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REPORT

Accelerating Skills for a Green Future:

A Case Study of the Philippines

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Disclaimer

The views and interpretations expressed in this paper are solely those of the authors and do not necessarily reflect the views of Education Development Center or its partners.

Photos courtesy of: USAID Philippines Opportunity 2.0 and Getty Images

Contents

Acronyms and Abbreviations

ADB	Asian Development Bank
AI	artificial intelligence
ALS	Alternative Learning System
ASEAN	Association of Southeast Asian Nations
BERDE	Building for Ecologically Responsive Design Excellence
CCC	Climate Change Commission
CHED	Commission on Higher Education
DENR	Department of Environment and Natural Resources
DEPDev	Department of Economy, Planning, and Development
DepEd	Department of Education
DOLE	Department of Labor and Employment
DOST	Department of Science and Technology
DSWD	Department of Social Welfare and Development
DTI	Department of Trade and Industry
EDC	Education Development Center
EU	European Union
EVs	electric vehicles
FELP	Functional Education and Literacy Program
GCF	Green Climate Fund
GDP	gross domestic product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Corporation for International Cooperation)
HVAC	heating, ventilation, and air conditioning
ILO	International Labour Organization
ILS	Institute for Labor Studies, Department of Labor and Employment
IMF	International Monetary Fund
IT	information technology
JLL	Jones Lang LaSalle
LEED	Leadership in Energy and Environmental Design

LGU	local government unit
MSME	micro, small, and medium enterprise
NAP	National Adaptation Plan
NC	National Certificate
NDC	nationally determined contribution
NDCP	Nationally Determined Contributions Partnership
NGJHRDP	National Green Jobs Human Resource Development Plan
NGO	nongovernmental organization
NTESDP	National Technical Education and Skills Development Plan
NSWMC	National Solid Waste Management Commission
OECD	Organisation for Economic Co-operation and Development
OSY	out-of-school youth
PCCI	Philippine Chamber of Commerce and Industry
PHILGBC	Philippine Green Building Council
PIDS	Philippine Institute for Development Studies
PRC	Professional Regulation Commission
PSA	Philippine Statistics Authority
SHS	senior high school
TESDA	Technical Education and Skills Development Authority
TVET	technical and vocational education and training
TVI	technical-vocational institution
TVL	Technical-Vocational-Livelihood
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
WWF	World Wide Fund for Nature
YDA	Youth Development Alliance
YEP	Youth Entrepreneurship Program

1. Executive Summary

As countries work to achieve their nationally determined contributions (NDCs) to address the rapidly advancing climate crisis, there is little discussion regarding how an unqualified workforce could delay the implementation of climate-related projects and investments in low-carbon technologies and processes. A delay in climate and energy projects due to skills shortages could lead to additional global warming while also increasing the costs of project implementation as demand for workers with technical and green skills outstrips supply.

The **Jobs and Skills for the New Economy Initiative** seeks to address this challenge by accelerating investments in the workforce for the green economy by elevating green skills in global climate discussions and national climate and education policies, while identifying financing to support national governments to swiftly advance green skilling efforts across sectors and levels of education.

The urgency of the transition to a low-carbon economy has spurred initial investments to build new industries and to adopt new technologies and more sustainable practices. In the Philippines, the highest growth and job creation is expected in six key sectors, according to the country's National Green Jobs Human Resource Development Plan (2020-2030): **(1) construction, (2) manufacturing (food and advanced manufacturing),[1] (3) transport, (4) renewable energy, (5) sustainable agriculture, and (6) ecotourism.**

The Philippine government has been a global leader in supporting and fostering this transition through national plans, laws, and policies on climate mitigation, adaptation, green skills, and green jobs. Examples include its ambitious NDC to reduce greenhouse gas emissions and its National Adaptation Plan (NAP). Additionally, the country's Green Jobs Act of 2016 (Rep. Act No.10771) is the law that mandated creation of the National Green Jobs Human Resource Development Plan (NGJHRDP). The NGJHRDP is a green skills development road map for implementing the law, co-created by the Department of Labor and Employment (DOLE), the Technical Education and Skills Development Authority (TESDA), and the Professional Regulation Commission (PRC). It identifies needed skills, training programs, and remaining gaps and sets out five goals and numerous actions to achieve them. This case study is aligned and informed by the key elements and provisions of the NGJHRDP as well as the Philippines' many other policy frameworks supporting climate mitigation and adaptation.

While the Philippines is a pioneer globally for its swift creation of bold policies and frameworks to support a just transition to a low-carbon economy and climate adaptation, implementation has been challenging in some areas, particularly at the subnational level. This level is particularly important in the Philippines due to its devolved governance structure in which cities and municipalities led by local government units (LGUs) play an outsized role in implementing national policies; designing education and training programs; incentivizing business creation and investment; and providing social support, including scholarships. While training and educational institutions at the secondary, technical, and university levels have begun to adapt curricula and facilities to meet demand in emerging and transitioning sectors,

[1] The Philippine government has chosen a focus on food manufacturing and advanced manufacturing as the most strategic forms of manufacturing in terms pf employment per the most recent Trabaho Para sa Bayan Plan (2025–34) (Department of Economy, Planning, and Development, 2025).

opportunities remain to close skills gaps and accelerate the transition by meeting employer demand.

Skills demanded in the Philippines' six priority sectors include a variety of technical, professional, and cross-cutting skills needed to support transition to a low-carbon economy. Examples of these skills are listed below.

Technical skills gaps:

- Industry-specific skills for new technologies: Renewable energy, electric vehicles (EVs), modern railways, green building, smart agriculture, and sustainable logistics
- Digital skills: Data analytics, data security, artificial intelligence (AI), cloud computing, digital supply chain management, robotic engineering, digital communication, and marketing
- Technology integration: Construction, energy, agriculture, and manufacturing

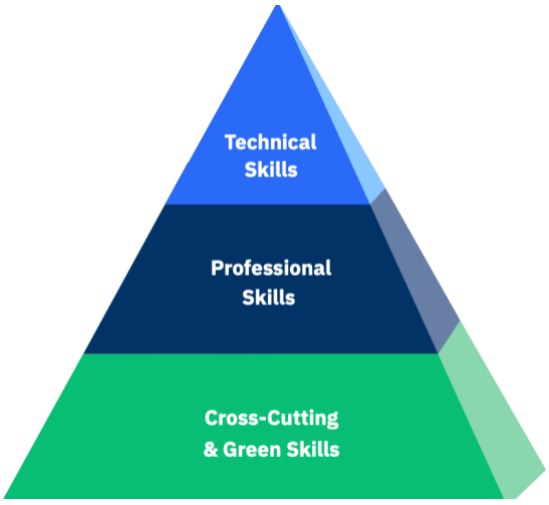
Professional skills gaps in project management or implementation:

- Project management for large and/or complex projects
- Green standards and certification systems for specific industries
- Regulatory compliance in waste management, energy, and building
- Sustainable business practices in traditional sectors
- Deep knowledge of climate change adaptation, mitigation, and circular economy

Cross-cutting and green skills gaps:

- Communication, problem-solving, resilience, teamwork, and adaptability
- Environmental awareness, entrepreneurial skills, and an understanding of sustainability

As shown in our analysis below, and various estimates by Philippines agencies and industry analysts, some 4 to 8 million green jobs could be created by 2030 in fast growing, low-carbon, and transitioning sectors if skills needs are met. As the Philippines transitions away from fossil fuels, some jobs will be lost even as others are created. A degree of internal migration may occur as workers move to access new jobs. As the transition is still in the early phases, data and projections are not available regarding the scale of potential job losses.



Clearly, the transition will increase demand for the reskilling and upskilling of existing workers, as well as for social safety nets to address social risks of the transition and support workers not able to transition to other jobs.

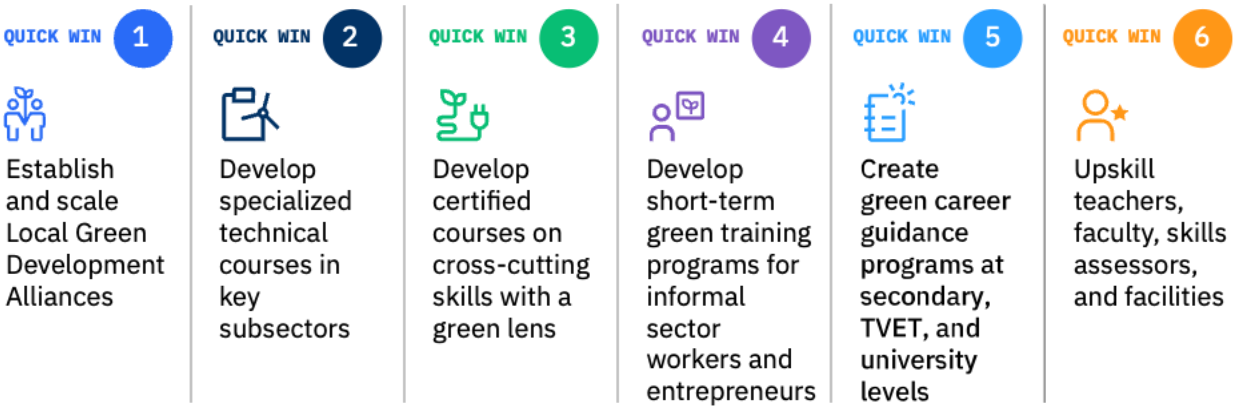
The disconnect that exists between the current workforce's capabilities and the emerging labor force and skill requirements of these green and transitioning sectors threatens to slow the Philippines' momentum. **To address this skills gap, further investment in technical green skills, professional skills training, and cross-cutting green skills is essential, particularly for workers in transitioning industries, marginalized groups, youth, and workers in the informal sector.** Informal sector workers alone make up over one-third of all workers, yet are not typically reached by formal training programs and institutions. Much greater attention must be paid to how skilling efforts can advance a just transition by prioritizing marginalized groups (e.g., women, out-of-school youth, persons with disabilities, informally employed and displaced workers) and providing flexible pathways and equitable access to skilling opportunities. Training should be offered in multiple formats, including a blended online and in-person version as well as in-person options at times suitable for those who are currently employed or engaged in household responsibilities. Current workers may not be able to access skilling opportunities if programs are only offered at times that conflict with their ability to generate income or with other responsibilities.

Given the Philippines position as a pioneer in climate and green jobs policies, this case study does not propose new policies or frameworks to address demand for green skills in rapidly growing and transitioning sectors. Rather, it seeks to build upon the momentum and political will already in place by proposing several "quick wins" that can be implemented to accelerate progress in green skills development. These are large-scale systems-level solutions in six key areas that can be achieved over the next three to five years, some at the subnational level, to significantly impact green skills development while building momentum for further systems change.

Efforts by the Green Climate Fund and others to build country platforms to coordinate climate financing and project implementation across sectors will be an important mechanism to coordinate climate policy and facilitate and direct climate financing to investment ready projects. While the proposed six quick wins could be coordinated through such a platform once created, country platforms and other medium- to long-term solutions are outside the scope of this study.

The following **six quick wins** are described in further detail in the body of this report. An increase in financing and, in some cases, access to technology will be crucial in implementing these interventions while helping to build momentum and support for the transition.

Figure 1: Six Quick Wins



1 **Establish and scale Local Green Development Alliances:**
Establishing multi-sectoral Local Green Development Alliances across municipalities or cities to connect diverse stakeholders (e.g., TESDA, Department of Education [DepEd], DOLE, Department of Trade and Industry [DTI], local businesses, and youth leaders) would improve the coordination of efforts around green skilling. These alliances could conduct labor market assessments, align training programs and scholarships with local green job needs, and promote green entrepreneurship, thereby fostering inclusive green economic growth. These efforts would also offer a platform for knowledge sharing and best practice exchanges, ensuring tailored solutions for local green skill gaps. Local-level alliances could be coordinated through the country platform, or another national body, once created.

2 **Develop specialized technical courses in key subsectors:**
Address technical skill gaps in the six critical sectors identified in the NGJHRDP by expanding specialized courses and curricula at various educational levels to prepare and upskill youth and adults for green jobs. This quick win includes the development of technical and vocational education and training (TVET) programs specifically targeting emerging sectors, such as renewable energy and ecotourism. Offering more practical hands-on learning opportunities would prepare workers for high-demand green jobs and increase employability, particularly for vulnerable youth.

3 **Develop certified courses on cross-cutting skills with a green lens:**
Develop and offer stand-alone TESDA and university-certified courses focused on cross-cutting skills (e.g., communication, creativity, problem-solving) through a green lens. These courses would help youth and adults develop adaptable, lifelong learning skills, emphasizing sustainability and climate action. Such training would be cost-effective and could quickly expand the workforce's ability to participate in many types of jobs across both green and traditional sectors, while aligning with national goals to foster a green skilled labor force.

