

Green Jobs Policy Readiness Assessment in Thailand





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Abbreviations and acronyms

AEDP	Alternative Energy Development Plan
BCG	Bio-Circular-Green Economic Model
BOI	Thailand Board of Investment
CO2	Carbon dioxide
CSO	civil society organization
DSD	Department of Skills Development
ESG	Environmental, social and governance
GCF	Green Climate Fund
GCNT	Global Compact Network Thailand
GDP	gross domestic product
GHG	greenhouse gas
LT-LEDS	Long-Term Low GHG Emissions Development Strategy
MOAC	Ministry of Agriculture and Cooperatives
MOI	Ministry of Industry
MOL	Ministry of Labour
MONRE	Ministry of Natural Resources and Environment
NAMA	nationally appropriate mitigation action
NDC	Nationally Determined Contribution
NESDC	National Economic and Social Development Council
NESDP	National Economic and Social Development Plan
ONEP	Office of Natural Resources and Environmental Policy and Planning
PAGE	Partnership for Action on Green Economy
SDG	Sustainable Development Goal
SET	Stock Exchange of Thailand
SMEs	small- and medium-sized enterprises
TGO	Thailand Greenhouse Gas Management Organization
UNCTAD	UN Conference on Trade and Development
UNFCCC	United Nations Framework Convention on Climate Change



1. Background

1.1. Thailand transition to the green economy

In most countries the transition to a green economy is still at an early stage and it is expected that job losses will occur due to changes caused by the transition to a green economy. However, ILO studies have concluded that these job losses will be smaller than initially expected (ILO, n.d.). The concepts of green jobs and a just transition to environmental sustainability (hereafter, a “Just Transition”) play an important role in the process of green economic policy development. Investment in clean and green energy can create the co-benefits of jobs and green growth during the transition to a low-carbon economy (FES, 2017). The economy in Thailand is shifting towards a greener economy to enhance the potential for realizing sustainable development objectives. This green revolution has been driven by the improvement of technology, innovation and social imperatives that allow workers to adapt to the skill needs and demands of new greener technologies. This has resulted in the emergence of new types of occupations: that is, green jobs. To accelerate greening, Thailand has produced policies designed to enhance environmental conservation. However, without the development of its labour force through suitable and up-to-date job skills, greening becomes difficult to achieve (Esposito and Annakis 2016).

Many efforts and resources over the past decade have been invested in creating quantitative estimates and forecasts of green jobs. However, the assessment of current counts of green jobs and the potential for employment creation and disruption as a result of addressing and dealing with the impacts of climate change only provide a limited basis for government and other relevant stakeholders to understand and address these issues. As with most sustainability policy issues, the ability to deliver and implement policy for enhanced

environmental sustainability and employment and the identification of Just Transition issues and their redress require:

- i. policy coordination across previously unconnected and fragmented sectors and parts/levels of government;
- ii. integration of ecological, social and economic concerns; and
- iii. reform of institutional settings and compositions that may hinder the development and implementation of activities to address greening and a Just Transition.

Therefore, assessing the existing capacity of institutions (governments and other constituents and stakeholders) to undertake greening and Just Transition strategies needs to be a critical first step as part of any activity aimed at building capacity for green jobs and a Just Transition.

1.2. Objectives

- Provide technical inputs to the ILO green jobs assessment of the institutional capacity planning in the context of the Thai Government's COVID-19 recovery investments and policies under the PAGE Thailand Green Recovery Project.
- Provide a snapshot of green jobs and Just Transition policy frameworks and activities at a macro level in Thailand, including policy coverage and policy coherence.
- Provide an assessment of "readiness" at the national and regional levels and highlight areas of best practice and opportunities in supporting green jobs and just transitions.

1.3. Methodology

The green jobs assessment approach will build on the ILO Green Jobs Rapid Situational Method with additional consultations with constituents (primarily government, employers and workers) and civil society actors to identify green jobs strategy and planning capacity across five categories:

- Assessment – ability to examine and analyse available information to inform decision-making, including using gender analysis to highlight any opportunities or constraints that should be addressed.
- Prioritization – ability to identify and assign relative importance to particular issues, sectors, geographies or populations.
- Coordination – role of creating and developing relationships, raising awareness, joint decision-making and management. Coordination can be horizontal/vertical or intra/inter, and should include full representation of women.
- Information management – role of collecting, analysing and disseminating information in support of greening employment.
- Risk management – ability to identify risks and develop management strategies.

The green jobs assessment was undertaken through desk-based research and one-on-one interviews with Thai government representatives at the provincial and national levels. The interviews highlight and characterize specific issues and hotspots, in addition to capturing thoughts and ideas from participants regarding the opportunities and challenges for enhancing Thailand's capacity for green jobs and Just Transition policy settings and investments. Specific efforts have been deployed to ensure strong voice and representation of women and their representative organizations in all consultations.



2. The national development framework for the green economy and international agreements on climate change

2.1. Green jobs definition

Green jobs are jobs that are good for people, good for the economy, and good for the environment. They are a mechanism to achieve both sustainable development as well as quality employment, in that they can provide the double dividend of just and decent employment creation with reduced environmental impact. Developing and implementing policies to promote green employment are the ambition of governments around the world as well as the subject of many international and multi-lateral commitments (for example, the Paris Agreement, Sustainable Development Goals (SDGs), the Climate Action for Jobs Initiative, the new Just Transition Partnership).¹

2.2. Greenhouse gas emissions in Thailand

Thailand's carbon dioxide (CO₂) emissions have significantly increased over the last ten years (Banerjee 2020). The energy sector is a key contributor to greenhouse gas (GHG) emissions in Thailand, accounting for 71.6 per

¹ This definition is based on the ILO PAGE Thailand Green Recovery Workplan, 9 February 2021.

cent of total GHG emissions. The energy subsectors contributing most to GHG emissions are electricity and heating, transportation, manufacturing and construction, and other fuel combustion (FES 2017). The energy sector, which includes the usage of energy for power generation, accounts for 36 per cent of the country's emissions (IEA 2020). The CO₂ emissions from energy consumption in Thailand are projected to increase by 3.0 per cent per year on average from 55.8 metric tonnes in 2017 to 148.9 metric tonnes in 2050 under a business-as-usual scenario (Kamalad 2021). Agriculture is the second-largest GHG emitting sector in Thailand, as well as being highly vulnerable to adverse climate change effects. Concerning land use in Thailand, 47 per cent is dedicated to agriculture, with almost half of this land given over to rice paddies. Emissions from the agriculture sector include biomass from open burning and rice cultivation, which accounted for approximately 89 per cent of GHG emissions (Sari et al. 2018). The Thai rice sector is responsible for almost 60 per cent of Thailand's emissions from agricultural activities (NAMA Facility 2020).

2.3. Thailand's political commitment at the global and national levels

Thailand has ratified most major multilateral environmental agreements (Annex 1), including the three Rio Conventions: the Convention on Biological Diversity (CBD) in 2003; the United Nations (UN) Convention to Combat Desertification in 2001; and the UN Framework Convention on Climate Change (UNFCCC) in 1994 (OECD 2021). In 2021, at the 26th UN Climate Change Conference (COP26), the Royal Thai Government committed to a 20–25 per cent reduction in GHG emissions by 2030 (NNT 2021a). Later in the same year at the Global Compact Network Thailand (GCNT) Forum 2021, the Prime Minister of Thailand highlighted that the need for climate action is urgent and that leadership by the private sector is crucial for sustainable development in Thailand. Thus, it is agreed that the country must accelerate the enhancement of its knowledge and capacity to innovate and create technologies to tackle climate change and other environmental concerns as well as to transition to a low-carbon economy and build resilience. The achievements made after the forum include one-third of GCNT network members having delivered on their commitment to integrate the 17 SDGs into business strategies through 510 projects in the pipeline with total combined budgets of 420 billion baht. These commitments to prevent and mitigate climate change will support government efforts in line with the Bio-Circular-Green (BCG) Economic Model, while prioritizing clean energy and high-value bio-based or “S-curve” industries (United Nations Thailand 2021).

2.4. Thailand's policy framework for a green economy and climate change

2.4.1. Policies and plans at the national level

Green growth is well reflected in Thailand's policy and planning documents. Since 2007, Thailand has incorporated climate change and the green economy into its national economic and social development plans. Thailand's commitments to the SDGs and its Nationally Determined Contributions (NDCs) are embedded in the highest policy level under the 20-year National Strategy (2018–2037); see Annex 2 for the government agencies involved in the actions of 23 master plans under the National Strategy (Thailand, NESDC 2021b). Under the 20-year National Strategy, the Government initiated the Thai Economy 4.0: Transforming toward the Value-Based Economy, which focuses on innovative industries and services in line with the country's SDG commitments and the 12th National Economic and Social Development Plan (NESDP) (2017–2021) in order to elevate Thailand from a middle-income to a high-income nation by using technology and innovation. This is to be achieved while making the environment a priority as well as aiming at promoting a gross domestic product (GDP) growth rate of about 5 per cent per annum in order to become a developed country (UNCSTD 2021).

