



International
Labour
Organization

► How to work in the green economy?

Guide for young people, job seekers
and those who support them



*A guide in
the “Building
my Future at Work”
collection*

▶ **How to work in
the green economy?**

Guide for young people, job seekers
and those who support them



Copyright © International Labour Organization 2022

First published 2022

Publications of the International Labour Organization (ILO) enjoy copyright under Protocol 2 of the Universal Copyright Convention. Nevertheless, short excerpts from them may be reproduced without authorization, on condition that the source is indicated. For rights of reproduction or translation, application should be made to ILO Publishing (Rights and Licensing), International Labour Office, CH-1211 Geneva 22, Switzerland, or by email: rights@ilo.org. The ILO welcomes such applications.

Libraries, institutions and other users registered with a reproduction rights organization may make copies in accordance with the licences issued to them for this purpose. Visit www.ifrro.org to find the reproduction rights organization in your country.

How to work in the green economy? Guide for young people, job seekers and those who support them

ISBN: 978-92-2-037653-9 (print)

ISBN: 978-92-2-037654-6 (pdf Web)

The designations employed in ILO publications, which are in conformity with United Nations practice, and the presentation of material therein do not imply the expression of any opinion whatsoever on the part of the ILO concerning the legal status of any country, area or territory or of its authorities, or concerning the delimitation of its frontiers.

The responsibility for opinions expressed in signed articles, studies and other contributions rests solely with their authors, and publication does not constitute an endorsement by the ILO of the opinions expressed in them.

Reference to names of firms and commercial products and processes does not imply their endorsement by the ILO, and any failure to mention a particular firm, commercial product or process is not a sign of disapproval.

Information on ILO publications and digital products can be found at: www.ilo.org/publns.

Cover illustration: Charlotte Design

Printed in Switzerland

► How to work in the green economy?

Guide for young people, job seekers and those who support them.

As early as 1990, the first report of the IPCC (Intergovernmental Panel on Climate Change) alerted us on the harmful effect of human activity on climate change and global warming. 32 years later, these predictions are confirmed, and our lives are impacted. Natural disasters follow one another, destroying lives, businesses, jobs and pushing people to migrate.

Aware of the risks, the international community has organized and mobilized to fight against climate change and try to contain average global warming notably. The Paris climate agreement was adopted in December 2015. The same year, world leaders, adopted the 17 sustainable development goals (SDGs) to end poverty, protect the planet and ensure prosperity for all. Goal 8 aims to promote inclusive and sustainable economic growth, employment, and decent work for all. The promotion of green jobs is at the heart of this objective.

The transition to the green economy will inevitably involve destruction of some jobs, but in the same time, the creation of new ones. The ILO estimate that about 100 million new jobs can potentially be created by 2030, leading to a net job creation of 25 million jobs.

It is therefore essential to prepare for it by supporting professional transitions.

Many young people, aware of climate issues, wish to contribute to the necessary transformation of our economies by moving towards green professions. However, they often lack knowledge on the green economy.

The objective of this guide is to provide young people, job seekers and those who support them with useful information to build their professional goals plan, either as an employee of the green economy, or by creating their own job in a sustainable entrepreneurship approach.

The ILO supports member states to adapt and mitigate the impact of climate change and manage just labour market transitions.

This guide is the third in the "Building my future at work" collection, created by the ILO to offer a toolbox enabling young people and those who support them to manage their professional life in a constantly changing world of work.

We wish you every success in your projects.

Mrs Sukti DASGUPTA

Chief of the Employment,
Labour Markets and Youth Branch
ILO - Geneva

Mr Moustapha Kamal GUEYE

Unit Head, Green Jobs
ILO - Geneva

Doing your part, and more...

"One day, says the legend, there was a huge fire in the Amazon rainforest. All terrified animals, aghast, watched helplessly disaster. Only the little hummingbird was busy, fetching a few drops with its beak to throw them on the fire. After a while, the armadillo, annoyed by this ridiculous agitation, said to him: "Hummingbird! You're not crazy? It is not with these drops of water that you will put out the fire!" And the hummingbird answered him: «I know, but I'm doing my part»."

This Amerindian legend, popularized by several ecological actors, illustrates the concern of many earthlings to "do their part", to contribute to the essential slowing down of climate change. If the isolated action of the Hummingbird seems useless in the face of the fire, however, by setting an example, it inspires the other animals and restores hope.



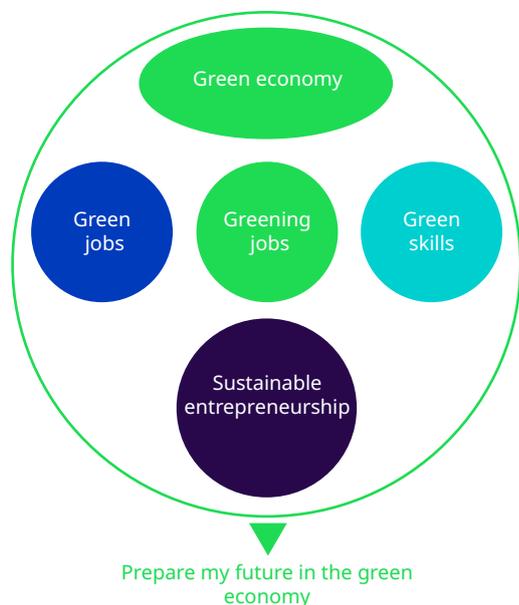
But how to do your part? When choosing professional future, many young people, sensitive to planetary issues, would like their future job to be consistent with their convictions and help to bend the carbon curve. However, for non-specialists, the green economy is still very vague. Which careers to go to? What skills to acquire?

The objective of this guide is therefore to provide you with the information you need to understand the green economy, distinguish between green and greening professions, identify green skills and discover the opportunities of sustainable entrepreneurship when creating your own job.

The last chapter will guide you, so that you can develop a solid, realistic and achievable professional project, in line with your ambitions and convictions.

This guide is not only intended for young people in the orientation phase. It also concerns their families and anyone who wants to give a new direction to their professional career. Finally, career support specialists, in particular employment services advisers, will also be able to use it as a resource in their daily practice.

I hope this guide answers your questions and enables you to take your part in building a fairer and greener future!