4 **Develop short-term green training programs for informal sector workers and entrepreneurs:**
Develop short-term green training and reskilling programs for informal sector workers and entrepreneurs starting or leading micro, small, and medium enterprises (MSMEs), comprising both business management skills and sustainable practices. The informal sector in the Philippines employs roughly one-third of the workforce and contributes significantly to the gross domestic product (GDP), yet it remains underserved in green and business development training. These courses would also serve to raise awareness of environmental issues and include cross-cutting and work-readiness skills.

5 **Create green career guidance programs at secondary, TVET, and university levels:**
Integrate climate leadership, work-based learning, and green entrepreneurship programs into career guidance at junior and senior high schools, technical and vocational education and training (TVET) institutions, and universities. This would increase youth engagement in green careers by strengthening environmental education and providing practical work experiences with green companies. Emphasizing green entrepreneurship will also empower young people to lead sustainable businesses, creating a more environmentally conscious workforce.

6 **Upskill teachers, faculty, skills assessors, and facilities:**
Rapidly upskill educators, trainers, and assessors to ensure that they are equipped with the necessary skills to teach and assess green and greening sectors effectively. This quick win includes developing specialized training for faculty and upgrading educational facilities to support the latest green technologies. By strengthening the capacity of the education system, this initiative will ensure that future generations are adequately prepared to meet the challenges of the green economy.

Finally, expanding **finance for green skills** will be essential for achieving these quick wins and other investments in new skills and technology. A combination of public funding, private sector investment, and international climate finance will be needed to scale green skills training and ensure equitable access, particularly for low-income and marginalized populations. Innovative

financing mechanisms, such as green bonds, may also be explored to support this transition. Particular interest may be paid to the opportunity to integrate green skilling into existing projects and programs for funding envelopes for which the Philippines has already qualified through multilateral climate funds, such as the Global Environment Facility and the Green Climate Fund.

By addressing these critical areas, the Philippines can accelerate its shift to a low-carbon economy, creating green jobs, fostering sustainable businesses, and ensuring that all workers have the skills needed to succeed in the evolving labor market. The Philippines' significant progress to date in creating the groundwork for such transformative investments makes it an ideal country champion for the Jobs and Skills for the New Economy Initiative.

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2. Introduction, Objectives, and Methodology

As countries work to achieve their nationally determined contributions (NDCs) and implement National Adaptation Plans (NAPs) to address the rapidly advancing climate crisis, there is little discussion regarding how an unqualified workforce could delay implementation of climate-related projects and investments in low-carbon technologies and processes.

Research suggests that the workforces of most countries lack sufficient green skills for a rapid low-carbon transition across all sectors, including agriculture, energy, transportation, manufacturing, construction, and services.

This green skills gap could not only slow the transition to net zero economies but also make it more costly as the demand for skilled labor outstrips supply—with grave consequences for arresting and adapting to climate change. The importance of addressing green skills and

training gaps at all skill levels has largely been absent from international discussions on climate finance, adaptation, and mitigation. Raising green skills needs on the global climate agenda is an important step toward generating greater policymaker attention and funding to address urgent reskilling, upskilling, and education needs to power a rapid, just transition across key emerging and existing sectors.

Meeting green skills demand presents an opportunity. Green skills have the potential to catalyze a just transition toward a green economy,[2] reduce social costs of the transition, mitigate emissions, and support climate resilience and adaptation. Despite these potential win-win scenarios, education and skills policies and programs are underrepresented (and sometimes absent) in climate agreements, climate policy, and climate finance. Fewer than 40% of NDCs have implementation plans for skills development, and 20% do not have any human capital-related activities at all (International Labour Organization [ILO], 2019). NAPs have also tended to underemphasize skilling and education.

Green Skills

According to the Philippines' government's National Green Jobs Human Resource Development Plan (NGJHRDP), green skills include four types of technical skills as well as overarching soft skills.

Green technical skills include engineering, science, operations management, and monitoring skills.

Soft green skills comprise environmental awareness, adaptability, teamwork, resilience, communication, and entrepreneurial skills.

(Son & Gamboa, 2024)

To address this challenge, an emerging group of organizations[3] is developing a first-of-its-kind initiative (referred to in this case study as the "Jobs and Skills for the New Economy Initiative") to accelerate jobs and skills for a green and just economy. The initiative aims to complement existing initiatives by driving change from within the climate community and to adopt a demand-led and system-change approach to skills development across the entire workforce as a critical strategy to ensure a just green transition.

This effort will (1) help secure jobs and skills on the global climate agenda, (2) catalyze and support job creation and skills development efforts for the transition in champion countries, and (3) accelerate industry and private investment. In doing so, it will fill a critical gap by bringing together the human development and climate agendas for a just transition.

Education Development Center (EDC), as a member of the Jobs and Skills for the New Economy Initiative, is a global leader in skills and workforce development, having operated in

[2] A just transition toward a green economy considers the effects of the transition on employment so that the transition is designed to create quality jobs.

[3] Organizations include GIZ, EDC, the Nationally Determined Contribution Partnership (NDC-P), Systemiq, and the World Resources Institute (WRI).

over 80 countries worldwide since its founding in 1958. Currently, one of EDC's flagship initiatives, *Our World, Our Work*, is working to provide 1 million young people with the skills and competencies needed for them to access green and blue jobs and entrepreneurship over the next decade. This case study is rooted in and draws on EDC's nearly 20 years of experience in the Philippines working with national and local system actors on youth workforce development.[4]

This case study of the Philippines contributes to the Jobs and Skills for the New Economy Initiative's evidence base on green skills development, focusing on progress and opportunities for greater green skills development in the country, and it forms part of the initiative's flagship report. The case study is also a stand-alone reference of the Philippines' experience, providing a model for other countries pursuing similar paths and identifying promising areas and quick wins where increased financing and technical assistance could speed skills development to support the Philippines' just transition to low-carbon, sustainable development, and growth. It includes an analysis on engaging youth and supporting their skills needs in both formal and informal sectors. Throughout this report, we refer to the three types of skills as "green skills." They include (1) cross-cutting skills (also called 21st century skills, soft skills, and core skills); (2) professional and management-oriented skills; and (3) technical and industry-specific skills.

Objectives

Key objectives of the case study are:

- To provide examples of progressive policies, frameworks, and initiatives that advance green skills development and green jobs in the Philippines, providing insights for other countries and actors
- To identify quick wins that can catalyze progress in green skills development to accelerate the transition to a green economy
- To offer insights on how to engage and support youth and other vulnerable populations in skills development across sectors, including in the informal economy
- To contribute to raising the profile of green skills development as an essential component of actions to address the climate crisis

[4] EDC implemented a series of initiatives with the Government of the Philippines that collectively expanded educational and skills training opportunities for hundreds of thousands of out-of-school youth in the Philippines. Education Quality and Access for Learning and Livelihood Skills Phase 2 (EQuALLS2) reached nearly 44,000 out-of-school youth in conflict-affected Muslim Mindanao with alternative learning programs, and its follow-on MYDev program enhanced local governance and skill development for youth, reducing their likelihood of joining terrorist organizations. Most recently, the Opportunity 2.0 (O2) project—co-designed by TESDA, DepEd, U.S. Agency for International Development (USAID), and EDC—leveraged these successes nationwide to provide second-chance education and workforce readiness training to more than 1 million out-of-school Filipino youth by strengthening government systems.

Methodology and Scope

To achieve these objectives, we adopted a comprehensive methodology, including extensive desk research covering existing policy documents, bulletins, labor market information, news reports, and research papers available online to gather relevant data and insights. Additionally, stakeholder interviews were conducted with key individuals from government agencies, the private sector, and international development partners (see Annex A for a list of interviewees). These interviews provided valuable perspectives and firsthand accounts of the challenges and successes in promoting green skills and jobs in the Philippines. Finally, the case study was reviewed by policymakers and technical experts in the Philippines and globally to ensure accuracy and to gain additional insights.

The study takes as its starting point the demand for skills in the fastest growing economic sectors, where the scale of green jobs demanded is highest. It then investigates the skills required for these jobs and the Philippines' progress in developing climate and skills policies, laws, and training programs; facilities; and curricula to meet this demand. It also details the policies that the Philippines has put in place to support green job growth. In addition to taking a demand-driven approach to examining green skills development, we bring a focus on the needs of youth and other vulnerable populations as well as the informal sector, as these populations are often left out of skills and training discussions. Finally, we adopt a strategic focus on quick wins with the potential for systems-level impact. These quick wins capitalize on the significant progress on climate policy and green skills training that the Philippines has already achieved while generating momentum for further gains at the local level. They can also help strengthen citizens' political support for the transition. The remaining recommendations would be designed and implemented at the national level and embedded within the offerings of government agencies.

Organization of Case Study

The case study is divided into seven sections:

Section 1 presents the executive summary.

Section 2 provides the introduction and outlines the objectives and methodology of the study.

Section 3 describes the demand for green jobs and skills across the key growth sectors identified by the Philippines government

Section 4 details the Philippines' significant progress to date in developing climate policies and frameworks, as well as green skills curricula and training.

Section 5 focuses on engaging and including youth in green jobs and skills programs.

Section 6 identifies areas of opportunity and several quick wins for accelerating green skills development.

Section 7 concludes with lessons from the Philippines for other countries.

3. Market Demand for Green Jobs and Skills

The Philippines is an important country from which to examine how private and public investment in green sectors and the development of green human resources—skills, competencies, and expertise—can drive a more rapid and cost-effective transition to a low-carbon economy while also strengthening adaptation.

Located in the Tropical Cyclone Belt and the Pacific Ring of Fire, the Philippines is extremely vulnerable to climate-related and geological hazards, including some 20 tropical cyclones per year (Climate Change Commission [CCC] & Department of Environmental and Natural Resources [DENR], 2023). Weather-related damage costs the country a staggering ₱506 billion (US$10.89 billion)[5] between 2010 and 2020 (Department of Finance, 2021). For example, loss

[5] Using the average Philippine Peso: U.S. dollar exchange rate during that period

and damage from Super Typhoon Haiyan alone reached 4% of gross domestic product (GDP) in 2013 (World Bank, 2023; CCC & DENR, 2023). This trend, if it continues, could critically jeopardize the country's ambitious goal of achieving high-income economy status by 2045 (World Bank, 2022).

The Philippines is also one of the most biodiverse countries in the world, thanks to its location at the apex of the Coral Triangle and its unique geography, composed of over 7,000 tropical islands. However, Philippines' biodiversity is critically threatened by habitat loss, pollution, invasive species, and climate change. Overfishing by both large commercial fleets and small fisherfolk, as well as environmental threats, have reduced fishery productivity and led to declining catches for small-scale fisherfolk, an example of the need for alternative livelihoods and new types of jobs in order to adapt to climate change.

The recent comprehensive policy advancements in the Philippines reflect the global climate crisis, the urgency to protect the environment, and the need to rapidly transition to low-carbon development and adapt to climate change. The collective impacts of climate change have created a rising demand for green jobs, not only in the Philippines, but globally. By 2030, it is anticipated that tens of millions of new jobs will emerge in green sectors, such as renewable energy, electric vehicles (EV), energy efficient buildings, ecosystem restoration, and sustainable agriculture (International Labour Organization [ILO], 2018; United Nations Environmental Programme [UNEP], 2024). A LinkedIn analysis in 2023 reported a 22% increase in job postings between 2022 and 2023 that required green skills (Weston, 2024). However, this surge in demand has highlighted a significant skills gap, as the growth in green talent during the same period was only 12%, indicating a mismatch between market demands and workforce capabilities. In addition, cross-cutting skills applicable to both green and traditional jobs will be needed.

In the Philippines, demand for green jobs is also growing. As of 2016 (the last year data are available), green jobs represent about 17% of total employment in the country, and the number is expected to continue growing over the coming years (ILO, 2019). Modelling suggests the green transition could require an addition 4-8 million jobs by 2030. According to the Philippine Institute for Development Studies (PIDS), by 2030, 10.8 million people are expected to be in green employment, representing an increase of 3.9 million (or 50%) from 2016 (Abrigo et al., 2021). These forecasts underscore the need for strategic and large-scale workforce development initiatives to ensure the country can meet the growing demand for green skills across key economic sectors.

In the Philippines, demand for green jobs is also growing. As of 2016, green jobs represent about 17% of total employment in the country.