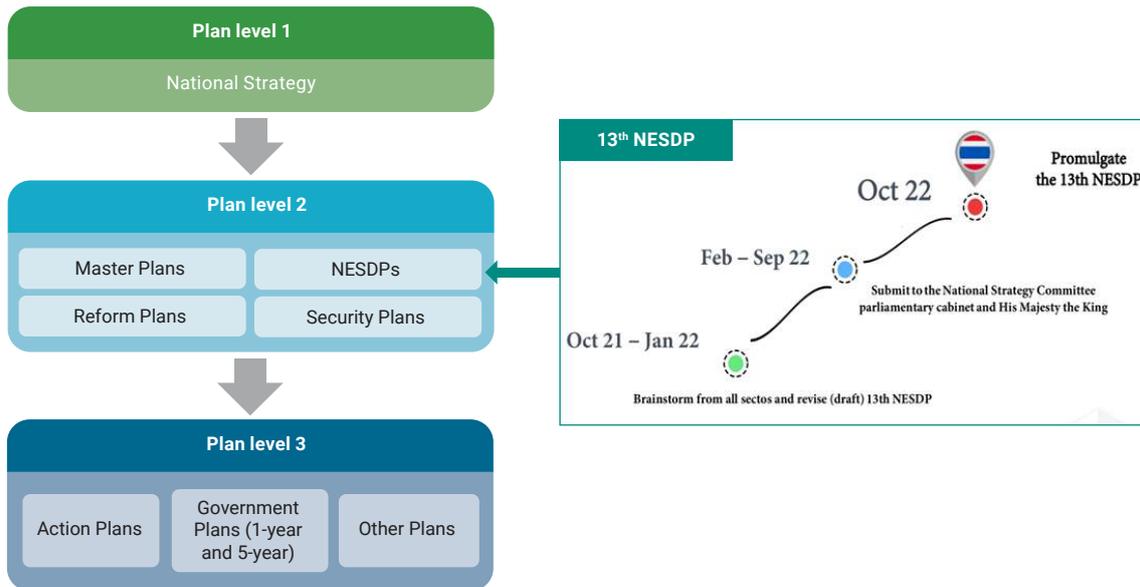
Currently, Thailand is in the process of developing the 13th NESDP (2023–2027) to specify the direction for development. The Plan focuses on four concepts: (i) Sufficiency Economy Philosophy; (ii) Resilience; (iii) Leaving No One Behind; and (iv) the BCG Model. Under the 13th NESDP, Thailand aims to transform the country

to reach five targets:

- i. restructure the production of goods to conform to the needs of the digital economy;
- ii. develop human resources to keep up with rapid digital changes;
- iii. support equal opportunity and being fair to people;
- iv. focus more on environmental conservation and ways of handling the effects of global climate change in a comprehensive and sustainable manner; and
- v. prepare for any future global challenges and issues (NNT 2021d).

The climate change issue has been included in the draft NESDP framework, which focuses particular on Target 10 of the Plan (circular economy development and a low-carbon society) and Target 11 (climate risk reduction from natural disasters) (Bangkokbiznews 2021). Figure 1 shows the status of national-level planning and 13th NESDP development.

Figure 1. National-level planning and 13th NESDP development status



Source: Thailand, NESDC 2021a; Thailand, NESDC 2021c.

In 2015, Thailand submitted its Nationally Appropriate Mitigation Action (NAMA) and its NDC to the UNFCCC, pledging to reduce the country’s GHG emissions in the energy and transportation sectors by 7–20 per cent from business-as-usual levels by 2020. Thailand’s NDC Roadmap on Mitigation (2021–2030) was further established to facilitate the achievement of its NDC targets (Thailand, MONRE, ONEP 2020). In 2019, Thailand succeeded in meeting the NAMA goal of reducing emissions by 17 per cent, see Annex 3.

Under the UNFCCC, Thailand has also submitted the Long-Term Low GHG Emissions Development Strategy (LT-LEDS) to put in place plans at both the national and local levels (Thailand, Royal Thai Government 2021a). The energy and agriculture sectors are two additional scenarios in Thailand’s LT-LEDS that have considered focusing on CO2 emissions. Business-as-usual emissions figures were determined based on technical analyses and consultation with relevant stakeholders by the working group on Thailand’s LT-LEDS, and included an

examination of energy, agriculture and industrial processes and product use. The emissions trajectory in the agriculture sector during 2031–2050 was modelled and estimated in Thailand’s LT-LEDS process. It is perceived that adaptation measures in rice cultivation and agricultural soil will contribute to lower GHG emissions in the agriculture sector post-2050 (Thailand, Royal Thai Government 2021b).

In March 2021, the National Climate Change Committee approved a draft of Thailand’s first Climate Change Act for submission to the Cabinet (Davidson 2021). This act aims to increase the efficiency of climate actions across environmental, economic, and social arenas to enable adaptation to climate change as well as to promote sustainable development (Germany, GIZ 2020a). With the target of a 20 per cent reduction in GHG emissions from the projected business-as-usual level by 2030, Thailand expects its level of contribution will increase by up to 25 per cent, subject to adequate and enhanced access to technology development and transfer, financial resources, and capacity-building support for the implementation of mitigation actions under the UNFCCC (Thailand, MONRE, ONEP 2020).

2.4.2. Policies in different sectors at the ministry level

2.4.2.1. Environment

The Ministry of Natural Resources and Environment (MONRE) has developed the Climate Change Master Plan (2015–2050) as a long-term national framework and mechanism for climate change mitigation and adaptation as well as to achieve sustainable low carbon growth by 2050. In addition to mitigation efforts, the first National Adaptation Plan was developed in 2018 to provide the framework for a climate resilient society with a focus on human settlement, natural resources and water management, agriculture and food security (Thailand, MONRE, ONEP 2018b). A green jobs policy has been included in the Office of Natural Resources and Environmental Policy and Planning (ONEP)’s Policy and Plan for Enhancement and Conservation of the National Environmental Quality (2017–2036). This policy/plan is projected to increase green jobs and green skills in private business by supporting the environmental goods and services sector, spur research and development, and upgrade social welfare for workers in green business (such as tax incentives) – as well as create a channel to access green labour information (Thailand, MONRE, ONEP 2018a). The medium-term (five-year) Environment Quality Management Plan 2017–2021 was also developed to specify a vision to have “good environment quality” as a step towards green growth.

An example of a designated national authority is the Thailand Greenhouse Gas Management Organization (TGO), which was established in 2007 by Royal Decree. The TGO, an autonomous public organization under the MONRE, is responsible for managing climate change impacts on the economy and society (TGO 2019). In July 2021, MONRE launched the Thailand Carbon Neutral Network, and signed a memorandum of cooperation with the Federation of Thai Industries to promote collaboration between government organizations, the private sector, local businesses and the community, as well as build the capacity of members able to participate in the carbon credit market (Thailand, MONRE 2021; Thailand, BOI 2021a). By 2020, there were 91 registered projects on the platform committed to reducing emissions by 5.28 metric tonnes of CO₂ equivalents (Thailand, BOI 2021a). In January 2022, the TGO organized an online training on “Development of Thailand Voluntary Emission Reduction (T-VER) project in energy sector and preparation of supporting documents for registration and certification” to build knowledge and understanding about T-VER project registration and carbon credit certification (TGO 2022).

2.4.2.2. Energy

The Government has determined the policy guidelines for the energy sector, which aim to develop clean energy and to achieve carbon neutrality by 2065–70 (TEI 2021). The Ministry of Energy developed Energy 4.0 to enhance energy supply and grid resilience and to subsequently reduce GHG emissions. The Government is driving renewable energy developments, especially in bio-waste, under the “Energy for All” policy. The Community Power Plants for Local Economy programme is the main focus to stimulate local economies using

distributed renewable energy generation, mainly from agricultural waste (Deepak 2020). In turning waste to use, regenerating natural systems, shifting toward more environmentally friendly products, and investing in energy efficiency and renewable energy, the Government expects the circular and green economy to create new investment opportunities among small- and medium-sized enterprises (SMEs) and communities (Bangkok Post 2021).

Thailand's energy policies – such as the Renewable Energy Plans, Alternative Energy Development Plans (AEDP2015) and the Energy Efficiency Plans (EEP2015) – are crucial instruments for GHG emission reduction management under the UNFCCC. To reduce GHG emissions, the Government aims for 33 per cent of the country's total power production to be through renewable sources by 2037 under the ten-year AEDP. The plan seeks to generate 15,574 MW from solar power, 5,786 MW from biomass power, 2,989 MW from wind power, 3,000 MW from hydropower and 900 MW from waste-sourced power by 2037 (McLaren 2021). However, a study by Misila, Winyuchakrit, and Limmeechokchai (2020) suggests that to achieve Thailand's NDC target of 20 per cent emissions reductions by 2030, at least 50–75 per cent of the AEDP2015 and the EEP2015 need to be completed. In addition, there will be a need to develop and deploy advanced technologies – such as more energy efficient devices and carbon capture storage – in order to reduce GHG emissions by 67.7 per cent by 2050.

2.4.2.3. Agriculture

Compared to the energy sector, GHG emissions from the agriculture waste have remained small, but steadily increased from 10.8 tonnes in 2010 to 12.6 tonnes in 2016. Reducing GHG emissions from waste is part of Thailand's sustainable development objectives and international climate commitments (CBI 2021). The transition of the production structure of labour from the agriculture sector to the industry and service sectors has directly affected the agriculture sector. The agricultural labour force reduced from 19.32 million people to 17.78 million people between 2011 and 2013. These changes have required taking a systematic approach and implementing good management administration when it comes to labour in the agricultural sector. Therefore, the transformation of farmers is a key factor towards achieving the agricultural development goals of the country (Thailand, MOAC 2017).

The Ministry of Agriculture and Cooperatives (MOAC) has given priority to developing farmers into so-called "smart farmers". To this end, the MOAC, along with other ministries, has prepared the 20-Year Agriculture and Cooperatives Strategy (2017–2036) as the framework for long-term agricultural development with the vision of secure farmers, a prosperous agriculture sector and sustainable agricultural resources. Some of the five strategies within this plan are focused on the promotion and transfer of sustainable and environmentally friendly technology, such as green agriculture, low-carbon farming, and good agricultural practices to farmers, their institutions and agribusiness entrepreneurs. Additionally, the Strategy focuses on the need for capital support in the form of green credit for production incentives and market promotion (Thailand, MOAC 2017). Under the 20-year National Strategy, the Smart Agriculture Action Plan 2020–2022 and the Strategy for Climate Change in Agriculture 2017–2021 were developed to integrate technology and innovation and to increase the value of products, as well as to integrate climate change adaptation into sectoral policy (Thailand, MOAC 2019). Agricultural 4.0, which began in 2016 under the Thailand 4.0 policy, has allowed farmers to improve cultivation by adopting new agriculture technology (AgTech) such as using drones, smart technology devices and internet of things technology in the agricultural sector, which help to mitigate agricultural labour shortages and enable farmers to schedule their crop plans and simultaneously manage their resources (Thailand, DEPA 2020). With proper agricultural innovations, farm productivity and efficiency are expected to benefit the whole bioeconomy. Thailand expects that farm production improvement will boost income for farmers and communities, and thereby reduce social disparity (Thailand, NSTDA, n.d.). However, the transformation to smart farming can be very challenging, because most Thai farmers are aged and lack the skills and resources to make the smart farming transformation on their own. Therefore, there is the need for support from the Government on awareness-raising around technology acceptance and cooperation on the development of smart farming in manner that is suitable for farmers (Kwanmuang et al. 2020).