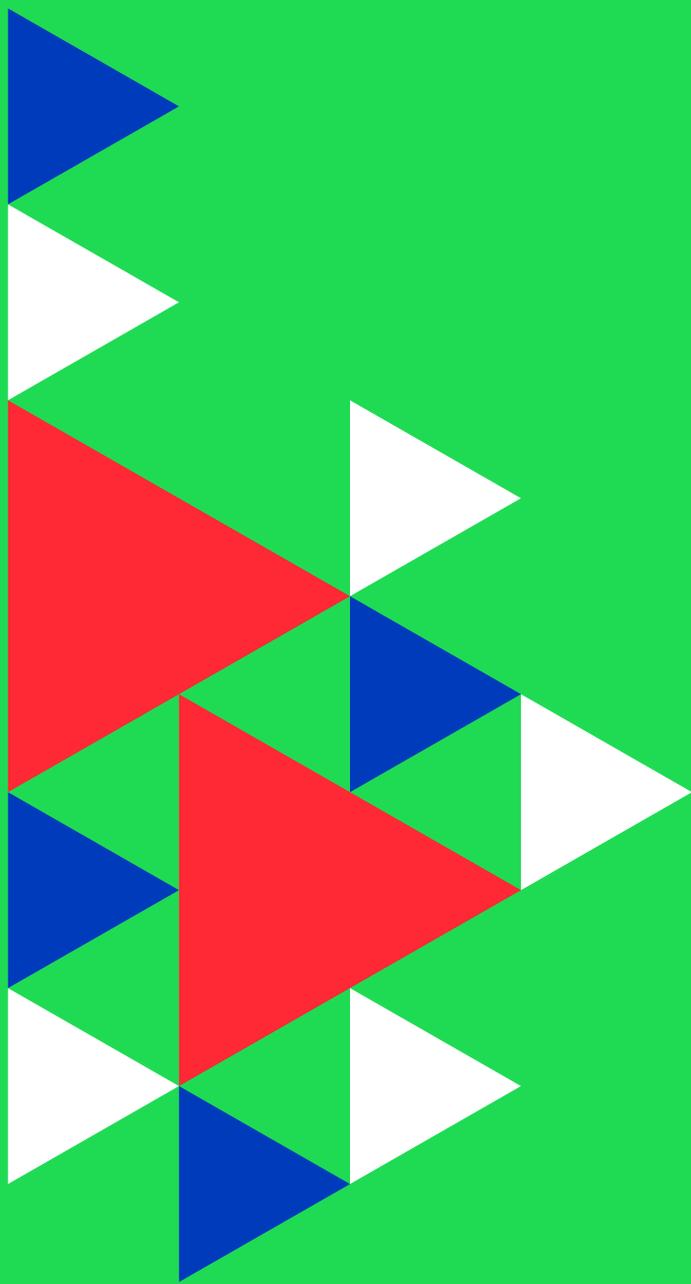
François DUMORA

Employment Services Specialist
Career guidance focal point

International Labour Organization – Geneva - 2022

► Table of Contents:

How to work in the green economy? Guide for young people, job seekers and those who support them.	iii
Introduction	iv
1 I want to contribute to a greener economy!	1
1-1: Some clarifications on the concept of « climate change »	2
1-2: What are the effects on the world of work?	4
1-3: Green economy / green jobs?	5
1-4: Can everyone find a place in the green economy?	7
2 Discovering the green jobs	8
2-1: 3 sectors at the heart of the green economy	9
2-2: Where are the green jobs?	11
2-3: Directory of green jobs	13
3 Discovering the greening jobs	19
3-1: Changing economic sectors	20
3-2: Directory of greening jobs	23
4 New skills in the green economy	27
4-1: How does the green economy affect skills?	28
4-2: Glossary of sustainable development	29
4-3: Examples of green training programs in the world	32
5 Sustainable entrepreneurship	33
5-1: Creating your own job in the green economy	34
5-2: Basic advice for green business starters	36
5-3: Ideas for sectors where to create your green business	37
6 How can I prepare for my future in the green economy?	40
6-1: Preparing my project	41
6-2: Tips for your job search	43
Sources	44





1

I want to contribute to a greener economy!



Some clarifications on the concept of
« Climate change »

What are the effects on the world of
work?

Green economy / green jobs?

Can everyone find a place in the green
economy?

As for many young (or not so young) persons, the future of our planet worries you. When choosing your future profession, you want to move towards a professional activity that will have a positive impact to slow down climate change and promote sustainable development. This guide aims to bring some insights that will contribute to your reflection.

► 1-1 : Some clarifications on the concept of "Climate Change"



What are we talking about?

According to the UN, the term "climate change" means long-term variations in temperature and weather patterns. These can be natural variations, due for example to those of the solar cycle. However, since the 1800s, human activities have been the main cause of climate change, mainly due to the use of fossil fuels such as coal, oil and gas. Their combustion generates greenhouse gas emissions – GHG – (mainly carbon dioxide and methane) which act as a blanket around the Earth, trapping the sun heat and causing temperatures to rise.

Clearing land and forests can also lead to the release of carbon dioxide.

Garbage dumps are a significant source of methane emissions. Energy, industry, transport, construction, and agriculture are among the major emitters.

And emissions continue to rise. As a result, the global surface temperature is currently 1.1°C higher than the temperature recorded in the 1800s. The last decade (2011-2020) has been the hottest on record.



What are the consequences?

Many people believe that climate change mainly results in higher temperatures. Yet rising temperatures are just the beginning of the story. Since the Earth is a system where everything is connected, a change in a place can have repercussions anywhere else.

Currently, the consequences of climate change include severe droughts, water shortages, severe fires, rising sea levels, floods, melting polar ice, catastrophic storms and biodiversity decline.

Climate change can affect our health, our ability to produce food, our habitat, our safety and our work. Some of us are already more vulnerable to the effects, particularly people in small island states, indigenous peoples, women in developing countries... Phenomena such as rising sea-level and saltwater intrusion have expanded to the point that entire populations have had to move, and prolonged droughts put populations at risk of starvation. In the future, the number of "climate refugees" is expected to increase sharply.



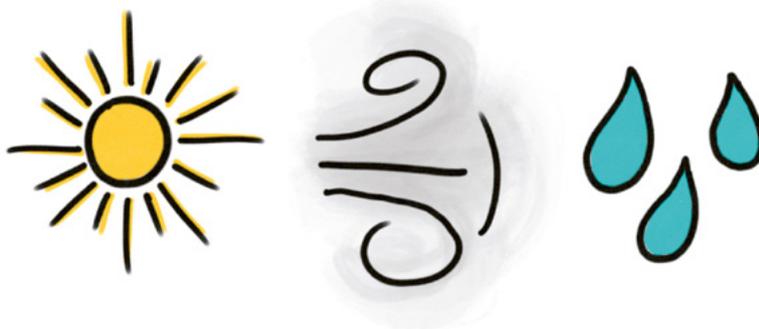
How to act?

In 1988, the United Nations established the Intergovernmental Panel on Climate Change (IPCC) to provide detailed assessments of the state of knowledge on climate change, its causes, potential impacts and potential solutions.

In their successive reports, the experts agree that containing the rise in global temperature to + 1.5 °C would help us prevent the most severe climate effects and maintain a livable climate on the planet. However, in their 6th report published in 2021, the experts give a warning. According to them, the current national climate plans are not sufficient and the warming of the planet should exceed + 2 ° C by the end of the century. The problem we all face is considerable, but we already know a large number of solutions.

We have international frameworks and agreements to guide progress, such as the Sustainable Development Goals, the United Nations Framework Convention on Climate Change adopted in 1992 and the Paris Agreement signed at COP21 in 2015. The three main categories of action are: emission mitigation, adaptation to the effects of climate change and financing the necessary adjustments.

At the energy systems level, switching from fossil fuels to renewables (such as solar or wind energy) will reduce the emissions that cause climate change. However, we need to start now. A growing coalition of countries is committed to achieving net-zero emissions by 2050, but about half of the emission reductions must be effective by 2030 if warming is to be kept below 1.5°C. Fossil fuel production is expected to decline by about 6% per year from 2020 to 2030.



