities for investment in power projects both domestic and international markets to grow sustainably, while developing energy storage technology to become a leading global power company in innovation and sustainability.

Our vision is to be ‘The global leading innovative and sustainable power company’.

We aim to do this through the following four pillars of our mission:

Mission



GPSC and its invested companies are located in Thailand, Lao PDR, Japan and the United States of America, selling power and steam to several industrial customers and government agencies. The company's customers include Electricity Generating Authority of Thailand (EGAT), Provincial Electricity Authority (PEA), Metropolitan Electricity Authority (MEA), ELECTRICITE DU LAOS (EDL), and Tohoku Electric Power Co., Inc.

GPSC Business Strategy

1) S1: SYNERGY & INTEGRATION

Manage all assets with synergy and integration to strengthen the base and forge ahead with unity, agility and strength to cope with such transformation as well as short-term and long-term business growth plans. Under the Synergy Initiatives to significantly grow business performance outcomes, GPSC operates through these three main components as follows:

- **Asset Integration** Generate additional co-value from integrated asset management
- **Business Integration** Work process integration plan.
- **People Integration** Human resources integration management.

2) S2: SELECTIVE GROWTH

Expand businesses and grow power generating capacities in Thailand and overseas through investments aligned with business strategies, risk and investment decision criteria under the following investment schemes:

- **Go along with PTT Group** Seek investment opportunities in power plant projects alongside the investments of PTT Group both domestically and internationally. To be a part of enhancing the competitiveness of PTT Group by focusing on power plant projects that are value chains of the business.
- **Domestic & International** Seek investment opportunities for power projects domestically and internationally.
- **Renewable Energy** Develop renewable-power plant businesses, including large-scale renewable power plant business development in Thailand and overseas, as well as Solar Private Power Purchase Agreement Development.

3) S3: S-CURVE

Expansion of investment in innovation to create new business revenue. Operations in the development of new businesses that are New S-Curve through three new business development initiatives as follows:

- **Energy Storage Business** Develop its business to become an energy storage system integrator
- **Battery Manufacturing** Invest as a pioneer in prototype battery manufacturing in Thailand.
- **Energy Management System** Conduct studies, analyses and selection of compatible technologies with the New Energy Market to shape new business opportunities

GPSC Sustainability Overview

The company has operated in line with its commitment to innovation development alongside social and environmental responsibilities, as sustainability business strategy, called “Innovative & sustainable power for all”. Our sustainability management is based on four frameworks as follows:

- **Power Accessibility** – to enhance stability of access by investing in Solar Rooftop and Solar floating
- **Quality of Life** – empower for a better living by providing occupational training program, light for a better life program and zero-waste village
- **Eco-system** – of driving clean energy, cultivating the circular economy concept, and easing environmental impacts
- **Sustainable Innovation** – for the corporation to drive improvement initiatives through Artificial Intelligence (AI) and Blockchain, innovation culture and young social innovator

GPSC has always been well-prepared to face major challenges, both short – term and long-term, by adhering to the 3D principles:

- 1) De – Carbonization: reduction of greenhouse gas emission and climate change;
- 2) De – Centralizing Power Generation: change in consumer behaviors and accessibility to power from remote areas; and
- 3) Disruptive Technologies: digital transformation that has impacts on business operations to match consumers’ changing behaviors and climate change.

The company’s transformation, such as application of an energy storage system with renewable energy, has become a contributing factor to the company’s strategy towards sustainability and increasing the use of renewable energies. To foster the company’s growth through technology and innovations, and the Energy Storage System (ESS). GPSC values and sees opportunities in Open Innovation, which opens doors to and exchange of knowledge, ideas, and experiences with external organizations. This allows the company to increase the value of existing products, create brand new products to boost company’s competitiveness and develop better energy innovations that fulfil our visions and missions. For example, Solar Rooftop project, has been installed at PTT Gas stations and Café Amazon outlets to reduce electricity costs. This is an effective move along the path towards the company’s success and social and environmental sustainability.