2.4.2.4. Industry

The Ministry of Industry (MOI) is committed to developing green industry policy and has set up a strategy for industrial development based on ecologically and socially friendly industry concepts. The Green Industry Project was officially launched in September 2012 and targeted improving the image of the industrial sector, building trust with communities, and creating a green economy. The expected outcomes of the Green Industry Project are:

- i. Reduce the environmental impacts of and complaints caused by the industrial sector;
- ii. Create a positive image and attitude towards the industrial sector;
- iii. Create green jobs and employment;
- iv. Reduce operating cost and increase competitiveness; and
- v. Create marketing opportunity through green products and processes (Envilience Asia 2022).

In addition, the BCG Model has been applied within the industrial sector, and the MOI expects that all industries in Thailand will transform to be “green industries” and that GHG emissions from the sector can be reduced by 1.22 million tons by 2022 (MReport 2021). To achieve the ambition of Thailand 4.0, the MOI, via the Department of Industrial Promotion, has also:

- i. invested in production processes for greener industries;
- ii. developed manufacturing by adopting the Lean Automation System;
- iii. developed new products for commercial extension;
- iv. developed prototypes for digitally enhanced industrial agriculture; and
- v. enhanced skills of personnel working in the industrial sector through the Industry Transformation Centre (Thailand, MOI 2022).

2.5. Green economy development mechanisms

In Thailand, the BCG Model is now being employed as a mechanism to drive Thailand’s economy toward exponential growth. In 2021, the BCG Policy Board approved the 2021–2027 BCG Economic Model as part of the Thailand 4.0 policy both to accelerate socioeconomic development by capitalizing on the country’s strength in biological and cultural diversity, and as a mechanism to drive the country’s economic recovery in the post-COVID period (Thailand, NSTDA 2021; Thailand, BOI 2021a). The BCG Model is driven through 4 strategies and 13 measures under close collaboration with key government agencies, industries, academia and communities (Thailand, NSTDA 2021). The model focuses on four S-curve industries, namely: (i) food and agriculture; (ii) bioenergy and biomaterial; (iii) medical and wellness; and (iv) tourism and creative economy (Thailand, NSTDA, n.d.). Targets including building value creation with microbial technology and transitioning to a low-carbon and clean-tech economy have been set for the BCG strategic policy. The country expects that the BCG Model will steer its economic recovery by increasing investment in science and technology and in activities that will create sustainable development and address global environmental concerns (Thailand, BOI 2021a). The first Bio-Circular-Green Complex in Asia has been initiated under a cooperation of the MOI, MONRE, Thai Eastern Group, Thailand Board of Investment (BOI) and Chon Buri local administrative office. This project aims to create 8,000 jobs in three years and is expected to increase economic value by 100 billion baht per year as well as contribute to grassroots development by promoting community-based renewable energy, such as solar-power water pumps and biogas production from waste (Thailand, NXPO 2021a). According to a summary of National Strategy implementation report, various government agencies have also promoted BCG to be implemented in the agriculture sector with the aim of strengthening grassroots economic development and increasing income

as well as creating jobs for people at all levels. In 2021, Agricultural Technology and Innovation Centres were established in all 77 provinces as a mechanism to drive sustainable agriculture (Thailand, AIC 2020).

In accordance with the BCG Model Action Plan, the first meeting of the executive committee for BCG Model development was organized on 7 February 2022 to provide the implementation guidelines for the development goals for 2023. There are four important items to highlight out of these guidelines:

- i. The budget allocation guidelines in relation to the BCG Model Action Plan will be provided by the Office of the National Economic and Social Development Council (NESDC) and the Budget Bureau.
- ii. The Ministry of Interior together with relevant ministries will develop a spatial BCG project that aims to create job opportunity for local communities.
- iii. Create an ecosystem to stimulate private investment.
- iv. The establishment of a National Food Bank and an Entrepreneurs Network to support civil society.

Under the vision of “Sustainable Growth”, the Government invested over 128,000 million baht in the first nine months of 2021 to support the private sector in applying the tenets of the BCG Model (Thailand, Royal Thai Government 2022).

2.6. Thailand’s green investment

In 2007, Thailand established the National Committee on Climate Change Policy (NCCC), which is chaired by the Prime Minister and has members from the public and private sectors and academic institutions. The NCCC is composed of four subcommittees:

- i. Climate Change Policy and Planning Integration;
- ii. Climate Change Knowledge and Database;
- iii. Climate Change Negotiation and International Cooperation; and
- iv. Public Relations and Actions for Climate Empowerment.

The subcommittees appointed a Screening Committee for Project Financial Support under the International Framework chaired by the Secretary-General of the ONEP. The Screening Committee provides guidance and recommendations on the Thailand Country Programme on climate change, reviews project proposals and prioritizes projects that are proven eligible to receive international support, especially from the Green Climate Fund (GCF), which was established as the financial mechanism under the UNFCCC (Thailand, MONRE, ONEP 2017). In 2021, the GCF approved a new US\$17.5 million grant towards building the climate change resilience of farmers in Thailand with approximately 62,000 people in northern provinces set to directly benefit. This GCF grant met with US\$16.2 million co-financed by the Government, a private sector partner Krungsri Bank will also contribute more than US\$113,000 towards financial literacy training for farmers. The Bank for Agriculture and Agricultural Cooperatives has also pledged a line of credit of US\$16 million to help farmers invest in adaptation measures (UNDP 2021). Moreover, the new programme support by the GCF was developed in collaboration between the Department of Marine and Coastal Resources, ONEP, MONRE and UNDP to increase resilience to climate change impacts in marine and coastal areas along the Gulf of Thailand (UNDP Thailand 2021).

In accordance with the draft 13th NESDP, the Government aims to support green finance and investment in environmentally friendly economic activities (Thailand, NESDC 2021d). The Ministry of Finance has established the Sustainable Financing Framework as a logical next step to Thailand’s pioneering sustainability commitments and ambitions targeting climate change mitigation and adaptation (Thailand, MOF, Public Debt Management Office 2020) as well as to issue green, social and sustainability bonds and loans in the form of direct investment expenditures, subsidies, fiscal measures and operational expenditures. The first green bond in Thailand was issued by TMB Thanachart Bank in June 2018 (US\$60 Million). Thailand expects that eligible projects in line with SDG 8 (see Annex 4) will reduce the country’s environmental footprint and will assist in the transition

towards a low-carbon economy while advancing the socioeconomic development of the country. Under this framework, the Ministry of Finance's Public Debt Management Office issued a 30 billion baht sustainability bond in September 2020 to finance green infrastructure and social impact projects supporting Thailand's recovery from the COVID-19 pandemic, such as projects aimed at job creation through SMEs and local public infrastructure development with social and environmental benefits (CBI 2021).

The Framework defines eligibility criteria in seven green areas and three social areas:

- **Green Eligible Categories:** 1. Clean Transportation; 2. Renewable Energy ; 3. Energy Efficiency; 4. Sustainable Water and Wastewater Management; 5. Sustainable Management of Living Natural Resources and Land Use; 6. Terrestrial and Aquatic Biodiversity Conservation; and 7. Green Buildings.
- **Social Eligible Categories:** 1. Employment Generation Including Through the Potential Effect of SME Financing and Microfinance; 2. Access to Essential Services: a. Healthcare, b. Educational and Vocational Training, c. Affordable Housing; and 3. Food Security (CBI 2021).

In September 2021 at the Sustainable Thailand Forum initiated by the Government Pension Fund, 43 financial institutions, including asset management companies and banks with total assets of US\$1.3 trillion (43.1 trillion baht), committed to action on the SDGs and the Paris Climate Agreement (Yathip and Sabharwal 2022). Likewise, to support the "green taxonomy" policy, the Bank of Thailand is planning to work with the country's Securities and Exchange Commission and the Ministry of Finance's Fiscal Policy Office to improve sustainable finance. The plan is to step up environmental, social and governance (ESG) disclosure, and increase incentives to invest in sustainable sectors, as well as aim to develop an environmental taxonomy of financial assets, tailored to Thailand's needs (Central Banking 2021).

In the agriculture sector, smart farming has been fully supported by the BOI under the current investment promotion scheme, such as through the manufacturing of modern agriculture products and services (for example, smart greenhouse systems, resources regulation systems and tracking systems) and tax exemption for investors (Thailand, BOI 2018; Kwanmuang et al. 2020). The Agriculture System Integrator (ASI) was launched by the National Science and Technology Development Agency to provide knowledge and skills on smart agriculture technology (Thailand, BOI 2018).

Concerning air pollution, in 2019, the Budget Bureau has approved a total budget of 138.6672 million baht to the MOAC and MONRE to implement projects/programmes under the National Strategy in relation to air pollution and quality of life, according to the report of the Official Inspection Bureau of the Office of the Permanent Secretary of the Prime Minister's Office – for more details see Annex 5 (Thailand, OIB 2021).

In the energy sector, the BOI has promoted more than 50 activities in accordance with the BCG Model. The top five promoted businesses under the BCG Model are: (i) electricity from renewable energy (including refuse-derived fuel); (ii) food production and preservation using high technology; (iii) production of eco-friendly chemical products; (iv) production of biomass products; and (v) manufacturing of natural rubber products (In-House Community 2022). In March 2022, the Electricity Generating Authority of Thailand, the Metropolitan Electricity Authority, and the Provincial Electricity Authority held the three-electric utility board meeting to seek the integration of future investments on electricity infrastructure, to enhance the unity of work direction to avoid redundancies, and to support renewable energy transition (EGAT 2022).

2.7. The monitoring system for policy implementation

The Electronic Monitoring and Evaluation System of National Strategy and Country Reform (eMENSER) was developed in 2020 to monitor and evaluate the implementation of the more than 62,000 projects under the Master Plans of National Strategy. It is the main mechanism used for processing an in-depth analysis for the large data system to support: (i) the implementation of the Government's projects; (ii) monitoring progress; and (iii) public participation. This system is also used for the information improvement and development of the planning level 3 process. The system showed that the achievement status in 2021 had slightly decreased compared to the result in 2020 (Thailand, NESDC 2021b).