► 1-2 : What effects on the world of work?

Job losses affecting mainly the most vulnerable

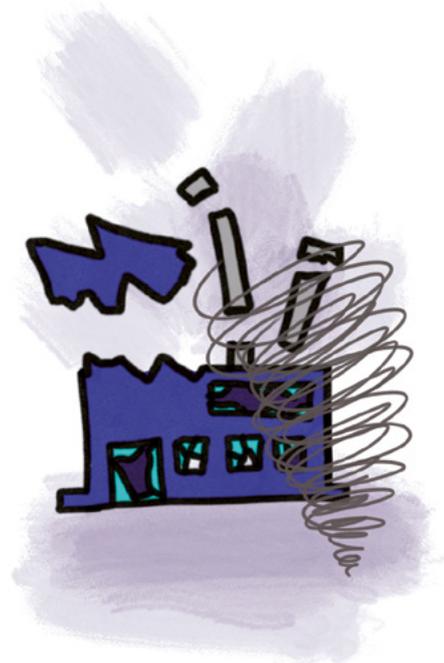
Climate change is probably the greatest challenge of our time. Because of the environmental degradation it generates, climate change poses a considerable risk to the economy by reducing productivity and destroying jobs.

Droughts, heat waves, heavy rains, tropical cyclones, rising sea levels, rising temperatures and changes in the distribution of rainfall have led to the displacement of workers, disruptions to business activities, damage to business equipment, infrastructure and negative repercussions on productivity, the labour market and employment.

Examples:

- In the United States, in 2012, Hurricane SANDY caused billions of dollars in damage to public and private facilities and infrastructure, and displaced 150,000 workers.
- In the Philippines, in 2014, Typhoon HAGUPIT affected an estimated 800,000 workers, damaging or disrupting their livelihoods overnight.
- In Sudan, in 1995, heat stress caused by heat waves caused the loss of 3.7% of annual working hours, or the equivalent of 210,000 full-time jobs.

As in all crises, the effects weigh disproportionately on the most vulnerable. The most affected are the working poor, the self-employed, workers in the informal sector, seasonal workers and casual workers, not to mention micro and small enterprises. They often lack an adequate social protection system, have limited alternative income opportunities, and rely heavily on climate-sensitive resources, such as local sources of water and food. Finally, women are generally more affected than men and in particular poor women living in rural areas that are more heavily dependent on natural resources.

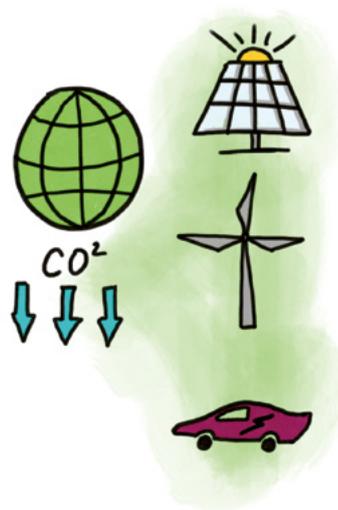


► 1-3 : Green economy / green jobs?

What is a green economy?

According to the United Nations Environment Program (UNEP), "A green economy leads to improved human well-being and social equity, while significantly reducing environmental risks and resource scarcity. In its simplest form, it is characterised by low carbon emissions, resource efficiency and social inclusion".

The aim is to promote a fair transition towards ecologically sustainable economies and societies, which generates decent jobs and an improvement in the living conditions of the most disadvantaged populations.



100 million potential new jobs in the green economy

Climate change mitigation and adaptation strategies require investment in new products, technologies, services and infrastructure, which can provide a major boost and create new jobs. Two scenarios are taken into account in the ILO simulations (ILO - 2019):

- The scenario of the energy transition , which consists in replacing fossil fuels with renewable energies, would create 25 million jobs, against the destruction of 7 million related to the exploitation of fossil fuels, i.e. a positive balance of + 18 million.
- The circular economy scenario, which consists of using resources in a sustainable and recyclable way, would create 78 million jobs, against 71 million destroyed, i.e. a positive balance of + 7 million jobs.

Horizon 2030, in millions of jobs	Risk of job destruction	Potential job creation	Balance
Energy transition scenario	-7	+25	+18
Circular economy scenario	-71	+78	+7
Total	-78	+103	+25

In total, 103 million jobs would be created by 2030, with a positive balance of 25 million. Two challenges lie ahead:

1. Support and train people whose jobs could disappear (due to the ecological transition process) so that they can develop the skills necessary in the new jobs available.
2. Training job seekers and young people entering the labour market so that they too can seize the opportunities linked to the net creation of 25 million new jobs.

What are green jobs?

Green jobs are key to achieving sustainable development.

According to the ILO, green jobs are decent jobs that contribute to the preservation, restoration or improvement of the quality of the environment. They can be practiced either in traditional sectors such as industry, construction, agriculture, or in new and emerging green sectors such as renewable energies.

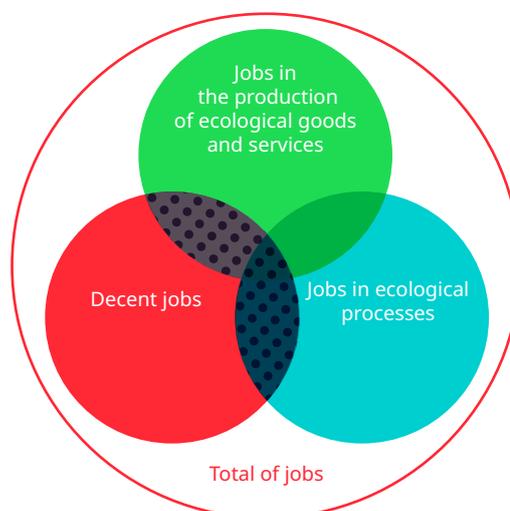
Green jobs allow:

- ✓ Improving the efficient use of energy and raw materials
- ✓ Limiting greenhouse gas emissions
- ✓ Minimizing waste and pollution
- ✓ Protecting and restoring ecosystems and biodiversity
- ✓ Contributing to adaptation to the effects of climate change.

At the enterprise level, there are two categories of green jobs:

- ✓ Those which will directly produce goods or offer environmentally friendly services (for example: non-polluting means of transport)
- ✓ Those which contribute in the enterprise to environmentally friendly production processes (for example: reduction of water consumption), even if the finished product does not have a direct link with the environment.

Green jobs are all the jobs that correspond to the checkerboard areas in the following diagram:



► 1-4 : Can everyone find a place in the green economy?

You want to contribute to the fight against global warming and climate change by moving towards a green economy profession. Is it open to all?

These professions are often poorly known and many may think that they are most often highly qualified jobs, requiring long years of study and therefore closed to the majority of applicants. It is not true. As you will discover in the following chapters, the green economy offers very varied professions concerning all levels of qualification and for different profiles. However it is necessary to identify them and acquire the necessary skills.

The skills gap challenge for green jobs

Faced with the urgency of transforming our energy consumption patterns and production practices, the transition to a greener economy will very quickly require new skills for many workers around the world, either to evolve in their current jobs that need to be adjusted, or to take up new and emerging jobs. Without a properly trained workforce, the transition will be impossible.