Six Sectors Represent the Strongest Demand for Green Jobs

The updated National Green Jobs Human Resource Development Plan (NGJHRDP) 2020–2030 identifies the following six key employment growth sectors for green jobs:

1. Agriculture, forests, and fisheries
2. Construction
3. Ecotourism
4. Manufacturing
5. Renewable energy
6. Transport

These sectors were selected based on (a) green jobs growth potential induced by ongoing sustainability transitions, (b) employment creation, and (c) high-emitter sectors with significant decarbonization potential as outlined in the NDC (Son & Gamboa, 2024). Manufacturing is a broad sector, and the government has chosen food and advanced manufacturing as strategic focus areas in the most recent Trabaho Para sa Bayan Masterplan for Employment (2025–2034) (Department of Department of Economy, Planning, and Development [DEPDev], 2025).

Data are not available regarding the geographic distribution of expected future employment in these sectors, but it is likely that internal migration will occur to centers of job growth in emerging sectors, such as renewable energy and green construction. As the government continues progress in upgrading infrastructure and increasing investments in priority sectors, additional green jobs are expected to emerge. The government's renewable energy targets, for example, will create jobs in solar, wind, thermal, and hydropower, as well as in systems design, installation, and maintenance. Green building standards and energy efficient policies will boost demand for eco-design professionals and energy systems technicians. Investments in mass transit will generate railway jobs, highlighting the need for specialized education and training. In traditional sectors, workers will need to be upskilled and/or re-skilled to support new technologies and more sustainable practices.

1. Agriculture, Forestry, and Fishing

In 2021, agriculture, forestry, and fisheries generated 10% of national GDP and employed 9.7 million people, translating to one of the sectors with the largest shares of employment (Philippine Statistics Authority [PSA], 2021). The Philippines is increasingly adapting its agriculture, forestry, and fishing industries to climate change. Aquaculture, for example, accounted for 42% of all fish production, with new enterprises using solar-powered high-

density tanks in urban areas supported by the Department of Science and Technology (DOST).[6] Climate smart integration of digital technology and AI is helping to reduce the use of water, fertilizers, and pesticides; improve productivity; and make real-time decisions. These changes are reducing carbon emissions and improving the sector's resilience to hotter temperatures and more frequent extreme weather events. Climate smart agriculture[7] is expected to generate 1.1 million jobs in the Philippines by 2030, with 190,000 of these jobs being in climate smart fisheries, according to a study by the Philippines Institute for Development Studies (2021).[8] Use of digitization and sustainable agriculture technologies such as hydroponics and aquaponics are also helping to attract more youth to the sector, where there is significant opportunity for green and blue entrepreneurship. This puts a premium on digital and cross-cutting skills as well as technical skills particular to each subsector.

Skill gaps for this sector include modern agricultural practices, including precision farming, sustainable land management, regenerative farming, and agroecology; climate adaptation; critical and analytical thinking; and business and entrepreneurship skills.

2. Green Construction

Employment in green construction in the Philippines has grown from a base of 211,000 jobs in 2014 to an estimated 440,000 in 2024 accounting for approximately 11% of all construction jobs (Technical Education and Skills Development Authority [TESDA], 2018; Accenture et al. 2024). In 2025, it is expected that 20% of new buildings will be built with green construction (International Finance Corporation [IFC], n.d.). Government support and private sector investment drive job growth in this sector. The Philippines has its own national standard for green buildings, called BERDE, established by the Philippine Green Building Council in 2009. The BERDE standard is recognized by the Philippine government through the Department of Energy and provides a way for developers to certify that their buildings meet stringent sustainability standards. Occupations in demand within the green construction sector range from heating, ventilation, and air conditioning (HVAC) installers to green architects to electrical engineers to project managers.

Skills gaps for this sector largely include advanced training in green building technologies, proficiency in international green building certifications or standards, and green building project management. Capacity development challenges in the sector include the need to

[6] For example, Agritektura Enterprises, launched in 2021 and funded by the Department of Science and Technology-MIMAROPA (DOST-MIMAROPA) employs a recirculating agriculture system reusing filtered water.

[7] Climate smart agriculture is agriculture that employs practices designed to adapt to the impacts of climate change. Practices may include water conservation, such as drip irrigation, solar-powered water pumps, and rain catchment systems; use of seed and plant varieties that are drought and flood resistant; multicropping to reduce water and pesticide use; and no-till practices that release only minimal carbon stored in the soil into the atmosphere.

[8] This estimate is based on the business-as-usual scenario; more investment in greening or higher economic growth would result in even more jobs in climate-smart agriculture in the country.

update TVET (technical and vocational education and training) courses and include on-the-job training and the demand for tertiary education in private sector roles, such as project management, design, and site operation (Accenture et al., 2024).

3. Ecotourism

Ecotourism is expected to generate between 330,000 – 570,000 jobs by 2030 (Abrigo et al., 2021). The Philippines' rich terrestrial and marine biodiversity, tropical climate, and abundance of islands make it a natural destination for ecotourism, both domestic and international. Demand is growing for accommodations that minimize environmental impact, such as eco-lodges, sustainable resorts, and green hotels implementing energy and water conservation practices. This sector, furthermore, is attractive to youth as it is seen as dynamic and exciting and offering the possibility of domestic and international travel. Occupations in demand offer opportunities for both high- and low-skilled workers. Training should offer hands-on and work-immersion opportunities (Accenture et al., 2024). Furthermore, ecotourism is also emerging as a source of alternative livelihood for displaced fisherfolk to transition to jobs such as marine tour guiding, aqua sports, snorkeling, and scuba diving.

Skills gaps include sustainable tourism knowledge, coordinating engagement with local stakeholders, sustainable business practices, and digital marketing/content creation (Sarinas et al., 2023).

4. Green Manufacturing

Green manufacturing is expected to create between 2.2 – 3 million jobs by 2030 in the Philippines mostly driven by domestic rather than foreign investment (Abrigo et al., 2021). Important subsectors with higher green growth are green packaging manufacturing, chemicals, food manufacturing, and textiles, where there is a trend for the use of banana fibers and abaca (Accenture et al., 2024). Green occupations can be found throughout the value chain, including the greening of manufacturing processes, more energy efficient systems, the design and use of greener packaging, and the substitution of more sustainable materials in apparel production. While TESDA offers courses across the subsectors, most of these are short in duration (less than a year), although these could be augmented through the addition of practical training in the areas of engineering and manufacturing, as well as the use of automation and AI (Accenture et al., 2024).

Skills gaps include advanced engineering (e.g., biochemistry, biosafety); advanced manufacturing; digital technology; complex manufacturing; and sustainability compliance standards.

5. Renewable Energy

The Philippines has a goal of tripling its capacity to generate renewable energy to 15,304 megawatts by 2030 compared to 2010 levels (approximately 5,438 megawatts). In 2023, Philippines generated 8,262 megawatts of renewable energy, bringing it over halfway to its target (Department of Energy, 2023). This goal, stated in its National Renewable Energy Program, is spurring investment in the sector. To achieve its target, Philippines has put in place tax and cash incentives for investment in renewable energy industries, including duty-free importation of renewable energy equipment. The country is expected to generate from 90,000 to 350,000 jobs in renewable energy by 2030, depending on the employment projection, with most of these in solar and hydropower.[9] Jobs exist in subsectors including energy generation; transmission; and storage technology in solar energy, wind energy, bioenergy, hydropower, geothermal energy, marine energy, or any other renewable energy source (Accenture et al. 2024). Renewable energy generation in the Philippines is growing quickly— in 2019, 24% of all the energy used was renewable, primarily in geothermal, wind, biomass, and hydropower (International Trade Association [ITA], 2020). Within renewable energy, there is huge potential in solar energy, which is just gaining traction in the Philippines and will require workers throughout the production, installation, monitoring, and servicing value chain.

Skills gaps include expertise in solar panel installation, wind turbine maintenance, and battery storage systems, as well as smart grid management, energy efficiency, complex project management, and compliance with relevant national and international standards.

6. Transport

Sustainable transport is growing slowly today due to the slow growth of the EV manufacturing sector and limited uptake of EVs. However, expansion in this area, as well as sustainable public transportation, is expected. PIDS estimates that sustainable transport will create 1.7 million jobs by 2030, assuming continuation of the Philippines' current growth path, and 2.6 million jobs under an intensive-greening scenario (Abrigo et al., 2021). Many supply chain jobs require tertiary degrees, highlighting the need for updated TVET programs to focus on EV technology assembly and repair. Capacity building in a range of skill levels is needed to develop expertise for EV maintenance and manufacturing as well as public transport (Accenture et al., 2024).

Skills gaps include EV manufacturing, repair and maintenance and modern railway technical expertise (for mass rapid transit systems).

[9]Abrigo et al., 2021 estimates 90,000 jobs in renewable energy under a business-as-usual scenario while the Institute for Energy Economics and Financial Analysis estimates 330,000 jobs in this sector.

Identifying Green Occupations and Skills Gaps

Table 1 provides a detailed look at green jobs across six key sectors and the level of education or training required for each. Additionally, the table indicates the number of green jobs projected for each sector by 2030 according to PIDS and other sources. Skills demanded in these sectors include technical, professional, and cross-cutting skills. Upgrading skills can allow workers to access higher "quality" jobs, meaning jobs with higher levels of compensation, greater value added in terms of productivity, and safer working conditions. In addition to promoting skills, it is crucial to support transitions to work or entrepreneurship. These may include ongoing mentorship, special training on work readiness, as well as access to career support services as part of training. Skills gaps have been identified in each area as shown below.

Technical skills gaps include:

- Industry-specific skills for new technologies: Renewable energy, EVs, modern railways, green construction, smart agriculture, and sustainable logistics
- Digital skills: Data analytics, data security, AI, cloud computing, digital supply chain management, robotic engineering, and digital communication and marketing
- Technology integration: Construction, energy, agriculture, and manufacturing

Professional skills gaps in project management and implementation include:

- Project management for large and/or complex projects
- Green standards and certification systems for specific industries
- Regulatory compliance in waste management, energy, and building
- Sustainable business practices in traditional sectors
- Deep knowledge of climate change adaptation, mitigation, and circular economy

Cross-cutting and green skills include:

- Communication, problem-solving, resilience, teamwork, and adaptability
- Environmental awareness, entrepreneurial skills, and understanding of sustainability

Table 1: Existing demand for green jobs and skills level by sector[10]

Occupation	Green Jobs/Educational Level
Agriculture, Forestry, Fisheries	**1.1M in Agriculture by 2030** **190,000 in Fisheries by 2030**
Agricultural engineer, agricultural scientist, agriculturist, agronomist, plantation manager, biochemist, forester, environment officer, environmental planner, environmental protection officer, veterinarian, climate action manager	Higher education (Tertiary)
Farm breeder, farm technicians, farm assistant, forest planter, forest ranger, forest technician, organic farmer, water resource facilities operator, zookeeper	Technical and vocational (TVET)
Farm laborer, organic farmer, driver, organic produce seller, fisher	Basic education (K to 12)
Green Construction	**2.6 million green jobs by 2030**
Civil engineer, drone engineer, environment engineer, mechanical engineer, environmental health & safety officer, waste management officer, eco-design architect, LEED/BERDE[11] coordinator, site locator, landscape supervisor, project manager	Higher education (Tertiary)
Construction inspector, foreman, mechanics, sewage treatment plant operator, heavy equipment operator/mechanic, crane operator, heating/ventilation/air conditioning (HVAC) mechanic/installer	Technical and vocational (TVET)
Landscape/gardener, sanitation crew, machine operator,	Basic education (K to 12)
Ecotourism	**330,000–570,000 green jobs by 2030**
Sustainability manager, environmental officer, biologist, ecologist	Higher education (Tertiary)
Ecotourism guide, forest technician, community engagement manager/officer, program coordinator, waste manager, solar technician, EV operator/maintenance	Technical and vocational (TVET)
Community engagement officer, gardener, EV operator	Basic education (K to 12)

[10] Forecasts for green jobs in each sector by 2030 are under a business-as-usual scenario (Abrigo et al., 2021).

[11] *LEED* means Leadership in Energy and Environmental Design. *BERDE* means Building for Ecologically Responsive Design Excellence.

Manufacturing	**2.2 million green jobs by 2030**
Industrial engineer, chemical engineer, quality engineer, production supervisor, process design engineer, packaging development specialist, supply chain manager, environmental health and safety officer, pollution control expert, waste management officer, environmental planner, water maintenance head	Higher education (Tertiary)
Machine operator, wastewater system operator, mechanical/electrical technician	Technical and vocational (TVET)
Shop floor worker, assembly line worker, wastewater systems maintainer	Basic education (K to 12)
Renewable Energy	**90,000 - 350,000 green jobs by 2030**
Solar/renewable energy engineer, energy analyst, project manager, energy director, assistant energy manager, energy regulations officer, quality control officer, trainer (geothermal/bioenergy), R&D/design engineer	Higher education (Tertiary)
Solar panel installer, solar rooftop technician/mechanic, building inspector, service technician	Technical and vocational (TVET)
Construction worker	Basic education (K to 12)
Transport	**1.7- 2.6 million green jobs by 2030**
Transport engineer, electrical engineer, mechanical engineer, vehicle control officer, EV integration specialist, corporate strategist, sales director	Higher education (Tertiary)
EV technician, garage mechanic, EV operator	Technical and vocational (TVET)
E-jeepney driver, heavy equipment operator	Basic education (K to 12)

Sources: Son & Gamboa, 2024; TESDA, 2024; Industry insights; job estimates from Abrigo et al., 2021.