2.8. Private sector activities related to the green economy

In Thailand, the private sector accounts for nine in ten jobs and about 90 per cent of GDP, conferring to the sector both a responsibility and an opportunity for leadership on meaningful climate action. Within the Global Compact Network Thailand (GCNT), a voluntary association of companies have committed to sustainability principles, with most of the 90 members of the network having already pledged to reach net zero by 2050. At its annual forum in 2020, GCNT members also promised more than US\$40 billion (1.2 trillion baht) through 2030 to advance the SDGs (Sabharwal and Chearavanont 2022). Under the National Strategy (2018–2037), the Government aims to include investment in public and private sector climate-friendly infrastructure development and promoting the involvement of the public and private sectors, local administrative organizations, families, and communities in human capital development (Thailand, NESDB 2017).

Using the concept of the BCG Model, the private sector has driven investment in the agriculture and industry sectors (such as bio-industry and agro-industry) through various projects. For instance, a precision agriculture development to become agro-industrial business project over an area of 2 million rai (320,000 hectares) was developed under the cooperation of the MOAC and the Federation of Thai Industries to ensure that production processes align with the quality requirements and standards of the industry (Thailand, NESDC 2021b). In addition to this, large corporations, particularly Thailand's state-owned PTT Global Chemical and Mitr Phol, have influenced the shape of the bioeconomy agenda through the official Public–Private Partnership Scheme. They have steered the bioeconomy towards cassava and sugarcane commodities (SEI 2020).

The Stock Exchange of Thailand (SET) has played an important role in the green economy by encouraging sustainable development. In 2014, the SET joined the UN Sustainable Stock Exchanges Initiative, a collaboration network of four UN agencies: UN Conference on Trade and Development (UNCTAD), UN Global Compact, UN Principles for Responsible Investment, and UN Environment Programme Finance Initiative. The SET aims to build a network of capital markets under an environmental, ESG framework and to set the vision “Toward Sustainable Growth”. Social development and environmental management have been included in the SET's framework (SET, n.d.). The SET has compiled a list of “Sustainable Stocks” from among listed companies to promote investment in ESG-conscious businesses. Although this list consists mainly of the largest companies, many listed companies are beginning to use ESG data to generate sustainability reports for disclosure to shareholders, investors, and the public along with financial reports in order to meet the needs of Thai investors interested in sustainable investment (SCG, n.d.). At present, 147 companies on the SET and the Market for Alternative Investment are included in the Thailand Sustainability Investment list, reflecting growing demand from investors and more readiness from listed companies to demonstrate sustainability measures (Sabharwal and Chearavanont 2022). Moreover, the SET has been working closely with the TGO and the Federation of Thai Industries to establish a carbon credit market as part of a fundamental infrastructure for efficient energy consumption (United Nations Thailand 2021).

In addition to all these efforts, a growing number of green certification schemes for products and services in Thailand are being established by various organizations. Some of these certification schemes are recognized by the Government's green procurement programme, such as Thai Green Label, Carbon Footprint, Energy Saving Label, Cool Mode, Green Leaf, and Green Hotel. The private sector also has its own certification schemes for environmentally friendly products and materials, such as SCG Eco-Value, Green for Life, and Green Heart (SwitchAsia 2020).

2.9. Civil society engagement

Civil society organizations (CSOs) are playing a crucial role in propelling sustainable development, by elevating and improving their practices in order to establish a concrete approach to link with the SDGs, under the circumstances of social, economic and political changes in Thailand (Lianchamroon et al. 2017). CSOs in Thailand are working closely with the key government agencies to achieve the SDGs and to mitigate climate change impacts in line with the National Strategy. However, CSOs have been the stakeholders with the least influence and decision-making authority within the green economy. Most organizations are not represented in the Public–Private Partnership Scheme and some lack platforms to represent their interests (SEI 2020).

2.10. Implementation of best practices on the green economy

Energy

An evaluation by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) on the renewable energy sector, showed that there is an increasing trend towards renewable energy in Thailand. Renewable energy accounted for 9.95 per cent of energy consumption in 2012, and this grew to 15.48 per cent in 2018. The renewable energy consumption for electricity and heat generation (including transportation) have reached 14 per cent of final energy consumption, nearly halfway to the 2036 goal of 30 per cent. The evaluation also analysed the structure and contents of 19 existing renewable energy training courses in Thailand, and found that they addressed only 7 out of 14 types of renewable energy that have been included in the AEDP2015. Of particular note, there are currently no training courses related to electricity generation from wind and waste energy, despite the AEDP2015 setting goals of 18 per cent and 3 per cent of renewable/alternative electricity generation coming from these respective sources² (UNESCAP 2021). A good example of the move towards renewable energy can be seen in the world's largest hydro-floating solar hybrid system (capacity of 2.7 gigawatts), which has been established at the Sirindhorn reservoir in Ubon Ratchathani Province, covering an area of about 660 km and combining two methods of electricity generation (Thanthong-Knight 2021b). This hydro/solar system is capable of reducing the country's carbon emissions by 47,000 tonnes every year (Horton 2022).

Agriculture

As of the production year of 2020–21, 86 large smart farming plots were operating under the Agricultural Extension Program (accumulated operations since 2017–18). A total of 10,000 farmers participated in this project over a total area of 174, 819.08 rai (27,971 hectares). Even though the number of plots did not increase during 2019–20, the value added from cost reductions and productivity gains has increased by 31.61 per cent compared to 2019–20 (the value increased from 1,351.79 to 1,779.07 million baht in 2020–21). Therefore, this reflects that income, cost reductions and productivity among the group of smart farmers have all increased due to the use of modern technology (Thailand, NESDC 2021b). Currently, Thailand has more than 1 million smart farmers out of 24 million farmers in total, including 20,000–30,000 young smart farmers supported by the MOAC (Bank of Thailand 2021).

2 It should be noted that these percentages do not include electricity generation via hydropower (UNESCAP 2021, 17).



3. Green jobs and a Just Transition in Thailand

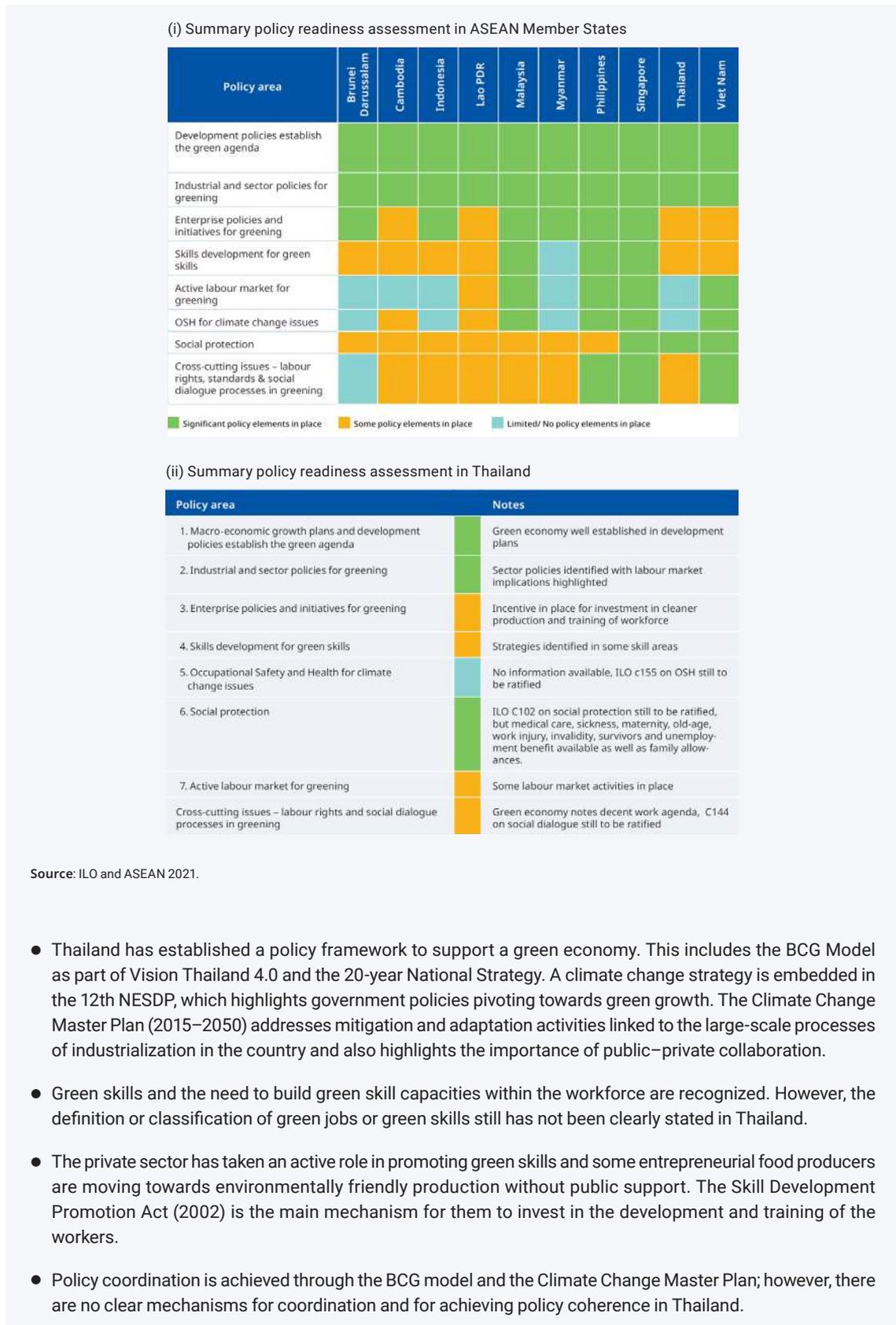
The Office of the Permanent Secretary for the Ministry of Labour has defined “green jobs” as jobs in businesses that produce goods or services that benefit the environment or natural resources, including research and development, installation and maintenance service, jobs with environmentally friendly processes or that reduce the use of natural resources, and dissemination of knowledge on the tools and methods to reduce environmental impacts (this definition refers to that of the US Bureau of Labour Statistics) (Thailand, MOL 2021).³

3.1. Regional context

The 2021 Regional Study of Green Jobs Policy Readiness in ASEAN utilized 2019 and 2020 data to assess the green jobs policy readiness in the ASEAN Member States, including Thailand. It showed that the progress of Thailand is still at moderate level compared to other ASEAN Member States (AMS). Although Thailand’s green economy policy and decent work agenda are well established and planned, the dimension of the readiness of its transition still needs some improvement due to an unclear framework and a need for greater policy coherence for overall development at all levels (ILO and ASEAN 2021). Figure 2 summarizes Thailand’s policy readiness assessment results, as concluded by the regional study.