GPSC examines issues that matter most to its business operation in terms of sustainability for internal and external organization. These issues are assessed and prioritized under the materiality assessment framework of the Global Reporting Initiative (GRI) Standards while at the same time addressing all stakeholders' expectations and global sustainability trends. The

company's operation strategies, along with current and potential risk and opportunity factors, are also taken into consideration as assessment guidelines.


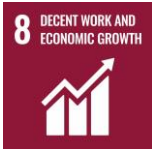
The overall responsibility of PTT Group's sustainability performance lies with the Group Sustainability Committee, which was renamed the Sustainability Alignment Committee (SAC) in 2014 to better and more closely integrate sustainability management within PTT Group. The Senior Executive Vice President of the Sustainability Management and Project Engineering serves as Chair of the Committee, with committee members from various Business Units and from Flagship companies – PTTEP, PTTGC, TOP, IRPC, and GPSC – meet regularly at least once every quarter to jointly establish sustainability-related plans and strategies, and to monitor progress.





The PTT Group Sustainability Management Framework has been developed to support the PTT Group Sustainability Policy. The Framework is in line with related international standards and guidelines such as World Business Council for Sustainable Development (WBCSD) Vision 2050, United Nations Global Compact (UNGC), ISO 26000, Global Reporting Initiative (GRI), and Dow Jones Sustainability Indices (DJSI).

GPSC's commitment to the Sustainable Development Goals (SDGs)

GPSC has embraced six main goals of the UN's Sustainable Development Goals as guidelines for the company's sustainable development management and for the benefit of all stakeholders. These are: Goal 7: Affordable and Clean Energy; Goal 8: Decent Work and Economic Growth; Goal 9: Industry, Innovation, and Infrastructure; Goal 12: Responsible Consumption and Production; Goal 13: Climate Action; and Goal 16: Peace and Justice Strong Institutions.

GPSC Commitments and Targets

UN SDGs	GPSC Commitments and Targets
SDG 7 Affordable & Clean Energy 	<ul style="list-style-type: none"> Promoting renewable energy development in rural areas and developing countries with at least three projects per year Increase in renewable energy power production ratio to approximately 28% by 2024 Reduction in power production cost within action plan 2020 Power plant efficiency improvement project by replacing the expired power plants with new plants by 2022
SDG 8 Decent Work & Economic Growth 	<ul style="list-style-type: none"> Increase in installed capacity at 1,500 MW within 2025 Setting up a power plant in Myanmar in 2020 - 2025, which will boost employment and economic growth, directly and indirectly Developing thermal energy and renewable projects in EEC and EECi Business expansion and investment in PTT Group during 2021-2023 Every plant adhering to safety culture policy and having the ability to monitor and select contractors who have outstanding safety operations
SDG 9 Industry, Innovation & Infrastructure	<ul style="list-style-type: none"> Improving public utility system in the areas where the businesses are located and consistently providing assistance during national disasters.