Green Job Growth Comes with a Decline in Employment in Some Sectors

The green transition combined with growing digitization may lower demand for some workers with traditional skills in positions such as car mechanics, workers in fossil fuel industries, and administrative assistants, among others. The International Monetary Fund (IMF) found that 36% of all jobs in the Philippines are highly exposed to AI; however, in more than half of those jobs, it is thought that AI can *support* the worker rather than replace the *worker—if the workers receive sufficient training in digital skills and overall education*. The IMF's analysis also found that sectors with workers most at risk of being replaced by AI are some parts of the service sector and clerical support (International Monetary Fund [IMF], 2024). The same report indicates that Philippines' authorities see skills gaps as one of the biggest bottlenecks to greater private sector investment, with a need to modernize education curricula.

In some areas, however, it is also possible that green practices combined with digitization may lower operating costs for businesses and thus offer opportunities for business expansion, and thus an increase in employment. While green jobs are conspicuous in emerging industries, such as EVs and renewable energy, similar opportunities also exist in traditional sectors that are becoming more sustainable to keep pace with global trends and changing consumer demand. Providing upskilling and reskilling programs, as well as social safety nets, for workers whose jobs are lost or have changed in nature due to the transition will be important for ensuring a just transition with benefits for all. Regular labor market assessments with a green lens can provide real-time data to document the evolving number and types of green jobs as well as the level of demand for certain green skills to facilitate this transition.

It is thought that AI can support the worker rather than replace the worker—if the workers receive sufficient training in digital skills and overall education.

Green Jobs in the Informal Sector

Informal sector workers and entrepreneurs are an important asset for the green economic transition. While opportunities for green jobs may be more evident in the formal economy, the informal economy involves no less than one-third of total workers and contributes between 30% and 56% of GDP annually.[12] In 2016, the most recent year for which data are available, the sector contributed ₱5 trillion (US$106 billion) or nearly one-third of GDP, with *sari-sari*

[12] Various sources present differing figures of its size and contributions to the GDP. In the Philippines context, informal sector/informal economy is defined as household unincorporated enterprises, including both informal own-account enterprises and enterprises of informal employers. Informal own-account enterprises are household unincorporated enterprises owned and operated by own-account workers, either alone or in partnership.

store (i.e., small neighborhood retail store) sales alone contributing US$26 billion (Royeca, 2023). Informal sector workers and entrepreneurs tend to have lower incomes, lower levels of education, and less access to formal training programs. They are also more vulnerable to economic shocks and climate change and have less access to information regarding greening their practices or to government incentive programs. Some sectors with informal workers and micro, small, and medium enterprises (MSMEs) present attractive opportunities to promote green practices and thus green jobs while reducing greenhouse gas emissions and promoting resilience to climate change. Sectors include the following:

1. Waste Management and Recycling

A significant number of informal workers and MSMEs already play a crucial role in the waste management sector, from collectors to segregators to recyclers. Efforts to formalize and improve working conditions in this sector can simultaneously enhance environmental outcomes and provide decent work (International Labour Organization [ILO] & Institute for Global Environment Strategies [IGES], 2014). An opportunity exists for informal workers to contribute to the successful implementation of the Extended Producer Responsibility Act of 2022, which requires large enterprises to take responsibility for **the life cycle of their plastic products**, including waste recovery, recycling, and sustainable disposal.

2. Sustainable Agriculture

Given that approximately 90% of labor in the agricultural sector is informal, promoting sustainable farming practices can create green jobs while also ensuring food security and environmental sustainability for a population whose livelihoods are highly vulnerable to climate change (Cabegin, 2022). TESDA offers training programs on sustainable farming, which are often supported by scholarships.

3. Marine Conservation

At the local level, many municipalities manage marine-protected areas and foster coastal resource management practices, including sustainable fishing and green aquaculture. Informal fishers and community members can take on roles as *Bantay Dagat* (sea wardens), ecotourism guides, diving and snorkeling instructors, or sustainable independent fishers, directly linking conservation efforts to livelihoods. These jobs build on community members' existing knowledge of local ecosystems while promoting climate-resilient practices. Expanding these opportunities will require accessible training, capacity building, and financial support to ensure informal workers can fully participate and benefit. Some local nongovernmental organizations (NGOs) are providing training for local governments and communities to take on these roles.

4. Green Construction

With the Philippines' focus on infrastructure development and green building, integrating green building practices and training informal sector workers in sustainable construction methods

can generate environmentally friendly employment opportunities in the formal sector. TESDA provides several courses to upgrade worker skills in construction.

5. Green Enterprises

MSMEs can benefit from adopting green practices. While many MSMEs are in the formal sector, they are also prevalent in the informal sector. Green practices can enhance sustainability and, in some cases, also contribute to cost savings, while helping to generate demand from environmentally conscious consumers. Green strategies include the following:

- Waste segregation, recycling, upcycling, downcycling, and composting
- Energy efficient or solar-powered equipment
- Water-saving technologies (e.g., drip irrigation, rainwater harvesting)
- Use of biodegradable packaging, such as natural materials
- Reduction of other inputs and natural resources

Green education and skills training should be targeted toward the youth workforce, which is more inclined to take on green jobs. Doing so could reap a demographic dividend. With nearly 29% of the Philippine population (31.4 million people) aged 15–30, the youth workforce is vital in driving the green transition (PSA, 2022). A Department of Labor and Employment (DOLE) survey in 2024 found that 41% of youth respondents were interested in green careers, yet only 25% were aware of green job opportunities in their locales (Son & Gamboa, 2024). Section 5 examines the Philippines experience with several youth training and engagement initiatives and best practices for promoting youth voice and interest in green skills development.

4. Policy and Progress on Climate and Green Jobs

The Philippines has advanced further than many countries in laying the legal and policy groundwork and in beginning to implement green skills programs to support a just transition to a low-carbon economy. While still experiencing a skills gap, the country offers a valuable lens through which to examine the process, lessons learned, and opportunities for accelerating development of a workforce that is well-prepared to support and drive the transition to net zero while also increasing resilience to the impacts of climate change.

As a party to the United Nations Framework Convention on Climate Change (UNFCCC), the Philippines has committed to an ambitious NDC target of reducing greenhouse gas emissions by 75% compared to a business-as-usual scenario with a baseline year of 2010, of which 2.71% is unconditional,[13] and 72.29% is conditional on financial assistance.[14] This

[13] Unconditional refers to policies and measures that can be undertaken using nationally mobilized resources.

[14] Conditional refers to policies and measures that require support or the means of implementation under the Paris Agreement.

commitment will be delivered through strategic green initiatives supporting green investment, skills, and jobs across priority sectors—energy, transport, agriculture, waste, and industrial production and processes—funded by the government as well as through private sector investments and support from bilateral and multilateral donors and other sources. The country has also committed to international environmental treaties, such as the Convention on Biological Diversity (CBD), and has set a goal of protecting 18.5% of land and 15% of seas in marine-protected areas by 2030. Finally, it has created an NAP that prioritizes early warning systems; disaster preparedness; improved climate data; and adaptations in agriculture, forestry, fisheries, and other sectors.

The ambitious NDC and NAP commitments provide political momentum and a strategic driver for accelerating the green skills agenda in the country. As a widely publicized and internationally recognized commitment, the NDC provides both a policy anchor and a forward-looking signal for aligning investments, curricula, and workforce development programs.

To achieve its NDC targets, the Philippines is taking steps to rapidly transition to a low-carbon "green" economy. To date, Philippines has slowed the rate of growth of emissions compared to the business-as-usual scenario. Yet according to Climate Action Tracker, its policies and actions are currently insufficient to meet its conditional NDC target of 75% reduction in greenhouse gas emissions by 2030 (Climate Action Tracker, 2023). Redoubling efforts and gaining the financing needed to meet its targets would not only mitigate the effects of climate change but also enhance the nation's adaptation to environmental risks while simultaneously fostering sustainable economic growth through a more circular[15] and sustainable economy. Many green and blue economy jobs emerging in the coming years will require higher-level technical and cognitive skills. Skills gaps could slow the transition and increase the vulnerability of some populations to climate change (Marin & Vona, 2019).
Recognizing the critical importance of this transformative approach, the Government of the Philippines has strategically developed a comprehensive legal and policy framework to address the causes and adverse impacts of climate change, slow biodiversity loss, and promote and sustain green jobs across its economy, demonstrating a multi-level approach to environmental and economic integration and transformation.

Philippines Alignment of Policies and Plans with Global Frameworks

The Philippines has aligned its national climate and sustainable development policies and plans with key global frameworks. These include the **2030 Agenda for Sustainable Development**, the aforementioned **NDC and NAP**, and the ratification of the **Convention on Biological Diversity** as well as several International Labour Organization (ILO) conventions,

[15] The circular economy refers to a system to prolong the life cycle of products by sharing, reusing, repairing, and recycling items as long as possible, thus keeping waste to a minimum.

among others. These agreements and commitments reflect the Philippines' prioritization of global sustainability and labor standards. Regionally, the Philippines has been an active participant in collaborative efforts to support sustainable economic development across Southeast Asia, endorsing the **ASEAN Declaration on Promoting Green Jobs for Equity and Inclusive Growth 2018** and integrating with the **ASEAN Economic Community Blueprint 2025**. These legal and policy frameworks provide a structured road map for implementing green job strategies and ensuring alignment of environmental and economic objectives.

National Policies, Laws, and Plans

Globally, the Philippines has been a leader in creating national plans, laws, and policies to support green skills and green jobs. Strong political will has existed at the national level to champion this change. The country has institutionalized its green economic vision through key national policy instruments, notably the **National Climate Change Action Plan (2011–2028)**, the **Philippine Development Plan (2023–2028)**, and the **Philippine Labor and Employment Plan (2023–2028)**. Additionally, the Environmental Awareness and Education Act requires the Department of Education (DepEd) to embed environmental principles and sustainable development into K to12 basic education and TESDA to ensure TVET curricula incorporate environmental education (Rep. Act No. 9512, 2008).

> The **Philippine Green Jobs Act of 2016 defines GREEN JOBS** as employment that contributes to preserving or restoring environmental quality while meeting standards of decent work.
>
> Rep. Act No. 10771, § 4, 2016.

In 2016, the country passed the historic **Green Jobs Act** (Rep. Act No. 10771, 2016) to accelerate sustainable growth and decent job creation while building resilience to climate change. The Act provides fiscal incentives for enterprises to create green jobs, including tax deductions for green skills training and the ability to import green technology duty-free to advance production and operations. Further, it assigns roles and responsibilities to various departments and agencies to implement the law, with the goal of generating green jobs and speeding the transition to a more sustainable economy across all economic sectors. A company must be certified by the Climate Change Commission (CCC) of the Philippines to qualify for these tax benefits. Yet difficulty in qualifying for the benefits and the absence of a coordinating body and clear guidelines have slowed the uptake of these benefits by companies.

Importantly, DOLE is mandated by the Green Jobs Act to develop and maintain a database of green jobs and skills. While work on the database is currently in progress, DOLE is also collaborating with the CCC to support the development of definitions, standards, and

frameworks on green goods and services, technologies, and practices, which will help qualify the financial incentives for private enterprises as required by the Act. The Philippine Qualifications Framework (PQF) Act (Rep. Act No.10968, 2018) requires the DepEd and TESDA to align their curricula and certifications with green jobs competency standards as required by the Green Jobs Act.

The **National Green Jobs Human Resource Development Plan** (2020–2030), mandated by the Green Jobs Act, was most recently updated in January 2025. It is a green skills development road map for implementing the law, co-created by DOLE, TESDA, and PRC. It identifies needed skills, training programs, and remaining gaps and actions to address them (Son & Gamboa, 2024). This case study is in alignment with and informed by the key elements and provisions of the NGJHRDP.