Training in these new skills will be one of the main keys to the success of the ecological transition, as employers who invest in new technologies must be able to find workers with the necessary skills.

The worker who wishes to seize the opportunities of these new jobs and contribute to the new green economy, must therefore be the pilot of his professional development by identifying the profession he wishes to practice in the future and the skills to be acquired. This guide accompanies you, in this process.





2

Discovering the green jobs?



3 sectors at the heart of the green economy

Where are the green jobs?

Directory of green jobs

► 2-1 : 3 sectors at the heart of the green economy

What are we talking about?

Over the years and international climate conferences, in order to speak a common language and measure the evolution of the sector, the concepts have been defined and stabilized. It is generally accepted that the green economy includes two components: eco-activities and peripheral activities.

► **Eco-activities** : activities that produce goods or services with the aim of protecting the environment or the sustainable management of natural resources. 3 sectors are identified as the heart of the green economy:

- Production and distribution of energy and water
- Sanitation and waste treatment
- Protection of nature, the environment and biodiversity

► **Peripheral activities** : activities promoting better environmental quality, without this being their primary purpose. 6 traditional sectors are particularly affected by changes in their production methods:

- Transport
- Building
- Agriculture and livestock
- Forest industry
- Fishing
- Manufacturing.

In order to be effective, the response of our societies and economies to climate change cannot rely solely on eco-activities. While it is essential to turn to clean and renewable energies, to better manage water resources, to sort waste and to protect the environment, these actions will be insufficient, if we do not reduce the polluting action of the traditional sectors of activity. These sectors must profoundly transform their modes of production, to be more efficient in the use of energy and natural resources. When they do, they contribute to the green economy.



Focus on eco-activities



Production and distribution of energy and water

The use of fossil fuels (coal, oil, gas) is the main source of greenhouse gas emissions, the cause of global warming. Other alternative energies, non-polluting or less polluting, must be developed to replace, at least in part, old energies, in order to produce electricity. The origins of the main alternative energies are:

- ✓ Solar – captured by voltaic photo panels
- ✓ Wind turbine - use of wind force,
- ✓ Hydraulic - use of the force of rivers or sea currents,
- ✓ Vegetable – production of biofuels from biomass or dedicated crops.

Water management and production is also a very strong issue. Fresh water is a scarcer resource on the planet, while it is essential for life, agriculture and many production activities. Freshwater resources are decreasing due to evaporation linked to global warming, due to groundwater pollution, due to the increase in the world population and due to poor management of the resource.



Sanitation and waste treatment

Air, water and land pollution is linked to the overproduction of waste and the dumping of harmful products into the environment. Waste remediation and treatment activities aim at a renewed and sustainable use of resources and materials. Thus, the collection and treatment of waste water aims to avoid its discharge into the environment, but also the reinjection of treated water into consumption circuits. In the same way, the cleaning of public spaces, the collection of waste, its treatment, aim to eliminate the disposal of toxic products into the environment. Thus, the waste is sorted to separate all materials (metals, plastics, paper, organic matter ...) that can be recovered to be reintroduced into a production cycle. This is the logic of recycling.



Protection of nature and the environment

The planet is our common good and yet we have mistreated it for centuries, and especially in the last 100 years. Environmental protection consists in taking measures, individual and collective, to limit or eliminate the negative impact of human activities on their environment.

This can involve different types of action:

- ✓ Nature conservation and conservation actions, for example through the creation, management and monitoring of protected areas (national parks...)
- ✓ Scientific actions to study the operation of ecosystems to develop the knowledge necessary to protect nature and biodiversity. This helps to improve the understanding of the phenomena, identify the risks, the opportunities and sometimes manage to repair the damage already caused.
- ✓ Education and awareness-raising activities for the populations but also for decision-makers.

► 2-2 : Where are the green jobs ?

What are we talking about ?

Beware of clichés! As you will have understood by discovering the different sectors of the green economy, not all the jobs included are practiced in the open air, in the middle of nature or in contact with wildlife. These are in the minority.

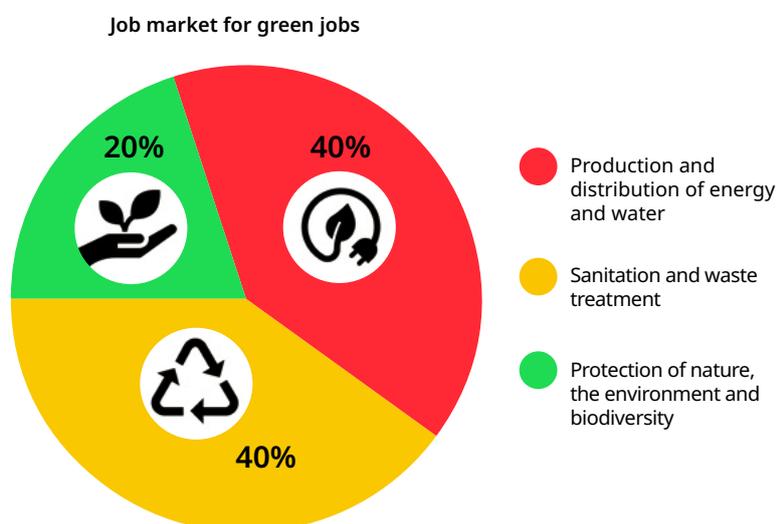
Green economy jobs contribute to reducing energy, raw materials and water consumption, reducing greenhouse gas emissions, minimising or completely avoiding all forms of waste and pollution, and protecting and restoring ecosystems and biodiversity. They can be practiced either in the 3 sectors called "eco-activities", or in peripheral activities, or even in other sectors.

They fall into two categories:

- **Green jobs** : These are professions whose purpose and skills implemented contribute to measuring, preventing, controlling, correcting negative impacts and damage to the environment. They are therefore directly linked to the environment and the sustainable economy. Some examples: national park officer, water quality measurement technician, waste sorting technician.
- **Greening jobs** : These are professions whose purpose is not environmental, but which integrate new "skills blocks" to take into account in a significant and quantifiable way the environmental dimension in the business gesture. Some examples: farmer in organic production, lumberjack in eco-managed forests, plumber installing heat pumps, mason in bioclimatic construction.

Which job market for green jobs ?

Mainly located in the 3 sectors identified as the heart of the green economy, green jobs are distributed differently according to the countries and their challenges. At the global level, it can be seen that the number of jobs in nature conservation occupations is generally half as high as for each of the other two sectors. This can be summarized by the following graph (author):



Thus, the jobs related to the protection of nature are in the minority. The main needs are most often in:

▶ **Waste management :**

- ✓ About three quarters of the positions related to waste management and cleanliness are occupied by low-skilled personnel (collection and sorting agents).
- ✓ The local authorities in charge of this competence are also looking for more qualified profiles: site managers or waste management consultants, but also sorting ambassadors and sustainable development project managers in order to raise awareness of ecological issues.

▶ **Water management :**

- ✓ The needs lie in the distribution of drinking water and the treatment of waste water. Profiles sought: water exploitation technicians, hydrogeologists, hydraulic engineers...