³ This definition matches with the ILO’s definition of “green jobs” only in regard to the environmental aspect, as it lacks components on sustainable economic development and just/decent employment.

Figure 2: Thailand's policy readiness within the ASEAN regional context



3.2. Green job potentials and labour market in Thailand

In Thailand, a green job refers to work done in the agriculture, industry or service sector that helps in preserving and restoring the environment (ILO 2012). In 2019, 31.43 per cent of employment in Thailand was active in the agricultural sector, 22.84 per cent in the industry sector and 45.73 per cent in the service sector (Statista 2022). However, labour productivity in the agricultural sector remains at a low level compared to other sectors (Thailand, NESDC 2022). Therefore, the Government is trying to position the country as a leading agricultural good producer surrounded by innovation aimed at value added production so that the Thai agriculture sector can transition to a smarter future (Thailand, BOI 2021b).

A shift towards small-scale, plant-based production has been promoted to help alleviate poverty by guaranteeing fair incomes and creating new opportunities for farmers. Some measures have been taken by the government under the BCG Model to maximize this opportunity. This market is expected to grow to US\$1.5 billion (50.7 billion baht) in 2024. It has also been suggested that the increasing level of education among young Thai farmers will promote entrepreneurship among rural communities and enable them to transition away from livestock and mono-crop production towards a more sustainable and agricultural production (Sungthong and Bruun 2021). In addition, organic farming, which is considered as environmentally-friendly and economically sustainable production, has been promoted as an alternative to conventional farming in Thailand over the past several years, given claims of its potential to mitigate climate change, reduce health risks and secure agricultural livelihoods. However, data collection and evaluation about organic farming and its relevance to emission control has been very difficult due to the lack of up-to-date and comprehensive/detailed data on organic farming (Lee 2021). Alternatively, eco-tourism and farm tourism can also be viable options for farmers, helping them to diversify their sources of income, which can be beneficial when agriculture faces environmental pressures. In Thailand, the Professional Qualification Institute is developing skills standards in key sectors identified as having high potential, and these include “affluent medical and wellness tourism” as well as agriculture and innovation in biotechnology and food (ILO 2019).

The renewable energy sector expects to be a major growth driver for employment and for the Thai economy. According to an Asia Business Council (2008) analysis on green market potential in Asia, Thailand ranked third for energy production via the use of biomass, with rice husks, straw, sugarcane bagasse, palm oil waste, and wood waste being used to generate energy. Thailand’s vision of “100 per cent renewable energy by 2050” aims to generate direct employment in the renewable energy sector, with an estimated 172,164 jobs being created via this transition. This would mean an average job creation of more than 4,600 jobs per year. Modern biomass and solar would then employ the largest number of people, with 77,964 and 76,964 jobs, respectively, followed by wind and biogas (Greenpeace 2020). Green jobs in the renewable energy sector will be in higher demand in Thai labour market, with jobs such as Solar Photovoltaic Installers, Wind-Turbine Service Technicians, Geoscientists and Urban Planners, Environmental Scientists and Specialists, and Systems Software Developers expected to grow by 104.9 per cent by 2026 due to technology change (Chuwong 2021).

3.3. Green skill development

“Green skills” are the specific skills required to adapt products, services or operations due to climate change adjustments, requirements or regulations (for example, water purification and site remediation planning/engineering in mining, solar panels installation, wind turbines design, green management, carbon capture and storage techniques) (Martinez-Fernandez, Hinojosa, and Miranda 2010).

Thailand has recognized the importance of green skills and the need to build green skill capacities within the workforce, with skills for green jobs being driven by the demand for more efficient and widely available information technology (IT) services (ADB 2021b; ILO 2019). The Ministry of Labour (MOL) has initiated policies and measures to improve the workforce’s skills in parallel with policies to strengthen social stability. Examples include reforms to the structure of wages in accordance with skill standards across numerous professions,

implementation of the Safety Thailand project to prepare for change, and boosting confidence in the Thai workforce's capacity and professional adaptability. These efforts also align with the ILO's Decent Work Agenda and Just Transition guidelines (Thailand, MOL 2017).

The Ministry's Department of Skills Development (DSD) has established national skills standards, has certified training centres and has been assessing workers as per the regulations in the Skill Development Promotion Act B.E. 2545 (2002, amended in 2014) (Germany, GIZ 2020b). This Act aims to enhance the skills standards of the labour force, promote the occupational knowledge and competence of employees, improve the efficiency of business establishments, and protect the public from hazards associated with work activities. Companies employing more than 100 employees are required by law to consider the Act and to arrange skills development programmes for at least 50 per cent of its total employees in Thailand (AccLIME 2021). In addition to this, the DSD has employed a memorandum of understanding to foster cooperation with the private sector in the area of green skills (ILO and ASEAN 2021).

Moreover, under the Skill Development Promotion Act, the Labour Skill Development Fund was also established in 2002 by the Minister's Council and administered under the rule of the Ministry of Labour on the Labour Skill Development Fund B.E. 2539 (1996). The objectives of the Fund are to provide funding to training providers for the labour skill standard test and to support any business operation relating to the promotion of labour skills development (Thailand, MOL, DSD 2022). The MOL reported that this Fund has been supporting entrepreneurs to develop quality skills among more than 4 million workers per year. In 2020, the DSD trained more than 200 officials on the Act's guidelines for promoting labour skills development in enterprises. The aim was for these officials to then train 14,704 entrepreneurs in 2021 (MGR Online 2020). However, the Action Plan on the Skill Development Fund of the DSD reported a variety of challenges in the use of loan services, such as time consuming loan processes, lack of information and the repayment period being too short. Thus, it is suggested that the DSD should organize more trainings for entrepreneurs (on, for example, soft skills, borrowing processes, labour skills standard tests) to supporting the skills development of workers (Thailand, MOL, DSD 2022).

The MOL developed the 20-year National Strategic Framework for Human Resources Development (2017–2036) with the vision of "High value human resources towards sustainability". The Framework is divided into four periods of five years:

- **Phase I.** Productive Manpower (2018–2021) to increase labour force skills such as research and development skills as well as science, technology, engineering and math (STEM) skills and to create occupational standards for labour;
- **Phase II.** Innovative Workforce (2022–2026) to enable workers to apply technology and innovation to increase productivity;
- **Phase III.** Creative Workforce (2027–2031) to achieve SDG 8; and
- **Phase IV.** Brainpower (2032–2036) expects to increase labour income from higher skills development.

The MOL – together with 15 other government agencies – have established the first five-year strategy under the "Labour Master Plan 2017–2021" with the aim to increase the potential of workers in Thailand (Thailand, MOL, DOE 2021). Support for smart farmers and renewable energy have been included in the programme under this framework; however, the green jobs programme was not specifically integrated (Thailand, MOL, DSD 2022). For 2022, the DSD is developing the curriculum on green skills development (waste reduction) and is planning to train migrant workers.⁴

Moreover, to develop the potential of workers, the MOL has provided up-skilling/re-skilling projects, such as the Skill Development Programme for Labour in the Eastern Special Development Zone, and training programmes for specific target groups (such as disabled persons and the elderly), as well as supporting investment in high technology industries and services. In addition to this, manpower development institutes such as the Digital Skill

⁴ Information from the Discussion: Preparing Presentation for 22–23 March Event on Green Economies and Green HRD, 15 March 2022.

Development Academy (DISDA), the Automotive Human Resources Development Academy (AHRDA), and the Manufacturing Automation and Robotics Academy (MARA) were developed to support S-curve industries (MOL, Office of Permanent Secretary 2022). Under the MOL's policy on labour skills development, the DSD has taken responsibility for accelerating up-skilling training that will place an emphasis on energy technology application. In 2020, a total of 842 people in 12 provinces were trained on the topic of methodology design for photovoltaic device installation in the agriculture sector, such as solar-powered water pumps and the automatic use of solar cells in the agricultural sector (Thailand Plus 2020). Overall, Thailand has provided some training programmes related to green jobs and the green economy; see some examples of green skills training programmes in Thailand in Annex 6.

However, the MOL's informal workers index report in 2021 shows that, while 65.31 per cent of workers in Thailand have knowledge on electrical skills, 19.79 per cent of these workers lack knowledge on technological and innovation skills. Only 19.97 per cent of workers have participated in skills development training and 29.91 per cent have joined training related to the agricultural sector (Thailand, MOL 2021). Green skills are also important in the industrial sector, but green skills development may need to focus more on SMEs, as they are more vulnerable than large industries.⁵ It is suggested that higher education and vocational education are needed to equip the Thai workforce with the skills required by industry and by the emerging needs of the service economy. Therefore, up-skilling and re-skilling training by all sectors should be provided as green economy jobs continue to grow.

3.4. Challenges to a Just Transition to a green economy in Thailand

A Just Transition is a positive outcomes plan to ensure that environmentally friendly jobs are created for those communities and people negatively affected by global efforts to decarbonize. Beyond just environmental considerations, a Just Transition must also have pathways mapped to make decent employment and social protection available for these people as part of the transition (Sharpe and Martinez-Fernandez 2021).

The creation of green jobs in all communities, fair trade, technological change, funding support for climate change adaptation and public participation are all key attributes to the transition (UNEP 2008). In Thailand, the main challenges to such a transition are the actual definition of a Just Transition, the organization mechanism structure, insufficient budget allocation management, outdated laws and regulations (such as procurement laws⁶), and inadequate prioritization of social dialogue and green employment.

- The definition of a Just Transition has not been adequately contextualized in Thailand. It should be clarified in the policies for a Just Transition to both workers and employers. For example, compensation benefits and a Just Transition plan for up-skilling and re-skilling (FES and TU 2018).
- The challenges related to the organization mechanism and budget allocation management start with the basic structure: National policies ► Main responsible agencies ► Ministries ► Departments ► Provincials ► Locals.⁷ The process of navigating this structure can take at least 1–2 years for budget approval. Plans and projects in line with national strategies will be proposed by line agencies and then be submitted to the ministries. The projects under the national strategy will be proposed to the Budget Bureau for a preliminary consideration then the final approval will be done by the Cabinet. This shows that the mechanical structure for policy implementation is ineffective.⁸

5 Information from the Tripartite Consultation on Validation of Green Jobs Policy Readiness Assessment in Thailand, 21 November 2022.