The **National Technical Education and Skills Development Plan 2023–2028** aims to develop a skilled workforce for the green economy by integrating sustainability into technical education, promoting reskilling programs, and aligning training with industry needs (TESDA, 2023). The Philippines' **Energy Efficiency and Conservation Act** (Rep. Act No. 11285, 2019) builds upon the Green Jobs Act by promoting employment in energy efficiency sectors. It requires the development of training programs for energy managers and auditors, creating new categories of green jobs while establishing specific skills requirements. The **Philippines Extended Producer Responsibility Act** (Rep. Act No. 11898, 2022) further expands green job opportunities by requiring large enterprises to establish waste recovery programs. While not directly addressing skills development, it creates demand for expertise in waste management and circular economy practices.

The **Philippine Development Plan 2023–2028** integrates these various frameworks by emphasizing the need for green skills training across sectors. It specifically calls for incorporating environmental competencies into technical-vocational education programs and professional development courses (Republic of the Philippines, 2023). Finally, the **Philippine Action Plan for Sustainable Consumption and Production (2020–2040)** outlines future skills requirements for the green economy, emphasizing competencies in renewable energy, sustainable agriculture, and eco-friendly manufacturing processes (Republic of the Philippines, 2020).

To help implement these policies and plans, the government has established several coordination bodies. These include the **Inter-agency Committee on Green Jobs**, which is led by DOLE and consists of 20 national government entities. One of its key tasks was to develop the National Green Jobs Human Resource Development Plan to implement the Act. Additionally, the **Interagency Working Group on Greening TVET and Skills Development**, comprising the Asian Development Bank (ADB), ILO, Organisation for Economic Co-operation and Development (OECD), European Centre for the Development of Vocational Training,

European Training Foundation, United Nations Economic Commission for Europe, United Nations Institute for Training and Research, and UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training, promotes green skills development globally, including in the Philippines.

Government Initiatives Promoting Green Jobs and Skills

Aside from overarching legal and policy frameworks, the government has introduced several programs and initiatives to support the development of green skills and jobs. These include a collection of labor market data; education and training; private sector incentives and regulations; partnerships with the private sector; and collaboration with NGOs. Each of these plays a part in promoting green jobs and skills acquisition to further a just transition to a low-carbon sustainable economy. However, gaps in financing and access to technology remain and will slow the transition if not addressed, including by international donors. Additionally, while incentives and policies promoting green jobs are plentiful, fewer policies and incentives exist to promote investment by companies in low-carbon technologies or the creation of new industries, such as solar panel production or EV batteries.

Labor Market Data

Annual government **Labor Market Information Reports,** produced by DOLE, serve as a critical tool for tracking and analyzing employment trends. In certain reports, green jobs were partially or fully covered. These reports offer skills mapping, industry analysis, supply-demand assessment, policy and career guidance, and training needs assessment.

General Education and Technical and Vocational Training

Primary and Secondary Education: The Philippine DepEd has embedded environmental concepts and green skills into the national K to 12 basic education curriculum. This integration involved revising learning materials and teaching methods to incorporate sustainability and environmental stewardship in grade schools (Department of Education, 2022). The **K to 12 Curriculum Integration Program** incorporates environmental awareness and sustainable practices into subjects with a focus on science and technology, and Technical-Vocational-Livelihood (TVL) tracks in senior high schools. TVL-related electives include (1) renewable energy servicing, (2) sustainable agriculture practices, (3) sustainable waste management, and (4) organic agricultural crop production.

Higher Education: Environmental sustainability and green programs are being offered by several leading universities and colleges focusing on transportation, energy, construction, agriculture, and tourism.

Technical and Vocational Education and Training (TVET): As part of its National Technical Education and Skills Development Plan (2023–2028) commitment to support the green

economy**,** TESDA has to date incorporated green competencies into 108 training courses covering diverse sectors including agriculture, forestry, and fisheries; construction, automotive and land transportation; logistics; electrical and electronics; HVAC; and tourism (TESDA, 2023). Green competencies cover four principal themes:

1. Environmental protection and resource efficiency
2. Waste management and recycling
3. Safety and environmental compliance
4. Sustainable materials and technologies

TESDA collaborates with industry partners in developing and adapting the programs to keep up with changing market demand. Recently, TESDA took a major first step in upgrading training facilities with its TESDA Green Technology Center in Taguig City, which will serve as a green skills hub (TESDA, 2015). Additional work to upgrade training facilities across the country and to train instructors and assessors will be crucial to meeting the green skills challenge.

Alternative Learning System (ALS): The Philippines has a very developed "second-chance" parallel education program that is designed for out-of-school youth or adults who have not accessed or completed formal education. The ALS K to12 Basic Education Accreditation and Equivalency (A&E) program allows ALS learners to obtain official elementary and junior high school certificates equivalent to those in the formal system, and upon completion, to enroll in higher levels of education, pursue TESDA-certified technical-vocational education programs, or pursue entrepreneurship. In addition, the Philippines developed ALS Functional Education and Literacy Program (FELP) short courses to enhance critical functional life skills, such as financial literacy, disaster preparedness, digital citizenship, responsible parenting, work readiness, and sustainable consumption. FELP courses are targeted at adults who are not necessarily interested in attaining the full equivalency in A&E courses, but rather want to receive upskilling in a specific area.

The Philippines intentionally designed its ALS programs to reach those who likely cannot relinquish existing work or caretaking responsibilities during the day by imbedding flexibility as a core design feature. Instruction is a mix of formats—self-directed, online (if applicable), and in-person—scheduled at a time and place agreed upon by the learners and teachers. The ALS programs have a strong focus on cross-cutting skills to boost employability in a variety of sectors, as well as embedded lessons on care of the environment and sustainable life practices. Enhanced greening of ALS learning programs will help facilitate workers, particularly those in the informal sector, accessing green skilling opportunities.

Public-Private Partnerships on Green Skills Training

Collaborations between TESDA and the private sector focus on upskilling or reskilling students for the green economy, covering targeted green skills such as digital and IT skills (supported

by Microsoft); entrepreneurial skills (supported by Coca-Cola); financial literacy (supported by Prudential Foundation, Manulife, and others); and EV (supported by the Electric Vehicle Association of the Philippines). Several **private technical-vocational institutions (TVIs)** offer TESDA-certified green skills training courses on a wide range of topics, including solar power installation and maintenance, renewable energy servicing, energy efficiency management, sustainable construction, and quality control for green manufacturing, among others. At the local level, TESDA and local private sector representatives have met to collaborate on local labor market assessments, identifying skills gaps that TESDA can fill (Section 5 on youth for more details).

Internship and apprenticeship programs for green careers are being offered by well-established companies. For example, Schneider Internship Program offers internships focused on energy management and automation solutions. Ecolab offers internships emphasizing water treatment and sustainability practices. Jones Lang LaSalle (JLL) provides internships related to real estate sustainability, including green building certifications and energy efficiency assessments. The Waste Hero Program, an education initiative supported by Indorama Ventures in partnership with the Yunus Foundation, empowers communities with knowledge about waste management (Indorama Ventures, 2024). The program has reached numerous educators and students, focusing on waste separation at the source and fostering a culture of recycling and environmental responsibility.

Private Sector: Regulations, Incentives, and Certifications

The government has rolled out a number of regulations, incentives, and certification programs to speed adoption of green practices by the private sector. The **Securities and Exchange Commission** (SEC) has mandated publicly listed companies to disclose their non-financial performance on economic, environmental, and social measures as part of a company's annual reporting using globally recognized sustainability reporting frameworks. The **Public Utility Vehicle Modernization Program** aims to impose a 15-year lifespan limit on jeepneys and other public utility vehicles, requiring their replacement with cleaner vehicles thereafter. The government has set ambitious targets, aiming to rationalize at least 50% of jeepney routes by the end of 2025 (i.e., controlling the number of jeepneys during off-peak times or where passenger demand is lower, all of which is expected to lead to reduced consumption of fuel and lower greenhouse gas emissions) and achieve full route rationalization by the end of 2026. The **National Organic Agriculture Program** focuses on enhancing the spread of innovation in organic agricultural practices, marketing, and product labeling among farmers. As a result, the number of organic farmers rose from 8,980 in 2011 to 43,470 in 2016 (Philippine Information Agency, 2016).

The **Sustainable Markets for Recyclables and Recycled Products Program**, led by the Department of Trade and Industry (DTI) and the National Solid Waste Management Commission (NSWMC), encourages the promotion of recyclables and recycled products in diverse markets. This involves coordinating and backing local trade fairs for such products, advocating for compost utilization in the National Greening Program, and streamlining incentive scheme guidelines to foster investor backing for recyclables and recycled products (Accenture et al., 2024). The **Anahaw-Philippine Sustainable Tourism Certification** initiative aims to integrate energy efficiency into mainstream practices, thereby lowering greenhouse gas emissions and subsequently reducing operational costs for businesses. Stemming from the Zero Carbon Resorts project, this program has expanded to include green hotel certification, recognizing over 300 establishments with awards since 2015 (Villaos, 2018).

Initiatives with International Partners and Nongovernmental Organizations

The Philippines has also partnered with numerous countries, international companies, and multilateral institutions to support green initiatives, addressing issues such as the circular economy, energy efficiency, renewable energy, reduction of plastic waste, support for sustainable development, green skilling, and green labor market assessments. Partners include the European Union, the ADB, the ILO, GIZ, the Australian government, and JP Morgan. Additionally, the Philippines has partnered with international, national, and local NGOs to support a more just transition to the low-carbon economy. These include World Wide Fund for Nature (WWF)-Philippines, EDC, Southeast Asian Regional Center for Graduate Study and Research in Agriculture, VSO Philippines, Greenpeace, Evergreen Labs, Save Philippine Seas, Coastal Conservation and Education Foundation, NGOs for Fisheries Reform, and many others. Descriptions of selected international and nongovernmental partnerships are provided in Annex B.

5. Catalyzing Youth Skills and Green Jobs

As the Philippines implements its laws and policies designed to further the green transition and respond to growing demand for green skills across both traditional and emerging sectors, it is important that youth, one of the country's largest cohorts and a critical source of talent and innovation, be engaged and consulted.

Youth in the Philippines make up 29% of the population, or about 31.4 million youth (PSA, 2022). However, the ILO estimates that 12.8% of youth ages 15-24 are not in education, employment, or training (ILO, 2022). This represents a great untapped resource for the country's workforce and economy. Adopting an intentional focus on youth can thus have an outsized impact on employment and sustainable development (ILO, 2020). Further, youth are not only reported to be more open to green jobs, but they have a heightened level of environmental consciousness and are showing increasing interest in green entrepreneurship and technology-driven solutions that could be applied in the green sectors. Significant

opportunities present themselves by engaging youth in green skills and jobs. Upon receiving work-readiness and green skilling training, youth are prepared to enter the green workforce and pursue green self-enterprise development. Youth entrepreneurs can shape their businesses to incorporate green practices, and youth employed in the private sector can use not only sector-specific green skills for their immediate employment but can also apply cross-cutting green skills to any potential employer. Cross-cutting skills follow youth throughout their lives and allow them to bring these skills to all parts of their lives at work and at home.

Insights from the Opportunity 2.0 Experience

Using EDC's experience implementing the USAID-funded Opportunity 2.0 activity (O2) in the Philippines from 2020 to 2025, we share a few lessons learned to effectively reach youth at scale with market-driven targeted interventions. O2 was a systems-strengthening initiative co-created with the DepEd and TESDA to increase DepEd's capacity to deliver the ALS K to 12 equivalency programs and TESDA's capacity to deliver effective workforce readiness trainings. Throughout its five years of implementation, the program reached over 110,000 out-of-school youth directly in its 15 project cities, while more than 2 million learners across the country indirectly benefitted from O2-created cross-cutting skills or work-readiness materials and trainings. Due to its systems-strengthening approach, indirect impact on millions more ALS and TESDA learners will continue for many years to come. Notably, among the O2 youth completers who were employed following the program interventions, almost two-thirds (62.3%) were employed or self-employed in **quality green and blue jobs**, demonstrating how a strong government mandate around reform (in this case, improving employment and education outcomes for out-of-school youth) can be translated into action.

One of the most important keys to success in changing outcomes for youth has been increased coordination between system actors through a multi-sectoral Youth Development Alliance (YDA). These alliances bring national-level policy to the local level, where implementation tends to happen in the Philippines with its dissolved governance model. Under the O2 program, city-level YDAs were established that brought together representatives from the local government; national government line agencies (e.g., TESDA, DepEd, DTI, DOLE, DSWD); service providers; higher education institutions; the private sector; and youth leaders. The YDAs brought together these actors to collaborate by aligning their plans, programs, and resources for youth development. YDAs proved to be successful because they had a clear mission—improving outcomes for out-of-school youth. They ensured that out-of-school youth were aware of and had access to the further education or work-readiness training programs, as well as critical post-program supports, including connections to employers, especially green jobs; self-employment opportunities; and other employment intermediation services.