▶ **Renewable energies :**

- ✓ Recruitment needs are substantial in the wind and solar sectors. These are mainly engineering and project manager positions for the design of equipment and technician positions for their installation, operation and maintenance.

▶ **Prevention and energy saving :**

- ✓ To reduce the environmental impact of their activities and apply the standards in force, traditional companies are increasingly relying on QSE (quality, safety, environment) managers, energy efficiency engineers and carbon footprint experts.

▶ **The fight against pollution :**

- ✓ The soil remediation market is looking for specialist engineers. This is also the case for air quality monitoring and measurement activities.

▶ **The business and community consulting sector :**

- ✓ Enterprises, all sectors combined, recruit in many areas of expertise: environmental policy, safety, risk management, energy management, recycling. Carbon footprint experts, business engineers and other consultants are highly sought after by consulting firms or by the enterprises themselves.
- ✓ Professions requiring skills such as environmental management, consulting and communication, to integrate environment considerations in the enterprise.

Nature protection professions generally offer fewer jobs because they do not benefit from the same level of funding as other sectors with high industrial and commercial stakes. Often located in public or associative structures, these are most often skilled jobs with very diverse profiles.

► 2-3 : Directory of green trades

What are we talking about?

To be able to think about an orientation towards the professions of the green economy, it is essential to have the elements to understand this sector and identify the main professions. That is one of the purposes of this guide. **The directory that we offer you here is not exhaustive.** It aims to present the main ones, in each sector of activity. The information given is general. **Specificities exist by country or region of the world.** These elements constitute only a starting point for your reflection and research. Additional information can easily be found on the internet. See the list of useful sites at the end of this guide.

NB : In the following directory, the job description designates alternately a woman or a man. It is a voluntary choice of the author to show that they can all be practiced by women as well as by men.



Sanitation and waste treatment professions

Title	Description	Working conditions and profile
Sanitation/ Sewer Worker	The sewer worker maintains and cleans sewerage pipes and related works under roads and in lifting and pumping stations. On board a vacuum truck, she ensures preventive and corrective maintenance of the installations: detection of anomalies, cleaning, pumping and cleaning of wastewater and rainwater networks.	Teamwork, outdoors, in dark environments. Climatic constraints, noise and odors, contact with pests (insects, rats). Irregular schedules. Frequent night and weekend work, most often standing position with handling.
Waste Collection Officer	A hygiene professional, he carries out the removal of household waste by truck. He then transports it to a treatment site or to an incinerator. He contributes to waste sorting operations carried out upstream by individuals or companies.	Work in a mini team, outdoors in all weathers, mainly in urban areas, staggered hours or at night.
Waste sorting agent	The officer sorts the waste from selective collection and directs the sorted materials to the recovery channels. In a waste treatment and recovery unit, he ensures the monitoring and dispatching of waste that passes on the conveyor (conveyor belt scrolling at high speed). He is thus one of the very first links in the recycling chain.	The job requires autonomy, dexterity, speed and a taste for teamwork. It implies a minimum knowledge of waste and strict compliance with hygiene, safety and environmental instructions.
Waste disposal agent	The agent welcomes users who come to dispose of bulky or specific waste and ensures the supervision and proper use of a landfill. Depending on the waste, he indicates the appropriate bins and containers. In parallel, the waste disposal agent also carries out administrative and management tasks, as well as the upkeep and maintenance of the site.	Outdoor work that requires good physical resistance. It involves organizational skills and good customer contact. A certain autonomy is required because often the reception agent is alone on the site. Schedules are regular (including weekends).
Recycling agent	The agent recycles the objects collected within her structure. She sorts, checks, cleans, repairs and revamps them to give them a second life for sale and reuse.	The job requires to be a good handyman, organizational and interpersonal skills.



Title	Description	Working conditions and profile
Sorting Ambassador	The ambassador informs and promotes the separate collection of waste among residents. He is an essential link between users and the waste collection service. His mission is to encourage residents to properly sort their waste (recyclable, glass, paper, bulky, battery and ink) as part of an environmental and sustainable development policy.	The sorting ambassador has good interpersonal skills. He has an ability to communicate and convince and obvious pedagogical qualities. Speaking up does not scare him. The job involves frequent travel.
Water quality and analysis technician	The technician analyses, measures and controls in the laboratory the chemical, physical and biological qualities of the water, on the basis of the samples she receives. She can thus detect impurities and pollution. She primarily analyzes water intended for human consumption, but also water from the natural environment (groundwater), wastewater, bathing water.	Laboratory work. This job requires a lot of rigor and precision both in terms of analysis and compliance with QHSE (Quality, Health, Safety, Environment) protocols and rules).
Water Treatment Technician / Wastewater Treatment Plant Agent	The water treatment technician monitors and controls the processes in a drinking water production plant, a treatment plant. He monitors the treatment steps (screening, drilling, settling, filtration, chlorination, ozonation, sludge treatment, etc.). He carries out checks and samples, checks and records the analysers and ensures follow-up.	His work involves responsibilities and very strict compliance with quality and environmental rules and standards. He works in a team, sometimes in 2x8 or 3x8 shifts, and may be subject to on-call duty.
Depollution technician	The depollution technician is responsible for the implementation and monitoring of the rehabilitation of polluted soils and sites. Upstream, she prepares, installs and adjusts the equipment. She carries out the operations of depollution and treatment of soils and groundwater and then evacuation of polluted elements.	The job involves mastering sampling techniques, scientific and technical instrumentation and depollution techniques. Knowledge of chemistry, geology, hydrology is useful.
Energy recovery unit engineer	The energy recovery unit (ERU) engineer conducts energy performance optimization projects on household waste incineration units that not only serve to eliminate waste but also make it possible to recover it and produce electricity or supply a heating or hot water network.	The job involves technical, environmental and regulatory knowledge. Depending on the job profiles, project management skills are also desirable.
Waste Treatment Site Manager	The person in charge ensures the operation and management of a treatment or storage site. She manages the recycling and recovery, incineration or landfill of waste operations. Both a technician and a manager, her mission is to coordinate a processing unit and organize its proper functioning in all areas.	The function requires versatile skills, a good knowledge of process engineering applied to waste treatment, interpersonal, leadership and management skills.