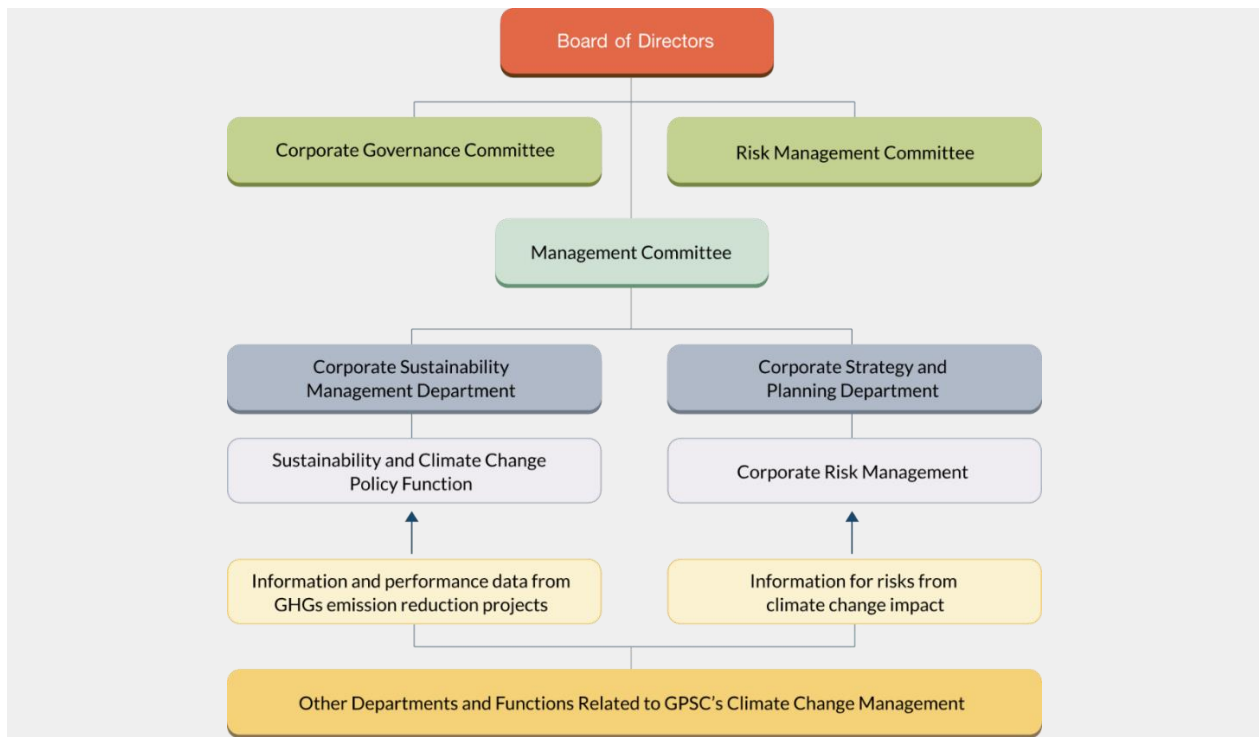
UN SDGs	GPSC Commitments and Targets
	<ul style="list-style-type: none"> • Developing at least one business based on the innovations from award-winning projects • Co-developing “Smart Energy” district cooling business in potential areas • Construction of a 10-30 MWh energy storage battery pilot plant • Employing at least 20 people per a power plant in the business expansion zones by 2023 • Enhanced production efficiency and improvement of public utility
<p>SDG 12 Responsible Consumption & Production</p> 	<ul style="list-style-type: none"> • Minimizing resource use to comply with PTT Group’s targets during 2019-2023 • Zero waste in landfills • Organizing projects and activities in communities, such as waste banks, waste donation for charity, basic waste-sorting and organic waste management in households, waste-sorting training in schools, waste-upcycling projects and green markets project • Reduction of 200,000 tonnes/year of waste from coal plants • Reduction of 260,000 m3/year of wastewater • Reduction of 400,000 m3/year of raw water use
<p>SDG 13 Climate Action</p> 	<ul style="list-style-type: none"> • The five-year target on greenhouse gas emission reduction, in compliance with PTT Group’s targets • CO2 reduction from the Low Emission Support Scheme (LESS)/ Thailand Voluntary Emission Reduction Program (T-VER)
<p>SDG 16 Peace, justice & Strong Institutions</p> 	<ul style="list-style-type: none"> • An average score of 90% for the test of understanding on business ethics and good governance • 100% report on transparency of conflicts of interests of the company’s employees and executives • Maintaining the 5-Star certificate of Thailand’s Private Sector Collective Action Coalition Against Corruption (CAC) • Human rights violation risk assessment in all operation zones • At least 80% of employees participating in ethics and good governance assessment

In 2019, GPSC’s efforts in the sustainable development space received widespread recognition. They won the ‘rising star sustainability award’ from the Stock Exchange of Thailand as well as the Asset Platinum award for Excellence in ESG assessed by the Asset ESG Awards. On the environmental front, GPSC was ranked at B level by the Carbon Disclosure Project (CDP) becoming the first power company in Thailand to gain acceptance in risk management and environmental impact reduction measures.