YDAs had a strong vision to promote green skilling and environmental awareness. Private sector members of YDAs, including large, medium, and small enterprises, received green

sensitization workshops to improve their business practices. Youth were encouraged to obtain green skilling and to enter the green economy, either as an employee or as an entrepreneur. YDAs also supported the organization of volunteer initiatives on climate change adaptation and conservation issues. This local-level engagement through alliances reinforced changes at the national level.

Another important lesson feature was the labor market assessments: YDAs helped conduct local labor market assessments (LLMAs) at the city-level on an ongoing basis. TESDA, DOLE, the private sector, and the youth themselves conducted LLMAs through the YDAs in their city to highlight the labor needs of the private sector, upskilling and reskilling opportunities, and job interest from youth. Youth provided feedback on what jobs were considered attractive for youth and the sectors that they would recommend be allocated scholarships from TESDA for training programs. By conducting an LLMA through a YDA, employers were connected with potential workers and skilling providers, creating a real-time analysis of what jobs and skills gaps currently exist.

Per the systems-strengthening effects of the O2 activity, improved service delivery paired with capacity building of actors to institutionalize reforms expanded the impact of investments made by the Philippine government (Education Development Center, 2025).

The co-created cross-cutting skills and work-readiness skills training programs are being institutionalized into all junior high school-level alternative learning programs and the technical-vocational skills courses of public and private TVET providers. Private sector partners have reported that they see youth who have received such work-readiness skills

training to be highly employable, and in some cases, these youth are preferable to traditional school graduates.

O2's organizational strengthening of the government education and training institutions also enhanced their ability to support the implementation of the Green Jobs Act. The new co-created work-readiness curricula provided support for green skilling by integrating green competencies and a green lens into DepEd ALS and TESDA TVET programming. To ensure the capacity of educators to teach the new curricula, O2 worked with DepEd, TESDA, and DTI to build a cadre of trained master trainers who then conducted their own subsequent regional trainings to nationally roll out new programs focused on green cross-cutting, work-readiness, and entrepreneurship skills. This model proved to be an effective way to build the capacity of agencies to deliver the new programs in all areas of the country, and it could be used to further scale green skilling and environmental awareness programs in line with national curricula.

Overall, the combination of increased coordination among system actors with new targeted curricula and institutional capacity building of Philippine government bodies proved to be an effective way to create system change at the national level. This approach could be used to accelerate progress on green skilling, building on the clear legislative mandate in the Philippines.

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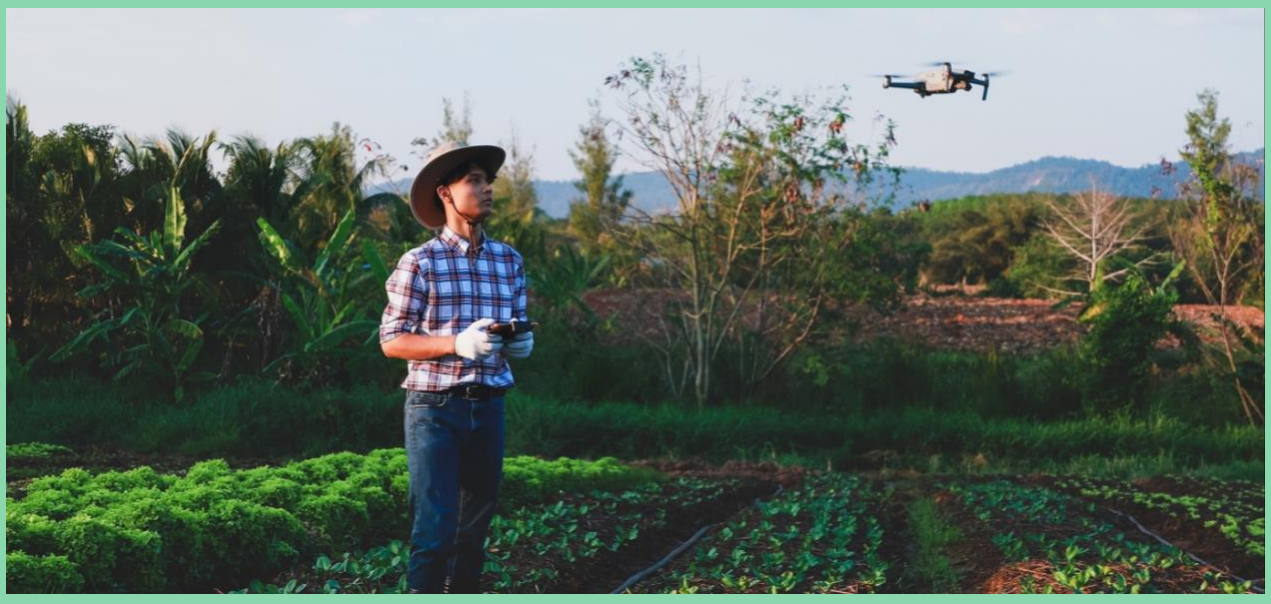
6. Opportunities to Accelerate Skills for the Green Economy: Six Quick Wins

The Philippines has made enormous progress to design and then begin to implement progressive policies, plans, and partnerships to advance the transition to a low-carbon economy, adapt to climate change, and promote green skills and jobs. This transition, for any country, is an enormous undertaking.

More remains to be done to accelerate implementation of the National Green Jobs Human Resources Development Plan (NGJHRDP) to support a rapid and just transition to a greener economy. For example, skills gaps persist that impede the current workforce's ability to meet emerging requirements of green labor markets due to several factors:

- Many green skills policies are still in the early stage of implementation.
- Implementation of national level policies at the subnational level is often lacking due to lack of coordination and resources.



- The one-third of workers employed in the informal sector, as well as informal sector entrepreneurs, often lack access to formal green skills training opportunities.
- Labor market demand and technologies are evolving quickly in emerging and traditional sectors, making it difficult to adapt.
- Instructors, professors, and skills assessors require training in green skills and facilities need to be upgraded to demonstrate new technologies and sustainable practices.

Such challenges underscore the importance of accelerating policy implementation at the subnational level where possible, identifying additional sources of finance, collecting up-to-date data on labor demand trends, and partnering with key employers and industries to design and implement training to ensure that it is demand driven and available to all.

This section outlines six quick wins for rapid green technical, professional, and cross-cutting skills development. These quick wins could be achieved in the next three to five years to create systems-level change, reach large numbers of those entering and already in the current workforce, demonstrate early results, and deepen green skills and jobs in the six priority sectors identified by the Philippines, and beyond, for formal and informal workers, including for youth and marginalized groups.

Quick Win 1: Establish and Scale Local Green Development Alliances

Support city or municipal local government units (LGU) to establish Local Green Development Alliances. Due to its decentralized governance structure, implementation of most policies, programs, and services of national ministries and line agencies are devolved from the national government to city- and municipal-level LGUs.

Local Green Development Alliances could directly address this by bringing together diverse stakeholders, such as TESDA, DepEd, DOLE (and specifically the Public Employment Service Office), DTI, private sector partners, the Climate Change Commission, and youth leaders with a clear mission to further green skills and jobs. The alliances would help harmonize initiatives between key players in supporting the green economy, particularly in relation to green skills development. In existing alliances in the Philippines, members coordinate trainings to reduce overlapping service provision to maximize resources. Through the alliances, members connect to understand other members' priorities and responsibilities, then collaborate to determine the agency with the best fit to serve different needs.

A key function of alliances would be to collect and share local green labor market data and then to align skilling programs to meet local demand. National-level job forecasting data are helpful to guide national policies and incentives, but isn't always actionable at a local level,

particularly for businesses and workers. Skill demands in green and greening sectors vary considerably by location throughout the Philippines. A sector that is highly relevant in one location may not be relevant in another due to differences in culture, markets, topography, and natural resources. For instance, if a labor market assessment shows a high potential for sustainable agriculture, TESDA could begin offering or restructuring programs to encourage high-revenue crops with sustainable farming techniques, as well as climate smart, technological advancement in farming.

Through the alliances, youth and other workers could receive information about training opportunities for in-demand jobs or for entrepreneurship, scholarships to access these programs, and grants to start a business. Private sector members of existing alliances could host youth for short-term work-immersion opportunities as part of their course of study and then could hire the most successful youth. Following the training, alliances could provide post-program support and ongoing coaching and mentorship to facilitate successful transitions into work. Through these local-level alliances, key stakeholders could develop tailored solutions to be inclusive of vulnerable populations.

This effort represents an approach for addressing gaps in local coordination regarding green skills and employment that could be scaled to additional municipalities across the Philippines, with or without a youth focus. These Alliances could draw on lessons learned from the O2 program experience, described in Section 5, on developing alliances for scale and sustainability, or potentially be incorporated into existing YDAs in the Philippines. Different Local Green Development Alliances could share information and best practices on implementation from their city with other alliances, and members of an alliance could also share knowledge with each other.

These local-level Green Development Alliances could be coordinated at a national level through the Green Climate Fund's Philippine country platform once created or by another national body, such as the Climate Change Commission. Improving coordination would help fulfill Goal 3 of the NGJHRDP, *Shared Green Jobs and Just Transition Governance*. This goal calls for actions such as defining "processes for consultation among tripartite stakeholders on green jobs and just transition national policies," harnessing linkages among these actors for advocacy on green jobs, and "strengthening collaboration on data management and data-sharing on green jobs" (Son & Gamboa, 2024, p. 74).

Quick Win 2: Develop Specialized Technical Courses in Key Subsectors

While the Philippines has a robust skills training system undergirded by a solid policy framework on green skills and green jobs, additional opportunities for strengthening this system exist in higher education, TVET, and K to 12 formal education.

Our analysis found that industries still face technical skills gaps in both the traditional and emerging green sectors identified as having the greatest potential for job growth: transportation, construction, renewable energy, sustainable agriculture, ecotourism, and manufacturing, as well in cross-cutting green skills that are crucial in all sectors. Gaps in technical skills have been identified at the tertiary level for managers, professionals, and technicians as well as at other levels of education (Manila Bulletin, 2023; Son & Gamboa, 2024).

This presents an opportunity to develop additional courses and specialized curricula and programs to meet demand for the positions identified in Section 3 (see Table 1). For example, few TVET offerings are oriented exclusively to the renewable energy subsectors. Current TVET training for renewable energy workers is aligned with construction or manufacturing roles rather than energy generation itself (Accenture et al., 2024). Similar opportunities exist in subsectors such as green packaging manufacturing, sustainable textiles, and e-manufacturing and maintenance. These opportunities should be made available not only to youth, but also to workers who need to be upskilled or reskilled for the green economy. Following the development of specialized technical courses, TESDA scholarships could be allocated for vulnerable populations to access training in green sectors. Regular and active communication and joint initiatives between workers, training institutes, and industry could better align training programs with local market demand, such as through a Green Development Alliance.

Additionally, there are opportunities to develop work-based learning programs for existing and future workers, including internships, apprenticeships, work shadowing programs, and co-ops that alternate periods of work and study for students during their technical training. This type of work immersion can support learners in becoming successful employees, and can give the hosting private sector partner a pipeline of future employees. For instance, in the ecotourism sector, more courses are needed that provide hands-on opportunities where trainees can practice the technical and cross-cutting skills they are learning. This could be particularly important in service sector positions. Facilitating transitions to work, in addition to skilling, is crucial to helping job seekers capitalize on their new skills as well as promoting access to green jobs and green entrepreneurship. This could be accomplished through career services in addition to the work-based learning efforts described above.

Specialized green technical training courses should be accessible for full-time workers and other prospective learners with existing time commitments. This can be achieved by integrating flexible delivery modalities such as blended learning with flexibly scheduled in-person learning anchored on learner availability. The Youth Access to TESDA Online Program (YATOP) pioneered by the O2 program and recently adopted by TESDA is such an example. YATOP provided online training on cross-cutting skills, technical skills, entrepreneurship, and work readiness coupled with in-person practical skills trainings and online facilitator learning support. This blended model of specialist technical training proved to be popular with out-of-

school youth who appreciated the flexibility of the program, and it offers insights for designing green skills technical training courses to ensure greater accessibility.

Quick Win 3: Develop Certified Courses on Cross-Cutting Skills with a Green Lens

Develop stand-alone TESDA and university-certified courses focused on strengthening cross-cutting skills development with a green lens. Cross-cutting skills, such as communication, creativity, critical thinking and problem-solving, equally apply to green sectors and jobs. Such skills augment the agility of the labor force, allowing workers to more easily move between jobs and sectors while also adapting to new and unpredictable trends in labor demand. Additionally, cross-cutting skills should adopt a green lens by covering basic understanding of environmental challenges, sustainability, climate change, and resource conservation practices. These courses are relatively low cost to provide and offer value for money. Curricula should be upgraded regularly due to the dynamic nature of technology and innovation in emerging sectors.