Jobs in energy and water production and distribution

Title	Description	Working conditions and profile
Solar panel installer	The installer installs, repairs and maintains photovoltaic (electricity production) or thermal (hot water and heating) solar panels. He carries out upstream studies prior to the site work, advises and informs the customer (estimate of production depending on the amount of sunshine, time and cost of the site work, stages and progress of the site work...).	The solar panel installer works at heights and outdoors. He must have a good physical condition and endurance because the weather conditions are not always optimal. Obviously, he must not suffer from vertigo.
Maintenance technician on wind turbines	The technician participates in the maintenance of wind turbines, machines that use the force of the wind to produce energy or to pump water. She is responsible for start-up operations and mechanical verification before delivery as well as preventive maintenance operations (maintenance, upgrade) or corrective maintenance (repair, change of parts).	Perched at heights of more than 80 meters, the technician must not be prone to vertigo and be in excellent physical condition. She is subject to climate change: sun, wind, rain. She moves from site to site and is subject to on-call duty.
Energy Advisor	The role of the energy advisor is to guide consumers in their energy savings process. The objective is twofold: to help consumers reduce their energy bills while promoting the use of renewable energies. He can suggest different energy solutions and equipment that consume less energy.	This position is often occupied by commercial profiles with a strong interest in the issues of green and renewable energies, ecology.
Flow saving agent	The flow saving agent is a specialist in the prevention of waste in energy and water. She interacts with local authorities, administrations and companies to reduce their consumption. She makes diagnoses and recommends solutions to reduce overconsumption.	The profession requires a good technical background (energy, thermal), legal and regulatory knowledge as well as teaching and interpersonal skills.
Hydrologist	The hydrologist is a scientist specializing in the study of the large natural cycle of water (rain, runoff, evaporation). He carries out missions of surface water control, preservation of aquatic environments and management of water resources. He is mainly interested in surface waters. He measures changes in the condition and characteristics of watercourses.	The hydrologist conducts observations on site but also works a lot using modeling tools, GIS (geographic information system).
Renewable Energy R&D Engineer	The renewable energy engineer is a specialist in energy transition and new energies. She works on projects related to biomass, wind, hydro, solar and geothermal. She both implements and upgrades sites and contributes to improve existing techniques or discover new sources of energy.	The job involves great technical, communication and writing skills. Some mobility is often required. The engineer usually works in multi-technical teams in design offices.



Professions in the field of nature, the environment and biodiversity

Title	Description	Working conditions and profile
Nature warden	In the field, the nature warden ensures the protection of the natural heritage and the preservation of biodiversity. He monitors the site or natural area for which he is responsible (mountain, forest, coastline, aquatic environments, nature reserve). He ensures an ecological watch, the maintenance of the heritage and of the installations.	The profession requires a strong interest in the environment and biodiversity. Knowledge of fauna, flora and ecology is essential. In contact with the public, the nature warden must have interpersonal and teaching skills. Always practiced outdoors, the job requires a good physical condition.
Nature and environmental education officer	The nature and environmental education officer supports, supervises and animates school and extracurricular groups, but also adults, to raise their awareness of the protection of nature and the environment. She designs and implements educational activities based on the knowledge of the environment.	The environmental education officer must therefore possess a good naturalistic culture and a knowledge of communication tools that allows her to adapt to different audiences. If she works in a team, she is part of the pedagogical project established by this team.
Health, Safety and Environment Technician	The health, safety and environment (HSE) technician ensures the prevention of industrial risks, enforces hygiene and working conditions, helps to produce without polluting. He is a risk manager who implements the company's environmental safety policy and prevention actions.	This job requires good physical resistance, composure, initiative, observation and discretion. Interfacing with other departments of the company, it also requires clarity, teaching and interpersonal skills.
Air quality technician	The air quality technician ensures the operation and maintenance of atmospheric stations responsible for checking air quality throughout a territory. She processes and controls the daily parameters transmitted by the various sensors located all over her territory.	The technician travels extensively on the territory for which she is responsible which implies autonomy. Her interventions require good knowledge of electronics, electrical engineering and automation.
Forest Technician	The forest technician manages a forest area. He ensures its protection and maintenance. He ensures the sustainable management of the forest. He has three main areas of intervention: wood production, the preservation of biodiversity and the reception of the public.	Often in the field, another important part of his work takes place in the office: statistics, tree disease surveys, accounting, management. The job requires autonomy and communication skills.
Carbon footprint expert	The expert helps companies and communities change their strategies to limit their greenhouse gas (GHG) emissions and therefore the impact of their activities on the climate. Her mission is twofold: carrying out an audit of greenhouse gas emissions and then recommending solutions to reduce them.	The profession requires synthesis and organizational skills as well as rigor and solid scientific knowledge. It is also necessary to have a good oral fluency and know how to be persuasive and a good pedagogue to defend one's recommendations.

Professions in the field of nature, the environment and biodiversity (continued)

Title	Description	Working conditions and profile
Eco-advisor	As a professional of the environment and sustainable development, the eco-advisor provides advice, decision support and project facilitation. He supports decision-makers on environmental issues and leads sustainable development projects.	This function involves transversal knowledge and skills in the field of sustainable development. The eco-advisor must also have excellent communication skills because he is required to work with many partners. Project management skills are also required.
Bridge, Water and Forest Engineer	The engineer works on land-use planning, the preservation of natural areas and their promotion. She takes part in the design, development, implementation and evaluation of public policies in multiple fields: climate, energy, housing, transport, agriculture	The bridge, water and forest engineer may perform her duties in ministerial departments, for local authorities or in private practices.
Engineer for the study of natural environments	The engineer for the studies of natural environments is a nature manager. He develops, adapts and applies techniques for monitoring positive or negative changes in natural environments. He carries out data collection campaigns and field surveys (flora, fauna, soils, irrigation, etc.).	This profession is carried out in three different settings: office, research and teaching laboratory and outdoor in the field. Travel, sometimes of long duration, is not to be excluded.
Ecological engineer	The ecological engineer studies, analyzes and predicts the impact of human activities on his environment and biodiversity. She is an expert in the functioning of natural or anthropized (i.e. man-made) ecosystems. She is responsible for ensuring the preservation and conservation of the environment.	The job involves a solid scientific culture, a good command of GIS tools and technical language. Comfortable in written formats (reports) as well as in spoken form (in contact with multiple interlocutors, facilitating meetings), the ecological engineer must be used to managing projects.
Natural Heritage Project Manager	The person in charge of the heritage of a natural area develops, implements and manages all actions intended for the preservation and enhancement of this heritage. He is responsible for the projects carried out on his territory: development work, tourist development ...	This job of reflection, coordination and project development involves relationships with many actors. It also involves technical and organizational skills. The time devoted to working meetings is therefore important, but the heritage project manager also travels to the field.
Natural park director	The director of a natural park or reserve manages all the activities to protect and enhance these areas. The director is a manager who runs a budget, manages teams as well as projects for the preservation and development of her structure.	The director must collaborate with scientists within her teams, have notions of environmental law, supervise the reception of the public, organize relations between the park and local officials. Diplomacy, technical, legal and management skills, such as the qualities and skills required.

The world of work is constantly evolving. Some of the jobs listed here are likely to undergo significant changes, particularly due to automation and digital technologies. Some professions may disappear and new professions may be created to meet the evolution of our societies. It is therefore important to keep abreast of these developments.



3 Discover the greening jobs ?



[Changing economic sectors](#)

[Directory of greening jobs](#)

▶ 3-1 : Changing economic sectors

What are we talking about ?

As explained in Chapter 2, it is generally accepted that the green economy comprises two components: eco-activities and peripheral activities.

Peripheral activities act in favor of better environmental quality, without this being their primary purpose. These primarily concern 6 traditional sectors, which emit a lot of greenhouse gases (see graph) that are changing in order to reduce their polluting action by profoundly transforming their production methods or their orientations. In recent years, environmental regulations in many countries have tightened to force these sectors to undergo environmentally essential transformations.

- ▶ Transport
- ▶ Building
- ▶ Agriculture and livestock
- ▶ Forest industry
- ▶ Fishing
- ▶ Manufacturing.