6 Interview with Thai Government representative from the Department of Skills Development at the provincial level, 30 March 2022.

7 Interview with Thai Government representative from the Foreign Affairs Division, Ministry of Interior, 30 March 2022.

8 Interviews with Thai Government representatives from the Foreign Affairs Division, Ministry of Interior, and the Department of Skills Development at the provincial level, 30 March 2022.

- The excessive numbers of laws that are no longer necessary, redundant or outdated that have remained in place over long periods of time without review or cancellation is one of the challenges for achieving a Just Transition.⁹ Currently, Thailand has over 1,400 acts and more than 100,000 secondary laws, most of these regulations, rules and guidelines are not flexible and the language of the laws is outdated. This creates difficulties in understanding the scope of meaning and in ensuring the compliance of enterprises, entrepreneurs and others (Bank of Thailand 2019). Therefore, timely review, update and improvement of laws and regulations is crucial to ensure policy readiness for a green economic transition.
- Lack of adequate social dialogue to facilitate a Just Transition process. Employers and governments regularly engage in social dialogue, but these exchanges also often exclude CSOs, NGOs and labour unions. Thus, establishing a full commitment to social dialogue remains a challenge to a Just Transition (UNEP 2008).
- Lack of a coherent definition of “green jobs”. The insufficient definition of green jobs is interrelated to the aforementioned methodological and policy coherence challenges. As of now, there are no clear definitions, indicators or indexes concerning green jobs within Thailand’s green economy policy framework. In particular, the concept of green jobs in Thailand is not adequately linked to the Decent Work Agenda.
- Lack of analysis of employment impacts caused by the environmental policy measures and the Just Transition to a green economy.

3.5. Employers’ and workers’ organizations’ concerns about the green economy transition

The Employers’ Confederation of Thailand (ECOT) has expressed their concerns over green skills knowledge for clean energy and the impact that the transition to a green economy will have on the labour market, especially the impact on the aged labour workforce. A Just Transition is forecasted to be costly,¹⁰ therefore, it is crucial to stimulate cost reductions in the private sector and to manage the labour market in addition to greening with the support from the Government during the green economy transition (such as, with changing factories from boilers to gas, waste management, and cloud computing). Green skills and knowledge of how to operate within and towards a green economy are still limited. Thus, it is suggested that the BOI must include green components in its support funding and pursue awareness-raising on the green economy, and there must also be active knowledge sharing within and law enforcement on the private sector. ECOT also argue that employers need more knowledge on green jobs and digital literacy, because the greening aspects of the proposed transition are wider than anticipated.¹¹

The President of the Confederation of Thai Labour recommended that the Government should reform the universal social security system so that everyone can have access to basic rights. Additionally, the Government should have policies to promote the agricultural sector, fund entrepreneurs to invest in processed food, support unemployed workers during COVID-19, and work on a policy to cover agriculture labour under the Labour Skills Development Protection Act (CU News 2020).

9 For example: (i) the Forest Act was established in 1942, and it has never been amended; or (ii) the procurement laws are outdated and do not match the policy for a green economy and new innovation.

10 However, there will also be costs involved in not transitioning and in not transitioning justly. This is why the role of the State and policy are important in helping smooth these costs over time (Commented by Dr Samantha Sharpe, Research Director at the Institute for Sustainable Futures, 17 May 2022).

11 Information derived from the Discussion: Preparing Presentation for 22–23 March Event on Green Economies and Green HRD, 15 March 2022.



4. The COVID-19 pandemic and labour policy

The labour market in Thailand showcased the negative impact of the COVID-19 pandemic and its related restrictions in terms of joblessness and diminished hours of work, productivity and wage income in the first half of 2020 (ILO 2021). The labour market recovered in the second half of the year, but additional waves of the variants and transmission control measures have interrupted the recovery. Labour force participation has been declining and Thailand's workforce has not transitioned to the types of jobs that involve the non-routine tasks and interpersonal communication that increasingly characterize knowledge-driven economies (Moroz 2021). The pandemic was reflected profoundly within the country's socioeconomic fabric by its impact on poverty. Before the COVID-19 outbreak, the poverty rate in Thailand had dropped to 6 per cent, but increased again in 2020 to 8.8 per cent (CBI 2021). People with informal and precarious employment conditions, including those with small family businesses, have been most affected. In response, the Government has introduced important measures to address economic challenges facing households (OECD 2021).

4.1. Labour policy during COVID-19 pandemic

The Department of Employment (DOE) announced the Ad-hoc Master Plan under the National Strategy in response to COVID-19 situations in 2021. The main aim of this Master Plan is to strengthen the local economy by supporting employment through labour database development and by increasing the level of qualification needed for new jobs that are in line with the economy as well as restructuring the labour market to manufacturing with higher incomes. The DOE prepared six outputs/projects to develop workers' potential in accordance with labour market demand and to promote jobs creation for all target groups:

- i. Support productivity of recruitment services to increase employment opportunity, targeted at 8,000,000 people;
- ii. The workforce preparation project, targeted at 265,600 people;
- iii. The Career Day project, targeted at 10,000 people;
- iv. The recruitment services project, targeted at 607,778 people;
- v. The project issuing work permits for skilled experts, targeted at 17,000 people; and
- vi. The project to expand employment opportunities for elders, targeted at 11,795 people.

In addition, the Government has created a platform named “Thais Have Jobs” and organized the “Job Expo Thailand” on 26–28 September 2020 under the immediate policy to solve the issue of unemployment during the pandemic; 104,933 persons participated in the event (Thailand, MOL, DOE 2020). Over 570 booths from public organizations and private firms and for roles overseas were set up for job seekers at the Job Expo in Bangkok in 2020. It was expected that about 1.2 million jobs would be offered in the private sector; however, these offers are ultimately part of relief measures, as the Government has introduced a 1.9 trillion baht (US\$ 60 billion) package to mitigate the impact of the outbreak (Sriring and Kuhakan 2020). Moreover, the MOL established the Co-Payment Project to support new graduates by providing employers a wage subsidy of 50 per cent of the salary up to a maximum of 7,500 baht per person for 12 months (from October 2020 – September 2021). This resulted in 260,000 new graduates receiving employment support (Thailand, MOL 2020).

4.2. Financing mechanisms

Green infrastructure has a vital role to play for Thailand to address the twin challenges of post-COVID-19 recovery and climate change. In the short term, investment in green infrastructure can accelerate the post-COVID-19 economic recovery, while creating new economic opportunities from green jobs and boosting overall national economic competitiveness and green growth. This green infrastructure will require US\$172 billion in capital investment and can create 30 million jobs in South-East Asia by 2030 (CBI 2021)

The World Bank in its January 2021 Thailand Economic Monitor report concluded that Thailand has overall performed well compared to its peers in the region in terms of scale and targeting of its pandemic response. However, the COVID-19 impacts still required a large amount of budget for remedial measures. An emergency decree authorized the Ministry of Finance to borrow a total of 1 trillion baht, 95.5 per cent from the House of Representatives and 4.5 per cent from the Asian Development Bank (ADB) under the first COVID-19 Loan Act (Thailand, Ministry of Commerce, DTN 2020; NNT 2021b). As per the decree, the spending was divided into three programmes: (i) 45 billion baht for healthcare management; (ii) 555 billion baht for economic relief programmes; and (iii) 400 billion baht for economic recovery projects. In practice, most of the 1 trillion baht budget was spent on economic relief programmes such as “Rao Mai Ting Kan” [Leaving No One Behind], “Rao Chana” [We Win], and “Kon La Kreung” [Let’s Go Halves] (Parasuk 2021). In May 2021, the Cabinet approved the borrowing of 500 billion baht more from the International Bank for Reconstruction and Development, the Japan International Cooperation Agency (JICA) and the ADB under the second COVID-19 Loan Act. The loan is to be divided into the three areas of expenditure which 30 billion baht to be dedicated to public health, 300 billion baht to support people affected by the pandemic and 170 billion baht is for economic and social rehabilitation (NNT 2021c).

The COVID-19 outbreak has put pressure on both businesses and households. Household debt reached 79.80 per cent of GDP in the fourth quarter of 2020 (CBI 2021). The Ministry of Finance has forecasted that the public debt level would rise to about 62 per cent of GDP by the end of the 2022 fiscal year in September (Staporncharnchai 2022). Thai farmers are struggling to pay off their debts due to the low price of crops together with the economic impacts from the COVID-19 pandemic, a situation that resulted in demonstrations by indebted rice growers in Bangkok starting in January 2022 (Urban Creature 2022).

4.3. COVID-19 impacts on the labour market in Thailand

COVID-19 impacts threaten to reverse Thailand's development gains in terms of labour market development and poverty and inequality reduction. These impacts further threaten to erode Thailand's fiscal stability and slow its transition to providing high-value goods and services (ADB 2021a). About 4.7 million workers are at risk of being affected by the pandemic, of which 1.2 million workers might become unemployed or underemployed (Sriring and Kuhakan 2020).

According to the summary of the NESDC's Social Outlook 2021, the total number of employed people in the third quarter of 2021 was 37.7 million people (Thailand, NESDC 2021b). Employment in manufacturing, wholesale and retail, and transportation increased by 2.1 per cent, 0.2 per cent, and 4.6 per cent, respectively (Thanthong-Knight 2021a). The total number of unemployed was 870,000 (or 2.3 per cent), which was the highest rate since the COVID-19 outbreak first occurred, but this is ultimately still a rather low rate overall. That said, things are more difficult for youth workers, with workers aged 15–19 have the highest unemployment rate, at 9.7 per cent, followed by workers ages 20–24 at 8.4 per cent. It is also expected that the rate of unemployed people who have been unemployed for more than one year will increase to 30.7 per cent during the post-COVID-19 period (Thailand, NESDC 2021e).