Such training would provide students with the necessary skills to be adaptable and lifelong learners, given the rapid changes to the environment and technologies that will continue to shape and transform the green economy. Further, it would address the NGJHRDP's Goal 1: Green Jobs -Ready and -Skilled Labor Force, particularly the call to "implement greening TVET system" and "expand green skills offerings in tertiary education" (Son & Gamboa, 2024, p. 65) while aligning with the DOLE's emphasis on cross-cutting green skills. This would also allow a broad sector of the population to contribute to green practices. Certification of cross-cutting skills can boost the employability of vulnerable youth as well, as employers report being more willing to hire out-of-school youth with cross-cutting skills training.

Stand-alone courses could quickly reach a wide range of students, expose them to general and sustainability-focused cross-cutting skills, and deepen their interest in pursuing green courses and jobs, and/or using their skills to transform their future workplaces in traditional sectors. Actions could include developing a National Certification Level 1 or 2 course for TESDA, a certificate or diploma for tertiary education, or micro-certified FELP short courses in the DepEd ALS. These courses would provide students with work-readiness training; problem-solving, communication, and digital skills; an introduction to sustainability; and environmental awareness. These courses would be accredited and would count toward degree, diploma, certificate, or micro-credential requirements.

Quick Win 4: Develop Short-Term Green Training Programs for Informal Sector Workers and Entrepreneurs

Develop short-term training programs in green and business development skills for the informal sector to meet the needs of youth and workers that fall outside of the formal education sector. As discussed, the informal sector in the Philippines is estimated to employ one-third of the workforce and generate between 30% and 56% of GDP. Providing access to training for workers in the informal sector presents a particular challenge as workers often lack awareness of green job benefits, training, and incentives.

On the supply side, the majority of greening initiatives target formal TVET and higher education and are usually designed for formal sector workers. Where these skills development programs exist for the informal sector, there is no central coordination or standardization, resulting in fragmented delivery of varying quality training programs and recognition, including accreditation.

On the demand side, informal workers and entrepreneurs in MSMEs (in both the formal and informal sectors) lack access to programs to develop green skills, an awareness of climate change, and incentives to transition to green practices. In practice, they have both the high-opportunity cost of studying (the inability to generate income) and the limited information about skilling opportunities to develop new green skills or to green existing skills. Even for the formal sector MSME workers, information gaps can prohibit MSMEs from adopting green practices. Informal sector workers tend to have less awareness of climate change and sustainability concepts, so these programs would not only increase overall understanding of these areas but also how to engage in the blue and green economies.

Incentives for green upskilling and reskilling tend to target large formal sector-led companies, even though MSMEs are important contributors to the economy. Additionally, unstable income prevents investment in transitioning to greener practices. Complex regulations deter workers from navigating certification and incentives. Finally, there is a lack of material recovery facilities, recyclers, and industrial composting facilities that could serve informal workers and entrepreneurs in the waste management sector.

Still, the government has taken a number of steps to engage this population in skilling efforts. For example, TESDA has initiated programs that support marginalized groups, including reskilling farm workers and fisherfolk to jobs in ecotourism. In addition, accredited institutions such as the Association of Construction and Informal Workers provide TESDA-certified training programs. Finally, civil society organizations, such as VSO Philippines, offer green skills training programs in agroecology, climate-resilient farming, and waste management, and local government and NGOs deliver green skills training (e.g., sustainable farming techniques, recycling, and energy efficiency) tailored specifically to the informal sector.

Despite this progress, significant opportunities exist to offer green skills to the large numbers of workers in the informal sector and MSMEs. Investing in targeted and scaled education and green skills strategies designed for the informal sector could speed the transition to a low-carbon economy while addressing poverty and closing equity gaps. Raising awareness of green practices can not only contribute to a just green transition but also result in cost savings for MSMEs. Training programs to green MSMEs would include not only business best practices, but also sustainable waste management, knowledge on energy efficient equipment, use of biodegradable materials, and water conservation, among others. These courses should also cover basic cross-cutting skills and work-readiness behaviors. In addition to initial skills training, post-program support should be given to emerging MSMEs and small businesses. For example, program completers could receive access to mentorship and coaching after the program. Given the high-opportunity cost of training for the informal sector, courses should be offered online or at a variety of times agreed upon by the instructor and learners.

This quick win addresses the NGJHRDP's Goal 1 on a green jobs-ready and -skilled workforce, in particular the call to "institutionalize accreditation of green skills and competencies providers" (Son & Gamboa, 2024, p. 65). It also aligns with the Plan's Goal 4: Capacitated Green Jobs and Just Transition Stakeholders, which calls for enhancing "provision of support to MSMEs and cooperatives in incorporating green and sustainable practices" (Son & Gamboa, 2024, p. 77).

Specific actions could include developing and implementing a green entrepreneurship program for informal sector workers with a focus on youth. This program would include ensuring existing youth entrepreneurship development initiatives, such as DTI's YEP, also reach youth in the informal sector and incorporate a green lens. These courses also serve to boost informal workers confidence in business management.

Additionally, there is an opportunity to develop DepEd-managed flexible nonformal education FELP short courses for out-of-school youth and adults focused on green enterprise development. To boost demand for green skills, there could be subsidies provided to MSMEs for skilling to adopt green practices. The Green Development Alliances proposed in Quick Win 1 could serve to conduct information and awareness campaigns around green skilling programs for informal sector workers and MSMEs and to support green career awareness and transition to work for informal sector workers through coaching, mentorship, and accompaniment services. They could also help identify resources for entrepreneurs to start or expand businesses, either through existing programs or through savings groups.

Quick Win 5: Create Green Career Guidance Programs at Secondary, TVET, and University Levels

Institute climate leadership, work-based learning, and green entrepreneurship programs in career guidance programs at the secondary (junior high school and senior high school), TVET, and university levels. While environmental education is embedded as a core feature of the primary and secondary curricula of both formal school and ALS, there are opportunities to deepen this programming to increase students' work immersion through job shadowing or internships. In addition, ongoing career guidance should be action-oriented and guide young people to green entrepreneurship, green jobs, or the greening of traditional jobs. Incorporating this across all education levels can deepen awareness of climate action and the benefits of climate-resilient jobs. It could also focus on cross-cutting skills such as communication, advocacy, and leadership skills to amplify youth voices on the environment, climate, and the green transition.

Likewise, within TVET institutions and universities, there are opportunities to green existing career guidance programs, strengthen youth environmental leadership, embed work-based learning programs with green companies and organizations, and introduce green entrepreneurship for innovators. After green entrepreneurship training, each graduate should know how to register a business, attract financing, assess market gaps, and conduct business planning.

Improving availability of and access to data on green jobs and skills training and expanding awareness of opportunities as previously described in Section 5 are all crucial. By incorporating environmental sensitization into secondary education and beyond, students will be oriented to potential career paths in blue and green jobs, as well as understanding how they can bring cross-cutting green skills into any position. These skills will be in demand in both explicitly green jobs and traditional sectors.

Secondary schools, TVET institutions, and universities themselves should be encouraged to be role models of early adoption of green technologies as well as solid waste management and circular economy frameworks. This would further increase awareness among the students by providing a living laboratory of innovations in climate-oriented practices and inspire further action.

Quick Win 5 also addresses the NGJHRDP's Goal 1 on creating a green jobs- and skills-ready workforce, particularly "integrating green jobs, occupations, and skills in career development programming" and "integrating green competencies in basic and secondary education curricula" (Son & Gamboa, 2024, p. 65). It also aligns with the Plan's Goal 3: Shared Green Jobs and Just Transition Governance, particularly to "institutionalize education/training-to-industry partnerships on pathways to green jobs" (Son & Gamboa, 2024, p. 74). The ongoing

revision of the new senior high school curriculum provides a unique opportunity to reach large numbers of young people in both the formal school system and the nonformal education ALS. Following this comprehensive career guidance, coupled with immersive work-based learning, students will have environmental education, opportunities to develop cross-cutting skills, awareness of green jobs and career options, real-life work immersion, and know-how of green entrepreneurship, which will make them workforce ready for the transition to the green economy.

Quick Win 6: Upskill Teachers, Faculty, Skills Assessors, and Facilities

Rapidly upskill teachers, skills assessors, and faculty with skills needed to advance transferable and technical skills in green and greening sectors. Despite ramping up resources and opportunities for training, the country's skills system still is not reaching its full potential due to a lack of sufficient numbers of qualified trainers and skills assessors who are needed to provide credentials. While there has been significant progress to date, opportunities exist to expand green skilling by supporting and upskilling training instructors and upgrading facilities with relevant green and digital technologies and equipment. Skills demands evolve quickly, so there is a need for agile training and support programs to ensure teachers, assessors, and faculty leading the training of future workers have the necessary content knowledge and skills.

The DepEd has identified several challenges in building teacher capacity and upgrading facilities to prepare them to offer green skills tailored to new technologies and sectors. These include a lack of resources such as "space, limited expertise and resources for teachers, and the need for continuous training and capacity building programs" (Son & Gamboa, 2024, p. 47).

The Philippines has implemented several efforts to expand the supply of skilled TVET trainers and skills assessors and to upgrade training facilities. For example, TESDA has offered upskilling and reskilling programs for existing trainers and skills assessors to facilitate greening of the technical and vocational skills development and certification system. Stipends and special allowances were offered to trainers and assessors who participated in select development projects supported by international development partners (e.g., ILO, ADB). Further, the TESDA Green Technology Center in the City of Taguig was established to develop courses and train green jobs experts. In Metro Manila and Cebu City, Project sustainABILITY was launched to train 750 instructors and 12,000 students in key sectors such as construction, engineering, automotive, and agriculture. These models could be replicated throughout the country.

With adequate resources, more upskilling and reskilling programs could be created for existing trainers, lecturers, and skills assessors in green technical skills as well as broader

environmental awareness, which are limited at all levels. These efforts could improve the quality of training, skills assessment, and certification, while also helping to attract learners to these programs, and they will be needed to meet Goal 1 of the NGJHRDP in preparing a green jobs-ready and -skilled workforce.

To meet this need, there could be a large-scale upskilling program for teachers and faculty coupled with support visits. When new curricula are introduced, trainings of trainers could be held to progressively roll out new green programs. Private sector employers could coordinate with training institutions, such as through a Green Development Alliance, to offer work-based learning and access to cutting-edge technology. Assessors will need to be reached through nation-wide training programs to ensure that programs requiring a TESDA national certification can be accredited and certified. Finally, investment by government and through public-private partnerships with employers in the six key green jobs sectors could finance the upgrading of facilities and technology to ensure learners are able to train in the newest processes and technologies.

Financing for Green Skills

Financing will be needed to implement the six quick wins described above as well as to fund broader development of a demand-driven green skills system. One of the biggest barriers to scaling education and training programs is agreement on shared responsibility and financing options. Many countries are already struggling to adequately finance basic education systems, and education and training have been largely neglected in climate finance negotiations.

The Philippines has allocated significant public resources toward building and upgrading its skills systems to meet growing demand from traditional and emerging sectors for green technical and cross-cutting skills. Looking forward, significant additional investment will be needed to seize the opportunities described above for expanding green skilling that meets demand while providing youth and other workers with opportunities for green employment and entrepreneurship. A combination of multiple forms of finance will most likely be needed to fully address Philippines' investment needs, including:

- Additional public funding;
- Revenues from tuition and other fees;
- Tax credits and other incentives;
- Private sector/employer investment;
- Climate financing;
- Bilateral, multilateral and philanthropic development assistance; and
- Other forms of innovative finance.

To the extent possible, the Philippines will likely need to consider increasing the allocation of **public funding as well as tuition and user fees**. It is important, however, that these strategies include mechanisms such as government-funded courses and scholarships that ensure low-income populations have equal access to education and training opportunities promoting green skills development. The Philippines has put in place policies providing tax credits for enterprises investing in the green skilling of their workforces. More can be done to encourage uptake of these credits. In addition, to incentivize private sector investment in low-carbon technologies, the Philippines may want to put in place tax credits for these kinds of investments, as has been done in the United States, the European Union, and other middle-income countries, such as Brazil, China, and India. Such incentives are a highly effective way to drive growth in green and traditional sectors and ultimately will be the most important lever for creating green jobs (in addition to government regulation). In addition to expanding public fiscal envelopes for training, more could be done to build **public-private partnerships** to elicit private sector investment in training design and financing. This will most likely be effective for specific industry-demanded technical skills, such as in renewable energy, waste management, and green construction. Additional potential sources of private funds are other companies, investment funds, banks, and other financial institutions with a stake in ensuring a well-trained workforce with green and cross-cutting skills.