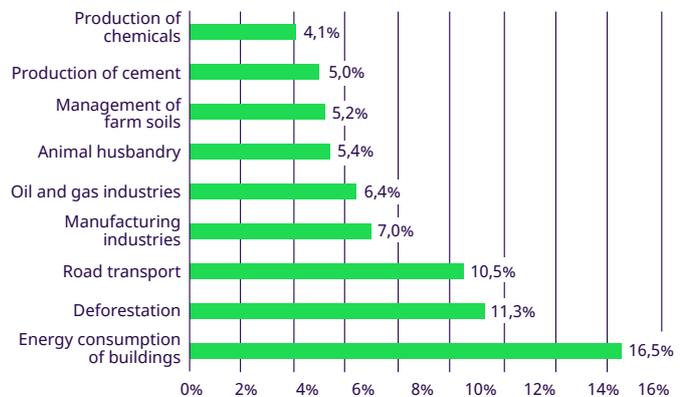
It is most often in these peripheral activities that greening jobs are identified. It should be noted that the Service sector can also be added to the list of sectors that are making their ecological transition, with the strong development of eco-tourism, for example.

Greening jobs : Professions whose purpose is not environmental, but which integrate new "skill blocks" to take into account in a significant and quantifiable way the environmental dimension in the practice of the profession.

In terms of volume on the job market, the greening jobs most often represent a much larger volume of jobs than the green jobs.



Main sectors emitting greenhouse gases
Word Ressource institue 2009



Focus on peripheral activities



Building

If we add up residential and office buildings, their energy consumption represents the main source of greenhouse gas (GHG), with more than 16%. The energy renovation of buildings is therefore a major challenge to reduce emissions. The priority is to eliminate "thermal strainers", that is to say to better insulate houses and buildings. Legislations are tightening and aid schemes are being deployed to encourage such renovations. But the transformations also affect new constructions, with, here again, regulations that encourage more efficient materials and techniques: solar water heaters, heat pumps, rainwater recovery, etc to achieve eco-designed, or even positive energy buildings. The construction sector is probably one of the most impacted by the greening of the economy, with strong consequences on job creation and expected skills.



Forest industry

If the forest industry is the second largest contributor to greenhouse gas (GHG) emissions, it is because of deforestation. Indeed, forest ecosystems have a natural capacity to absorb CO₂. By cutting forests disproportionately, this capacity is limited and the forest industry contributes 11% to the increase of greenhouse gases in the atmosphere. The impact is also deplorable on indigenous peoples, biodiversity, soil degradation, and water resources.

Guidelines are taken to limit deforestation and promote a regulated, responsible and sustainable exploitation of wood resources. This involves the labeling of exploitation modes, reforestation, adaptation of species, making certain forests like sanctuaries...



Transport

Road transport is estimated to contribute more than 10% to GHG emissions. To this, sea and air transport must be added, which has developed strongly in recent decades with a very strong polluting effect, due to the type of fuels used.

The trends aim to limit transport by private vehicle and promote public transport, including rail, as well as soft mobility. In the medium and long term, the purpose is to switch to much cleaner means of transport. Particular focus is placed on:

- ▶ Free public transport in certain cities
- ▶ Encouraging carpooling and reducing the speed limit in built-up areas
- ▶ Incentives to buy electric or even hybrid vehicles
- ▶ Promoting cycling, therefore cycle lanes and all types of "soft mobility "
- ▶ Developing much less polluting aircraft engines,
- ▶ Relaunching sailing propulsion for the merchant navy ...

These orientations imply a significant industrial transformation, generating many jobs in engineering, R&D, but also in production.



Manufacturing

Over the past century, industry has worked to maximize production to meet the demands of a growing world population, rising living standards and increasing urbanization. However, industrial production, which consumes a lot of energy (electricity and gas) and water, is now the 4th largest GHG emitting sector. Its activity harms our health, pollutes the air we breathe, contaminates soil and water and depletes the world's resources.

The industrial sector needs to transform rapidly to significantly improve its energy efficiency and resource use. Enterprises will have to modify their factories to save energy, use more recycled materials and deploy new production processes. If we consider steel as an example, increased use of scrap metal would lead to lower energy, water and land consumption and reduce GHG emissions. To achieve these opportunities, public authorities will need to take regulatory and incentive measures to push industry away from the linear economy – which extracts, transforms, consumes and then disposes of raw materials – and generalize decarbonization, circular economy and resource efficiency.



Agriculture and livestock

Through adding animal husbandry and land use, agriculture contributes more than 10% to GHG emissions. Its negative effects on the environment are serious. These include pollution and degradation of soil, water and air. But agriculture can also have positive effects because crops and soils absorb greenhouse gases and some agricultural practices mitigate flood risks.

One of the main challenges facing the agricultural sector is to feed a growing global population while reducing its ecological footprint and preserving natural resources for future generations. Farmers have made progress in the use and management of nutrients, pesticides, energy and water, the quantities of which per unit area have decreased. Despite these improvements, however, much remains to be done and public authorities have an important role to play in promoting sustainable or organic agriculture, strengthening food education, and better organizing the management of water resources.



Fishing

Populations of fish, crustaceans and molluscs are renewable, but not inexhaustible. When the industry removes more fish from the ocean than can be reproduced, stocks can shrink or even collapse. One of the reasons for overfishing is the rapid technical progress of the last 70 years. Increasingly efficient nets, sonars, radars and other fish finders have helped locate and easily track fish shoals. Freezer factory trawlers have also appeared, which can remain at sea for months. Heavy nets rake the seabed causing the destruction of habitats, corals and sponges and capturing secondary species or marine mammals, which will then be discarded.

A supervision of practices is essential for a fishery that does not threaten the ecosystem, protects the environment and provides humans with jobs and food indefinitely.

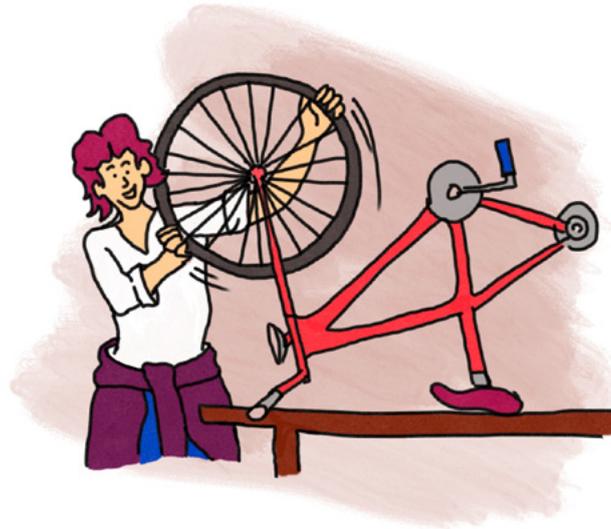
► 3-2 : Directory of greening jobs

What are we talking about ?

This section aims to allow you to identify the main so-called "greening" professions. These are rarely new professions, but most often changing trades in which professionals develop new skills to support the transformation of their sector of activity. The directory is not exhaustive. The information given is general. Specificities exist in countries or regions. These elements are only a basis to develop your reflection and research. Additional information can easily be found on the internet. See the list of useful sites at the end of this guide.