Climate Change Management

GPSC recognizes the risk and potential impacts from climate change and global warming and is committed to provide our full support and collaborating enthusiastically with every sector to achieve the challenging goal of reducing greenhouse gas emissions by adopting a robust climate change policy and management approach. Climate change management at GPSC is under the supervision of the executive team led by the **Chief Executive Officer and with the CEO serving as president.**

Our Climate Change governance structure gets its mandate from the Board of Directors (as below).



GPSC has a robust ensuring that new business or expansions to existing operations undergo thorough environmental impact assessments, especially in regard to protecting natural habitats and biodiversity. GPSC has developed a system to manage, control and improve operations with an emphasis on minimizing environmental impacts right from the project design and construction phase.

For more information about GPSC's sustainability, please see GPSC website and sustainability report.

GPSC's Green Finance Framework

In order to meet the commitments described above, and finance projects that will deliver environmental benefits to support GPSC's vision, mission and business strategy, GPSC has decided to create a Green Finance Framework.

The Green Finance Framework articulates how GPSC intends to raise Green Bonds, debentures or loans to finance or refinance new and existing projects with environmental benefits.

In the case of Green Notes or loans, such financing (including refinancing) shall be of Green Projects that conform to the principles listed below:

- International Capital Market Association ("ICMA") Green Bond Principles ("GBP") 2018¹;
- The ASEAN Capital Markets Forum (ACMF) ASEAN Green Bond Standards (ASEAN GBS) 2018²;
- Loan Market Association ("LMA") / Loan Syndications and Trading Association ("LSTA") / Asia Pacific Loan Market Association ("APLMA") Green Loan Principles ("GLP") 2020³.

Further, GPSC may pursue having some of the green bonds issued under this framework certified by the relevant organisations, including the Climate Bonds Initiative (CBI) to be consistent with the Climate Bonds Standard V3.0⁴ (the CBS).

In aligning with the above principles and guidelines, GPSC's Green Finance Framework is presented through the GBP's four core components as well as its recommendation for External Review:

(a) Use of Proceeds

(b) Process for Project Evaluation and Selection

(c) Management of Proceeds

(d) Reporting

For Bonds / loans issued under this Framework investors, will not bear the credit risk of the underlying allocated eligible asset exposures.

¹ <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/>

² <https://www.theacmf.org/initiatives/sustainable-finance/asean-green-bond-standards>




³ https://www.lma.eu.com/application/files/1815/8866/8537/Green_Loan_Principles_V03.pdf


⁴ <https://www.climatebonds.net/2019/12/climate-bonds-launches-version-3-international-climate-bonds-standard-universal>

1. Use of Proceeds

GPSC will allocate an amount at least equivalent to the net proceeds of the Green Bonds/loans financing instruments issued under this Framework towards financing or refinancing, in whole or in part, new and/or existing eligible projects of GPSC and its affiliates as described below (“Eligible Green Projects”) in the eligible categories, together forming the “Eligible Green Project Portfolio”.