Despite low unemployment overall, several weaknesses are apparent in Thailand's labour market. These include: declining labour force participation; large gaps between male and female labour force participation; weak job growth, particularly of wage jobs; and the prevalence of low-quality, informal jobs (World Bank 2021b). An October 2021 Thailand labour market update brief by the ILO highlighted that hours worked had fallen by 7 per cent, and at 9 per cent the joblessness of young men and women had reached a level unseen in recent years (ILO 2021a). Non-farm employment had fallen by 1.3 per cent, with the construction sector losing the most jobs, followed by the hotel and restaurant sectors, which fell by 7.3 per cent and 9.3 per cent, respectively. Efforts are being made to combat skill loss as a result of prolonged unemployment and to upgrade the skills of workers (Thanthong-Knight 2021a). However, many people have returned to low-productivity agricultural employment as a safety net (World Bank 2021a). In 2021, the number of employed people in the agriculture sector increased from 11.48 million to 11.75 million compared to the same period in 2020 (Thailand, NSO 2021).

Nevertheless, Thailand aims to take this opportunity to build back better by creating an ecosystem and economy that promotes climate-resilient and sustainable development, including through the implementation of NDCs (Thailand, MONRE, ONEP 2020). Therefore, Thailand is recommended to restart its economy and create local employment, while ensuring underlying growth drivers remain resilient to future shocks in order to achieve significant progress towards green growth in the context of post-COVID-19 recovery (OECD 2021).



5. Discussion, conclusion and recommendations

5.1. Discussion

Many Thai Government agencies have developed strategies, plans and measures in relation to the green economy through the NESDP, the BCG Model, and the Climate Change Master Plan (2015–2050). However, the practical measures for implementing these strategies and plans are still unclear, as are the specific mechanisms for coordination and achieving policy coherence (ILO and ASEAN 2021). In addition, the procedures for transition at the local level have not yet been identified.¹² Thailand has comprehensive policies, but still lacks an integrated policy that includes all dimensions. Social conditions and cultural differences in each area are the major challenge in the implementation of green jobs. All sectors would need to know the benefits of operating green jobs. These are, therefore, important factors in implementing the policy.¹³

In Thailand, only two research studies related to green jobs have been conducted by the MOL, together with Chulalongkorn University, accounting for 0.06 per cent of the Ministry's studies, which is considered a very low number compared to other topics (Thailand, MOL, National Labour Research Center, n.d.). Likewise, there is no specific database for or definitions of green skills and green jobs. It is therefore difficult to see the overall number of green jobs in relation to Thailand's transition towards a green economy. It was mentioned in the NDC

¹² Interview with the Thai Government representative from the Foreign Affairs Division, Ministry of Interior, 30 March 2022.

¹³ Information from the Tripartite Consultation on Validation of Green Jobs Policy Readiness Assessment in Thailand, 21 November 2022.

that the Long-Term Low GHG Emissions Development Strategy (LT-LEDS) is under development, but details on the timeline and content have not been provided. This NDC has made generic mentions of national policies for social and economic development. However, the specific mention of Just Transition policies is not made (WWF 2020). Moreover, the implementation and operation of policy in the country is usually a slow process or delayed due to the fact that the existing laws and regulations are outdated and the coordination process is inefficient (Thailand, NESDC 2021b). Thus, it is suggested that awareness on the effective enforcement of environmental regulation and poor coordination between different actors in Thailand should be reformed (ILO 2019b).

Interviews with Thai Government representatives confirmed that the country lacks relevant vocationally skilled workers, which has resulted in shortages in the labour market. In terms of green skills, data collection and analysis should be reported to forecast the demand for green skills and enhance planning on tackling green skills shortages. The concept of green jobs is new knowledge for most people in the country; so it is crucial to provide trainings on how to integrate green jobs into policy implementation.¹⁴ Knowledge Intensive Business Service (KIBS) is a mechanism that can play a significant role in developing innovative capacity and building a knowledge-based economy at various levels (Bohatkiewicz et al. 2017). Therefore, the policymakers may consider the role of KIBS in transferring knowledge in innovation systems into the green economy (den Hertog 2001). Moreover, collaborations among key policymakers and the interests of small-scale businesses, farmers and workers as well as knowledge producers need to be supported to ensure provision of green jobs, Just Transition and green skills trainings. In addition to green jobs creation, the ILO has suggested that an active climate policy will offer potential employment and social gains. Increasing productivity and sustainability is critical for sectors such as agriculture, construction and waste management, which could serve as examples to lift small-scale farmers out of poverty. A greener economy could also lead to greater gender equality. Women would be the main beneficiaries from improvements in small-scale agriculture and in recycling (ILO 2012).

With regard to the COVID-19 situation, Thailand could require a renewed focus on employment retention policies – like wage subsidies – and green job creation policies – such as public works – that could help make up for reduced working hours. As Thailand recovers from the COVID-19 outbreak, up-skilling and re-skilling programmes can be combined with financial support to help displaced workers get back to work. Green training programmes can target workers from sectors severely impacted by the outbreak and provide training in strategic sectors (World Bank 2021a). The labour skill development process should be accelerated amidst rapid and large technological changes to support the country's recovery. It is important to reassess the education system and demand and supply within the rapidly changing Thai labour market (Chulalongkorn University 2020).

5.2. Conclusion

Thailand's green jobs and Just Transition policy readiness status is still uneven across the country, as it currently does not possess a standardized definition of green jobs and a Just Transition and the institutional mechanisms for policy coherence is still unclear. Green jobs and a Just Transition are not well known; so, dissemination of information about green jobs and a Just Transition should be the first priority. Awareness and knowledge on green jobs and a Just Transition budget allocation should be provided and supported by the Government.¹⁵ The appropriate and common principles should be developed to facilitate green economy operation for all sectors.¹⁶ Therefore, several steps still need to be taken to make preparations to adopt a Just Transition to a green economy. The system of policy coherence of various government ministries and authorities to develop and coordinate policies related to green jobs should be more concrete to ensure that institutions and policies are moving in the same direction at all levels. Thus, data collection for the assessment of capacities in key areas such as green jobs and green skills should be processed to determine existing gaps in knowledge as well as to

¹⁴ Information from the Tripartite Consultation on Validation of Green Jobs Policy Readiness Assessment in Thailand, 21 November 2022.

¹⁵ Information from the Tripartite Consultation on Validation of Green Jobs Policy Readiness Assessment in Thailand, 21 November 2022.

¹⁶ Information from the Tripartite Consultation on Validation of Green Jobs Policy Readiness Assessment in Thailand, 21 November 2022.

strengthen institutional capacity in order to contribute to Sustainable Development Goals in Thailand.

5.3. Recommendations

1. Develop the quality of information guidance on green jobs, green skills and a Just Transition. The criteria/standards for green jobs should be assessed/analysed and used to enhance policies that can be applied at all levels to ensure sufficient investments in the quality of future workers so that they become more productive in green jobs. Clear definitions of a Just Transition, green skills and green jobs are needed (with care taken to ensure that decent work dimensions are included in the definition of “green jobs”). In addition, processes are needed for starting to collect and analyse data on green jobs in order to promote green job activities in different sectors.¹⁷
2. Review and update policies, regulations and laws in accordance with the current situation to meet the needs of a Just Transition. Stricter enforcement of environmental laws and incentive policies may be implemented to ensure that environmental responsibilities are imposed on and observed by business operators whose products, goods, and services impact the environment.
3. The understanding of policy implementation on green jobs and a Just Transition in each department should be boosted, and incentives for collaboration between the public and private sectors as well as civil society should be provided.¹⁸
4. Provide instruments and guidance for enhancing policy coherence and strengthening coordination mechanisms in support of SDG implementation, and modify monitoring and reporting systems in priority areas such as green jobs, green skills, and a Just Transition to a green economy.
5. Develop green jobs, green skills and Just Transition road maps with clear action plans as well as guidance on activities for local level transition.
6. Prioritize financial and technological support for climate change actions, including mitigation and adaptation, to ensure that a transition to a low-carbon economy can be planned in the long term. Good practices in regard to the environment and climate should be integrated into the country’s main policies at all levels, especially for the agricultural sector, forest management and precision farming. Sustainable farming that strengthens ecological immunity and approaches to reducing GHG emissions should be applied in practice to help ensure the stability of livelihoods (Thailand, MONRE, ONEP 2020).
7. The private and industrial sectors should establish response plans and seek additional opportunities to drive towards green economy goals. The key to responding to these challenges is the readiness of individuals and organizations in terms of collaboration and corporate culture, and most importantly, the implementation of suitable technology and automation within organizations to adapt to the transition and create green jobs (RYT9 2022).
8. SMEs should provide new skills training for workers with support from the Government, industry (including on-the-job training through apprenticeships) and KIBS providers to increase the employability of workers in all transition processes.
9. The Ministry of Education and the Ministry of Higher Education, Science, Research and Innovation should incorporate the concepts of a green education system and a green technical and vocational education and training (TVET) system into national education strategies (UNESCO and UNICEF 2021).

¹⁷ Recommended during the Tripartite Consultation on Validation of Green Jobs Policy Readiness Assessment in Thailand, 21 November 2022.

¹⁸ Recommended during the Tripartite Consultation on Validation of Green Jobs Policy Readiness Assessment in Thailand, 21 November 2022.

10. The foundation for workers to participate in the transition to a green economy should be created and supported by the Government (Thailand, MOL 2021).

11. A working group to promote green economy policy implementation should be created.¹⁹

12. Significant support from the Government – such as capacity-building for green jobs and green skills training programmes, investment in up-skilling and re-skilling for unemployed workers and SMEs, and hiring subsidies to increase labour demand – are needed as part of the country's recovery from the COVID-19 pandemic.

13. The ILO should support capacity-building on green jobs and a Just Transition, especially on curriculum development and training of trainers, and provide tools to assess the country's green jobs in all sectors at the national level.²⁰

¹⁹ Recommended by the Tripartite Consultation on Validation of Green Jobs Policy Readiness Assessment in Thailand, 21 November 2022.

²⁰ Required by MOL and other participants during the Tripartite Consultation on Validation of Green Jobs Policy Readiness Assessment in Thailand, 21 November 2022.