Financial resources to support skills systems could also be sought from **bilateral and multilateral development institutions**, including climate funds, as well as philanthropic donors. The Philippines has the opportunity to integrate green skilling into existing projects and programs for funding envelopes for which it has already qualified in the multilateral climate funds, such as the Global Environment Facility and the Green Climate Fund (GCF). Currently, the Philippines is approved for eight projects with GCF totaling $137 million, some of which are multi-country projects for which Philippines has not yet submitted proposals. Green skills elements could be integrated within all of these projects. Green skilling could also be incorporated into youth workforce development projects funded by multilaterals such as the World Bank and the ADB or bilateral donors. Multilaterals can also collaborate with private donors to de-risk investments by providing guarantees and catalyzing additional private finance. Additionally, philanthropic sources of sustainability finance for skilling include foundations and corporate social responsibility programs.

More could be done to build public-private partnerships to elicit private sector investment in training design and financing.

Finally, new **innovative forms of finance including green bonds and climate bonds** are a potential source of funding, in which green skilling could be included as one important means for achieving climate mitigation and adaptation targets. Green bonds are bonds issued by companies or public sector entities to fund green projects such as renewable energy projects, waste management, or conservation projects. Investors in green bonds are often entities seeking to meet internationally recognized standards including environmental, social or governance standards. Green bonds often have tax benefits for investors in that interest payments on the bonds may have lower taxes, and they are verified by agencies such as the Climate Bonds Standard Board.

These types of financing would reap multiple benefits. Not only would green skilling and green employment support global efforts to reduce carbon emissions, but skilling youth, especially vulnerable youth, would boost societal cohesion and generate economic growth for the country.

7. Conclusion and Lessons Learned

As demonstrated in multiple analyses, demand for green skills and workers in the Philippines exists and is expected to increase rapidly in coming years in the agriculture, fisheries and forests, construction, ecotourism, manufacturing, renewable energy, and transportation sectors. As new jobs are created and as traditional sectors adopt more sustainable practices, green upskilling and reskilling of the workforce will be increasingly needed. Indeed, it will be absolutely essential to achieve the country's ambitious goals for climate mitigation and adaptation in a timely manner and at a lower cost.

The Philippines has made enormous strides in designing and implementing policies and initiatives to meet these targets and to support development of green skills and jobs, in some cases focusing these efforts on vulnerable youth and informal workers. Public and private education and training institutions at all levels have begun to build on the Philippines' strong policy foundation, including its qualifications frameworks and green job descriptions, to develop courses and upskill instructors in green skills, processes, and technologies. Expanding

access to green skills training to vulnerable communities such as women, youth, informal workers, and those with disabilities, however, needs further focused attention. This requires making such green skills training accessible through flexible scheduling, use of multiple delivery modalities, and options for online assessment and certification.

Despite the Philippines' impressive steps on the road to a just green transition, the scale, complexity, and urgency of this transition call for even more accelerated actions to implement the NGJHRDP. This report aims to present the immediate opportunities and quick wins that the country could implement to maintain momentum by rapidly advancing green skills development while creating systems change.

At the international level, formal recognition within climate policy discussions regarding the importance of green skills and a green workforce to speed and lower costs of achieving NDCs and NAPs has until recently been scant. This is beginning to change. While the **Jobs and Skills for the New Economy Initiative** seeks to build on early momentum to bring the discussion of green skills even higher on the climate finance and policy agenda, it also aims to work with a small number of champion countries to implement further actions to advance green skills and offer lessons for the global community. Philippines is an ideal champion country that could help create momentum and provide a road map for other countries on how to develop policy and implement green skilling systems at scale.

The Philippines transition to date offers some lessons for other countries undertaking this process.

The progress on green skilling in the Philippines detailed here and in the NGJHRDP makes a strong case for the Philippines to receive heightened international support, including climate financing, to further strengthen its green skills system, while also addressing the needs of its diverse workers, including displaced workers, youth, informal workers, and other marginalized populations. Opportunities exist to highlight Philippines' progress and garner additional technical assistance, partnerships, and funding to fully implement the NGJHRDP, rapidly putting in place robust skills systems to ensure availability of a skilled workforce for the green transition, while supporting socioeconomic well-being. EDC and partners are poised to support the Philippines in the realization of these quick wins by providing technical support, developing

Expanding access to green skills training to vulnerable communities such as women, youth, informal workers, and those with disabilities, however, needs further focused attention.

feasibility plans, piloting new models, determining viable options for roll out and scale, doing cost analyses, and supporting the government in accessing climate finance.

This case study offers a basis for discussion with the Philippine government, donors, and other actors in global climate, skills, education, and sustainable development to help the Philippines achieve its bold climate mitigation and adaptation commitments while also securing a just transition and improved outcomes for populations most at risk from climate change, including youth, women, and marginalized groups. Indeed, with the bold progress made so far, the world can scarcely afford not to get behind, and learn from, the Philippines.

Lessons from the Philippines

Incentives for Investment

While the government has begun to support and incentivize businesses to create green jobs, more could be done to implement incentives mandated by the Green Jobs Act of 2016. For example, businesses are sometimes unaware of available incentives or the steps required to access them, such as obtaining certification. From the government side, there is no current existing coordination body to implement the incentives.

Importantly, significant room exists for new legislation and policies that provide tax credits and other financial incentives for businesses and industries to invest in the low-carbon technologies and practices themselves (as opposed to incentivizing job creation and training). It is these kinds of investments that will power the transition, creating demand-driven green jobs in the process.

Subnational Coordination and Implementation

As addressed by Quick Win 1, subnational implementation of national level policies is critical. It can be improved through subnational mechanisms that bring together government entities, training institutions, and private sector employers as well as representatives of vulnerable groups.

Multi-Modal Training Delivery Options

Multiple training delivery options and types of training are crucial to reach all workers—particularly those in the informal sector and those who cannot leave their place of employment or family responsibilities to access training during regular working hours. The Philippines has been a leader in this arena, both in creating an ALS for basic education equivalency and functional literacy programs and in offering flexible training options. The latter includes multi-modal training such as online courses, flexible scheduling, self-paced programming, online assessment, and second chance programs.

Financing

Additional climate finance from the international community and the private sector will be necessary to achieve the quick wins described here as well as longer-term investments in the Philippines transition. A variety of climate finance mechanisms and investments are crucial as developing countries seek to achieve their NDCs and NAPs, and greater recognition is needed by funders in the public and private sectors regarding the importance of investing in green skills.

Annex A – List of Key Informants

Organization	Name
Institute of Labor Studies, Department of Labor and Employment (ILS, DOLE)	• Ms. Athena Mari Son, Senior Labor and Employment Officer • Mr. Joe Mari Francisco, Senior Labor and Employment Officer • Mr. Bernard Mangulabnan, Chief, Employment Research Division
Technical Employment and Skills Development Authority (TESDA)	• Ms. Gemma Reyes, Chief, Foreign Relations and Project Development Division, Planning Office • Ms. Karol Josef Lopez, Planning Office • Ms. Francis Mejorada, Labor Market Information Division, Planning Office • Ms. Bernadette Audije, Chief, Competency Standards Development Division, Qualifications and Standards Office • Ms. Marisol Gallegos, Qualifications and Standards Office • Mr. Edgardo Caldit, Qualifications and Standards Office • Mr. Clefford Pascual, Chief, Partnership, Apprenticeship, and Incentives Division, Partnerships and Linkages Office • Mr. Michael Gayona, Green Technology Center
Department of Environment and Natural Resources (DENR)	• Elenida Del Rosario-Basug, Director, Climate Change Service • Maria Cristina A. Francisco, Chief, Environmental Education and Information Division (EEID)
Philippine Chamber of Commerce and Industries (PCCI)	• Mr. Marlon Mina, Executive Director
Asian Development Bank (ADB)	• Mr. Bilal Khan, Social Sector Economist
Nationally Determined Contribution Partnership (NDCP); Climate Change Commission of the Philippines	• Ms. Joyceline Goco, In-Country Coordinator
Systemiq	• Dr. Liesbet Steer, Executive Director, People in the New Economy • Ms. Teresa Labonia, Director

Annex B – List of NGOs and International Partners

Listed below are some of the key international and NGO partners that are supporting the green economic transition and green skills development in the Philippines.

International Partnerships

- **European Union (EU).** The Green Economy Programme in the Philippines aims to support the country's transition by fostering a circular economy, reducing plastic waste, improving energy efficiency, and promoting renewable energy. Running from 2024 to 2028, it involves collaboration between the national government, LGUs, and the private sector.
- **Asian Development Bank (ADB)** supports various projects aimed at promoting sustainable development, including policy papers, studies, and initiatives that focus on enhancing skills related to renewable energy and sustainable agriculture. This includes a comprehensive study titled Technical and Vocational Education and Training in the Philippines in the Age of Industry 4.0, prepared in collaboration with TESDA, to align TVET with modern industry requirements.
- **International Labour Organization (ILO)** has been actively involved in promoting green jobs and green skills into TVET systems. Among its supports are a policy dialogue focusing on the skills required for a clean energy transition, advocacy for the development of competencies and provision of skills necessary for green jobs, and the update of the National Green Jobs Human Resource Development Plan 2020–2030.The **Industry Skills for Inclusive Growth (InSIGHT) Phase 2 (2019–2022)** project developed strategies and proactive measures to enhance skills related to green jobs, ensuring that workers are equipped to meet the demands of a sustainable economy. The project emphasizes collaboration with industry stakeholders to align training programs with labor market needs.
- **Education Development Center (EDC)**, a global nonprofit operating in the Philippines since 2006, conducted the **Blue and Green Economy Labor Market Assessment** in collaboration with Accenture and under the USAID's Opportunity 2.0 Program. O2 identified blue and green jobs opportunities for out-of-school youth within the construction, waste management, transport, agriculture/forestry, fishery/aquaculture, tourism, energy, and manufacturing sectors. EDC's initiative aimed to accelerate youth employment within inclusive green economies and resulted in over 35,000 youth transitioning into green jobs in the past two years in the Philippines. Efforts included promoting skilling and transition to work solutions that build the foundations for youth leadership, activism, and career pathways in environmental sustainability and climate adaptation.
- **Project sustainABILITY**, supported by JP Morgan and implemented by ASSIST, is providing training for 750 instructors from 20 TVIs who will train 12,000 students in construction, automobile, metal, engineering, renewable energy, sustainable agriculture, and ecotourism sectors**.**
- The **Promotion of Green Economic Development (ProGED**) was a program carried out in collaboration with GIZ from 2013 to 2016. Its primary objective was to promote and enhance the sustainability of supply chains for MSMEs in traditional sectors. This was achieved by raising awareness about eco-friendly practices, facilitating business connections between green suppliers and their customers, and developing guidelines for green business operations.

- The **Australian Government, the Philippine Board of Education, and the Philippine Green Building Council (PHILGBC)** launched a training program for green building workers to enhance skills in sustainable building practices. This initiative is part of a broader effort to address the skills gap in the green building sector.
- The **Southeast Asian Regional Center for Graduate Study and Research in Agriculture** runs programs aimed at empowering youth with green skills. This includes hands-on activities related to agri-preneurship and sustainable agricultural practices, fostering skills that contribute to environmental sustainability.
- **Clean Air Asia** offers internships focused on air quality management and climate change. Interns conduct research on air pollution drivers, prepare reports, and support the organization's environmental policy initiatives.

Partnerships with Nongovernmental Organizations

- **World Wide Fund for Nature -Philippines** offers internships in their Climate and Energy Programme. Interns assist with research, project coordination, and stakeholder engagement, focusing on climate change adaptation and renewable energy initiatives. This program is ideal for students in environmental science or related fields.
- Civil society organizations, such as **VSO Philippines**, offer green skills training programs in agroecology, climate-resilient farming, and waste management.
- **Greenpeace Philippines** provides internship opportunities where interns work on environmental advocacy projects. Interns gain hands-on experience in various initiatives aimed at promoting sustainability and addressing climate change. The program emphasizes mentorship and practical skills development.
- **Evergreen Labs** focuses on upskilling informal workers in the recycling sector. It provides training on waste reduction, recycling techniques, and circular economy principles to enhance the capabilities of workers involved in waste management, most of whom are informal workers.
- **Save Philippine Seas, Coastal Conservation Education Foundation, the National Fisheries Reform, and other NGOs** work on various environmental issues, including marine conservation and sustainable livelihoods. They engage communities through education and training programs related to fisheries and aquaculture, promoting sustainable practices among informal workers.
- **Several local government units (e.g., Quezon City, Cebu, Angono) and local NGOs** also offer green skills training (e.g., urban gardening, sustainable farming techniques, waste segregation and recycling, and energy efficiency) tailored specifically for the informal sector workers.

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