Eligible Green Use of Proceeds Categories

Category (GBP)	SDG Target	Criteria	Eligible Green Projects	Exclusions
Renewable Energy 	SDG 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix	Investments in or expenditures for the acquisition, conception, construction, development and installation as well of re-powering of renewable energy production Manufacture of components wholly dedicated to renewable energy technology	<ul style="list-style-type: none"> Solar Projects Wind Projects Run-of-the-river Hydropower projects 	Hydropower over 25MW is excluded
Energy Efficiency  	SDG 7.3 By 2030, double the global rate of improvement in energy efficiency SDG 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	Development, construction, installation and maintenance of Energy Storage Facilities Investments and/or expenditures in projects that would reduce energy consumption, improve network/energy efficiency and/or reduce electricity grid losses	<ul style="list-style-type: none"> Heating and cooling generation comprising combined heat and power (CHP) District heating including energy from waste and excess heat utilization Storage systems: acquisition, conception, construction, development and/or operation of electricity storage facilities, aiming at power grid stabilisation and/or management of peak generation of renewable energy 	

Category (GBP)	SDG Target	Criteria	Eligible Green Projects	Exclusions
Pollution prevention and control 	SDG 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse	Investments related to the development, operations, maintenance, and upgrading of facilities used to produce energy from biomass and waste products Investments related to waste management, circular economy, pollution prevention	<ul style="list-style-type: none"> Facilities for collecting, sorting and material recovery Facilities for the recycling / reuse of materials Facilities for the production of compost / biogas from waste Waste to Energy plants 	Landfills

Projects that are involved in the following operations will not be Eligible Green Projects (Overall Exclusions List):

- Any activity or technology associated with the extraction, production, refining, transmission and distribution of fossil fuels
- Nuclear power generation
- Child labour
- Forced labour

2. Process for Project Evaluation and Selection

To ensure eligibility for green financing, GPSC has set up the “**Green Finance Working Group**” in charge of the evaluation and selection of the Eligible Green Projects, in accordance with the eligibility criteria defined in the Use of Proceeds. The Green Bond Working Group comprises of cross functional representatives from the Funding and Treasury Management department, the Business Development department, the Transformation and Sustainability Management department, the Plant SHE division, and on case by case basis, with representatives from business units. The Green Bond Working Group meets on a semi-annual basis, including on an ad hoc basis when amendments are required to the Eligible Green Project Portfolio.

The Green Finance Working Group is responsible for:

- Reviewing and ratifying Eligible Green Projects to ensure eligibility for green financing
- Proposing the Eligible Green Projects to the GPSC Management Committee to review and approve
- Undertaking regular monitoring of the asset pool to ensure the eligibility of projects, whilst replacing any ineligible projects with new green assets

- Verifying compliance of the green projects with GPSC's policy and internal environmental and social standards
- Facilitating regular reporting on any Green issuance in alignment with the section 4 on 'Reporting'
- Managing any future updates to the Framework

3. Management of Proceeds

The net proceeds of any GPSC bond issuance under the Framework will be managed on a portfolio approach by the Green Finance Working Group and would be allocated as follows to Green Bonds / Loans in the Eligible Green Projects.

The net proceeds from GPSC's Green financing instruments will be deposited in the general account and an amount equal to the net proceeds will be earmarked for allocation to the Eligible Green Projects in accordance with GPSC's Green Finance Framework. GPSC will attempt to maintain an Eligible Green Project Portfolio that at least matches or exceeds the net proceeds from its outstanding Bonds issued under this Framework.

During the life of the instruments issued under this Framework if a project ceases to fulfil the eligibility criteria, GPSC will remove the same from the portfolio upon becoming aware and replace it with another eligible green project as soon as reasonably practicable.

GPSC will track the use of net proceeds of instruments issued under this Framework via its internal information system. The balance of the tracked proceeds should be adjusted on an annual basis, in order to match the allocation to Eligible Green Projects re/financed during this period.

For any net proceeds of instruments issued under this Framework that remain unallocated, GPSC will hold the proceeds in cash and/or invest in other short-term liquid instruments, in line with GPSC's policy. GPSC will aim to be fully allocated to Green Projects within 2 years of Issue date.

4. Reporting

GPSC intends to report the allocation of the net proceeds to the Eligible Green Project Portfolio. Reporting will take place within a year following the issuance of the applicable instrument issued under this Framework and will be renewed annually until full allocation.