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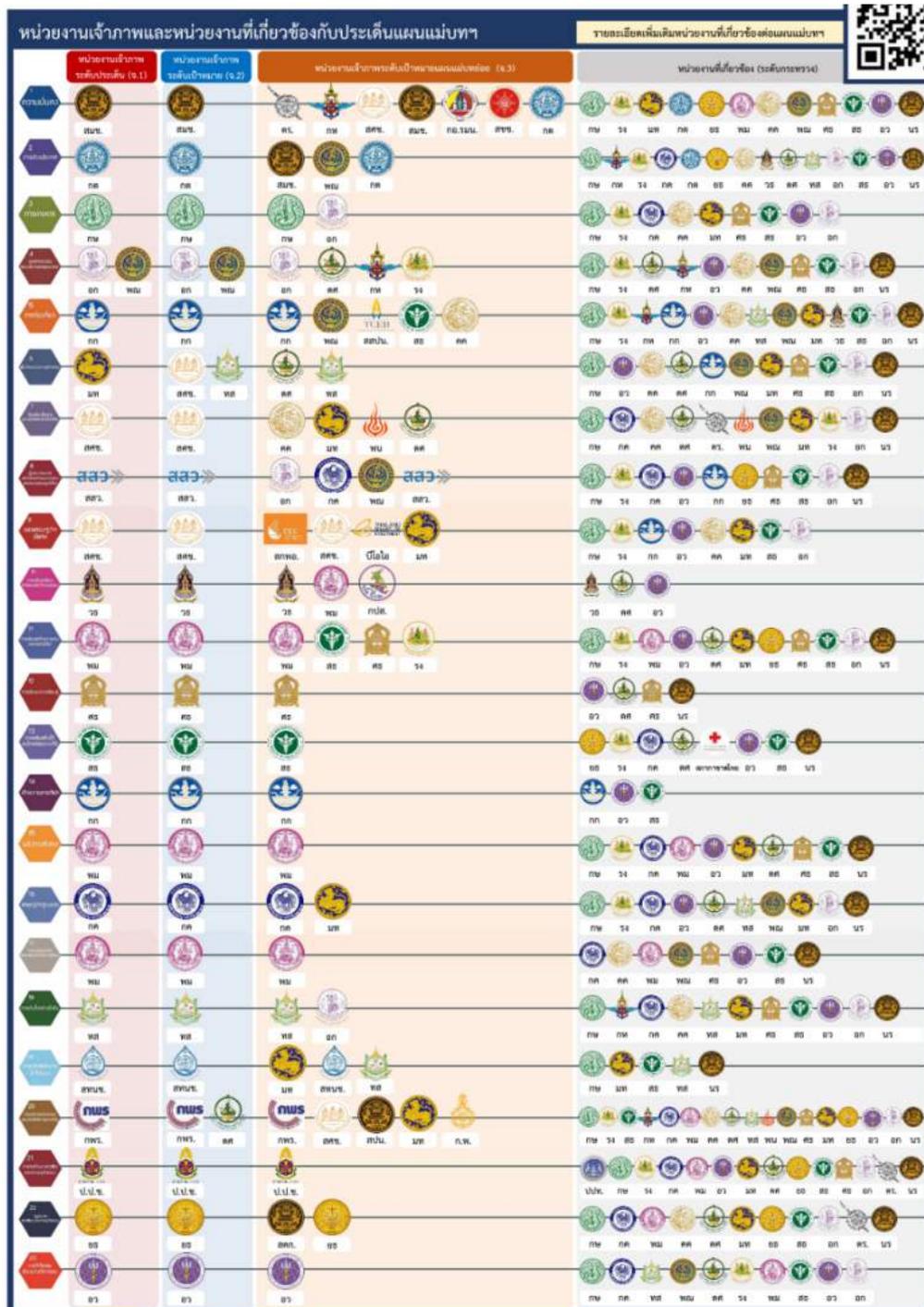
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Annex 1. Multilateral environmental agreements (MEAs) ratified by Thailand

Multilateral environmental agreements (MEAs)	Year of ratification / accession
ASEAN Agreement on the Conservation of Nature and Natural Resources	1997
ASEAN Agreement on Trans boundary Haze Pollution	2003
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	1997
Cartagena Protocol for Bio-safety	2005
Convention on Biological Diversity	2003
Convention on International Trade of Endangered Species of Wild Fauna and Flora	1983
Kyoto Protocol to UNFCCC	2002
Montreal Protocol on Substances that Depletes Ozone Layer	1989
Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the CBD	2012
Paris Agreement under UNFCCC	2016
Ramsar Convention on Wetlands	1998
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	2002
Stockholm Convention on Persistent Organic Pollutants	2005
UN Convention on the Law of the Sea	2011
UN Convention to Combat Desertification	2001
United Nations Framework Convention on Climate Change (UNFCCC)	1994
Vienna Convention for the Protection of the Ozone Layer	1989

Source: OECD 2021.

Annex 2. Government agencies involved in the 23 master plans of the National Strategy



Source: Thailand, NESDC 2021b.

Annex 3. Thailand succeeded in meeting the NAMA goal

ผลการลดก๊าซเรือนกระจกของประเทศไทย ภายใต้ NAMA



Source: Thailand, MONRE, ONEP, n.d.

Annex 4. Eligible social project categories aligned with SGD 8

Eligible Social Categories	Alignment with ICMA SBP	Eligible Project Description
Employment generation	Employment generation, including through the potential effect of SME financing and microfinance.	Micro-, small- and medium-sized enterprise (MSME) loans that support employment generation in small businesses. Target populations: <ul style="list-style-type: none"> • Women or women-led SMEs. • Rural SMEs. • Disabled-led SMEs.
Employment generation (COVID-19 financing)	Employment generation, including through the potential effect of SME financing and microfinance.	SME loans that support employment generation in small businesses and income support & unemployment benefits. Target populations: SMEs and populations that apply for funding, including employees or freelancers affected as a result of spread of infectious diseases such as COVID-19, as well as farmers registered with Ministry of Agriculture and Cooperatives.

Source: MOF 2020.

Annex 5. MOAC and MONRE air pollution resolution projects/ programmes under the National Strategy

Programmes/projects	Budget (million baht)
MOAC	
1. Project to support soil incorporation and organic fertilizer to reduce GHG emissions (Land Development Department)	34.7000
2. Zero Burn Project in agriculture sector (Department of Agricultural Extension)	11.8180
MONRE	
1. Solutions to forest fires and smog (Office of the Permanent Secretary Natural Resources and Environment)	8.5000
2. Solutions to and prevention of air and noise pollution (Pollution Control Department)	20.9920
3. Vehicle inspection and law enforcement (Pollution Control Department)	1.2268
4. Project to support participation for smog reduction and prevention of open air burning and forest fires (Department of Environmental Quality Promotion)	10.6578
5. Project to support awareness-raising and capacity-building on climate change (Department of Environmental Quality Promotion)	5.9360
6. Awareness-raising and public participation on GHG reduction in the forestry sector (2nd phase) project (Department of National Parks, Wildlife and Plant Conservation)	16.5569
7. GHG emissions reduction project (TGO)	28.9375

Source: OECD 2021.

Annex 6. Green skills training programmes

No.	Ministry/department/organization	Training topics	Year
1	Department of Environmental Quality Promotion	1. Climate change 2. Environmental technology 3. Green office management 4. Basic knowledge on environmental impacts assessment 5. Zero waste 6. Air pollution management 7. Environmental law and air pollution management	2021
		1. Solid waste management by community 2. Environmental change leadership for local authority	2022
2	Ministry of Agriculture and Cooperatives - Office of the Permanent Secretary for Ministry of Agriculture and Cooperatives - Provincial Agriculture and Cooperatives Office - Department of Agriculture Extension - Land Development Department - Department of Livestock Development - Department of Fisheries	1. One Tambon One New Theory Agriculture Group	2021
3	Cooperative promotion department	1. Green Agriculture Practice for Cooperatives and Farmer Organization	2020
4	Department of Skills Development	(Green jobs and green economy) 1. Usage and Maintenance NGV Fuel Automobile 2. The Clean Air in Homes and Small Commercial 3. Maintenance of Air. Conditioning in Homes and Small Commercial 4. Solar Equipment Maintenance 5. Green Tiling with Cement Adhesive and Sealant 6. Electrical Energy Conservation for Industrial 7. Installation and Inspection of NGV Fuel for Car 8. Installation of NGV Fuel Systems for Automobile 9. Installation R32 Refrigerant Split-Type Air Condition 10. Safe Use of Flammable Natural Refrigerants 11. Growing Hydroponic Vegetables that are Non-toxic 12. Design and Installation Internet of Things Control System for Planting 13. Application of Internet of Thing for Agriculture 14. Design and Use of Solar Incubators for Processing of Agricultural Product 15. Application of Solar Cell System for Agriculture 16. Embedded Control Design for Agriculture 17. Installer of Smart Solar Energy Farm Systems 18. Farm Management and Improvement 19. Unmanned Aerial Vehicle (Drone) for Agriculture 20. Installation and Maintenance Solar Cell System Techniques 21. Green Skills for Construction	2021
5	Ministry of Industry	1. Green Industry	2020
6	Chulalongkorn University	1. The potential development of entrepreneurs to BCG Model in 2021	2021
7	King Mongkut's University of Technology Thonburi	1. The BCG Model for sustainable management in food, agriculture, and the environment.	2021
8	National Science and Technology Development Agency	1. BCG Economic Model to Sustainable Development	2020

Source: Compiled by the author, 2022. Also, available at:
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PAGE PARTNERSHIP FOR ACTION ON GREEN ECONOMY

This report investigates Thailand's transition to a green economy and its potential impact on employment, including both job creation and job loss. Green jobs and a Just Transition to a sustainable economy are crucial concepts when developing green economic policies. Thailand is transitioning towards a greener economy, but without sufficient skills needed for greening initiatives, this may prove challenging. In order to more effectively address issues surrounding green jobs and a Just Transition, policy coordination; the integration of ecological, social and economic concerns into decision-making; as well as institutional reform are all important.

This study's objectives are to provide technical inputs to the ILO/PAGE green jobs assessment within Thailand's COVID-19 recovery investments and policies; provide a snapshot of green jobs and Just Transition policy frameworks and activities in Thailand; and assess the country's institutional capacity and readiness for a Just Transition at the national and regional levels. The study involves desk research and consultation sessions with government, employers, workers and civil society actors to identify green jobs strategy and planning capacities, with a specific focus on the energy and agriculture sectors.

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