Wherever feasible, GPSC intends to report on the aggregated impact of the Eligible Green Project Portfolio on a category level on an annual basis, starting one year from the first Green financing instrument issuance, up to the date of full allocation of the Use of Proceeds and on a timely basis in case of material developments. GPSC will align, on a best efforts basis, the reporting with the portfolio approach described in ICMA's Harmonized Framework for Impact Reporting (June 2019)⁵

The reports will be available on GPSC website.

⁵ <https://www.icmagroup.org/green-social-and-sustainability-bonds/impact-reporting/>

a. Allocation reporting

Until the bonds are fully allocated, the Green Finance Working Group will annually prepare a report to update investors on the allocation of the net proceeds of instruments issued under this Framework. Reports will provide information such as:

- The issuance amount or percentage of allocation to the Eligible Green Project Portfolio
- Examples of projects being financed
- The amount of proceeds allocated by Project Category
- The portion of net proceeds used for financing vs. refinancing
- The balance of unallocated proceeds

b. Impact reporting

On an annual basis, GPSC intends to report on the impact of the portfolio by category from environmental perspective, subject to the availability of information and baseline data and based on methodologies that will be publicly available.

The impact reporting will also provide information on the methodology and assumptions used for calculation of the impact metrics.

Examples of indicators and Metrics:

Eligible Green Projects Categories	Sub-categories	Examples of impact indicators
Renewable Energy	<ul style="list-style-type: none"> • Solar energy • Wind energy • Hydropower facilities 	<ul style="list-style-type: none"> • Reduced and/or avoided GHG emissions (in t. CO2e p.a.) • Expected annual renewable energy generation in MWh p.a.
Energy Efficiency	<ul style="list-style-type: none"> • Heating and cooling generation comprising combined heat and power (CHP), • Battery storage facilities 	<ul style="list-style-type: none"> • Reduced and/or avoided GHG emissions (in t. CO2e p.a.) • Energy conserved in KWh
Pollution prevention and control	<ul style="list-style-type: none"> • Waste sorting • Waste to energy 	<ul style="list-style-type: none"> • Waste that is prevented, minimised, reused or recycled before and after the project in % of total waste and/or in absolute amount in tonnes p.a • Annual energy generation from sorted Refuse Derived Fuel (RDF) in energy/emission-efficient waste to energy facilities in MWh/GWh (electricity)

Eligible Green Projects Categories	Sub-categories	Examples of impact indicators
		<ul style="list-style-type: none"> • Energy recovered from waste (minus any support fuel) in MWh/GWh/KJ of net energy generated p.a. • GHG emissions from waste management before and after the project in tCO2e p.a.

External Review

a. Second Party Opinion

The Framework is supported by a Second Party Opinion (SPO) by DNV GL. The Second-Party Opinion ensures the Framework is aligned with global benchmarks as defined by the Green Bond Principles 2018, ASEAN Green Bond Standards 2018, the Green Loan Principles 2020, and market best practices. The Second Party Opinion is to be made available on the GPSC website.

b. External Verification

In order to provide transparent information about the reporting of the funds from bonds issued under this framework, GPSC intends to engage a Second Party Opinion Provider/ Verifier/ External Auditor to provide the assessment on the alignment of the allocation of funds with Framework's criteria until the full allocation of the proceeds. The verification report will be made available for investors on GPSC website.

Amendments to this Framework

The Green Finance Working Group will review this Framework on a regular basis, including its alignment to updated versions of the Principles as and when they are released, with the aim of adhering to best practices in the market. Such review may result in this Framework being updated and amended. The updates, if not minor in nature, will be subject to the prior internal approval of GPSC. Any future updated version of this Framework that may exist will either keep or improve the current levels of transparency and reporting disclosures, including the corresponding review by an External Reviewer. The updated Framework, if any, will be published on GPSC website and will replace this Framework.