NB : In the following directory, the job description designates alternately a woman or a man. It is a voluntary choice of the author to show that they can all be practiced by women as well as by men.





Building trades

Title	Description	Green Skill Blocks
Plumber/Sanitary and thermal equipment installer	The plumber assembles, repairs and maintains the water and gas pipes upstream and downstream of the appliances themselves. She also installs and repairs sanitary appliances: bathtub, water heater, meter, taps.	Advice and installation of water and energy-efficient equipment: solar water heater, heat pump, water recovery system, etc
Rofer	The roofer builds or repairs the roofs of buildings or individual houses. He installs the thermal insulation under the roof.	Advice on the choice of roofing and insulation materials according to the region and the climate.
Bricklayer	The bricklayer carries out the structural work for individual houses and buildings. She lays the foundations and erects the walls or partitions in the context of new constructions or maintenance and rehabilitation work.	Installation of insulation on the outside of the building. Taking account of the exchanges and thermal bridges of the building.
Construction Electrician	The construction electrician carries out all electrical installations, distribution and connection of electrical appliances in industrial buildings, housing and offices.	Advice and installation of smart equipment promoting energy savings: home automation Connection to renewable sources: eg. Solar and wind
Buildings (hazards and utilities) inspector	The buildings inspector carries out mandatory real estate diagnoses in the context of the sale, rental or work on a property. After examining the premises in the light of the regulations in force, she draws up a report.	Identification of polluting materials: asbestos, lead Energy balance of the building Control of regulatory changes.
Architect	The architect is responsible for the different phases of the execution of a building (private ou public): from the design to the acceptance of the work. He must take into account technical, regulatory and financial constraints.	Knowing how to erect buildings that consume very little energy and limit the use of fossil fuels (oil, natural gas, etc.) by promoting renewable energies.

Professions in the forest industry

Title	Description	Green Skill Blocks
Forester	She ensures the optimal development of forest stands. She is concerned with obtaining healthy trees of respectable size in order to optimize the yield of the logging and ensure the regeneration of the forests.	Compliance with the rules induced by eco-certification. Taking into account global warming for the evolution of species during plantation.
Lumberjack - Forestry machinery operator	The lumberjack carries out wood cutting work for the exploitation and maintenance of the forest. He is also often involved in driving skidding machines, which consists of hauling the wood to a forest road where transporters take it to a sawmill.	Knowledge and preservation of ecosystems Application of the specifications resulting from the eco-certification.
Forest auditor	The auditor implements a methodical, independent and documented process to obtain audit evidence, to evaluate it objectively, to determine the extent to which the criteria are met.	Certification process for the labeling of sustainably and responsibly managed forests.

Transport professions

Title	Description	Green Skill Blocks
Driver	At the wheel of his truck, the road driver ensures the transport of goods. He is responsible for the cargo and supervises the loading and unloading operations. In addition to driving, he performs commercial and administrative functions.	Eco-driving Route optimization
Eco-driving trainer	The eco-driving trainer provides theoretical and practical advice, often in companies, to adopt new reflexes behind the wheel to limit pollution and save fuel.	Eco-driving reduces fuel consumption, limits GHG emissions and reduces the risk of accidents.
Bicycle Mechanic	The bicycle mechanic maintains and repairs any type of bike. Incidentally, he can also ensure the sale of equipment (cycles, spare parts).	Electrically assisted bicycle Cargo bike ...
Automotive Maintenance Mechanic	The mechanic dismantles, inspects, repairs and adjusts all mechanical systems of motor vehicles of different brands, as well as electronic equipment.	Anti-pollution settings Hybrid engines Electric motors Recycling of parts and waste
Transportation Operations Manager	Supervises the activity of a road transport operating site, in its technical, commercial, social and financial dimensions, according to the regulations, with a view to quality (service, cost, deadlines).	Compliance with regulatory changes Optimization of routes and organization of tours integrating a multimodal approach.

Agricultural professions: livestock, fishing and green areas



Title	Description	Green Skill Blocks
Fisherman	Being versatile, the fisherman maintains the boat, the net while participating in fishing. He prepares the various fishing instruments, plunges them into the sea, monitors them and raises them when a sufficient quantity of fish or crustaceans has been caught. He contributes to navigation.	Respect of quotas and seasons for sustainable fishing Use of selective and suitable fishing gear to avoid unwanted by-catch or destruction of the seabed.
Gardener	The gardener creates, develops and maintains parks, gardens and sports fields. Soil preparation, seeding, planting flowers or shrubs and maintaining walkways and lawns are her responsibility, as the seasons go by.	Sustainable gardening, without pesticides, vigilant on water resources, composting, the protection of biodiversity ...
Organic farmer	The farmer is both a company manager and an agricultural worker. He carries out all activities related to the cultivation, processing and sale of the product of his land. He prepares soils, sows, plants, irrigates, fertilizes, fights diseases/pests, then harvests and markets.	Organic farming: production method excluding the use of synthetic substances, such as pesticides, medicines, synthetic fertilizers, and genetically modified organisms.
Agricultural Technical Advisor	The agricultural adviser accompanies farmers to help them improve their practices and the management of their farms. She is the farmer's partner.	Knowing how to advise to adapt to climate change, reduce pollution, preserve the quality of soils and groundwater, move to organic farming, etc

Manufacturing occupations

Title	Description	Green Skill Blocks
Packaging Engineer	In research and development, the packaging engineer's mission is to improve existing packaging and create new solutions that meet consumer expectations, technical and financial constraints, and new regulations.	Taking into account regulatory changes against the use of single-use plastic objects, the circular economy, the scarcity of resources, etc
Buyer	The buyer is a procurement professional. He reviews the offer, chooses the products and negotiates the rates according to the needs of the company. This is often done through wholesalers	Taking into account the environmental qualities of products, the circular economy, guidance on short circuits, the scarcity of resources, etc
QHSE Manager (Quality, Health, Safety, Environment)	The QHSE manager defines, implements and monitors the procedures and approaches for environmental safety within a company.	Detailed knowledge of the applicable regulations in terms of environmental protection.



4 New skills in the green economy



How does the green economy affect skills ?

Glossary of sustainable development

Examples of green training programs around the world

► 4-1 : How does the green economy affect skills ?

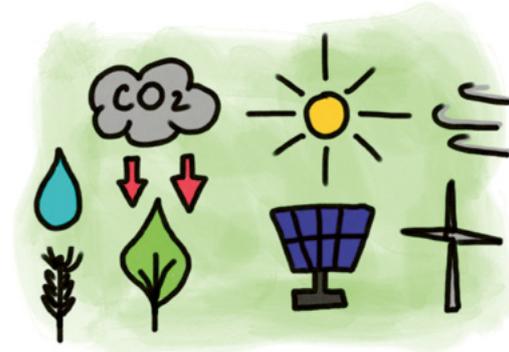
What are we talking about ?

Competence : The ability to perform a manual or mental activity, acquired through learning and practice. The term "competence" is a general term for the knowledge, skills and experience necessary to perform a specific task or job.

Thus, on a daily basis, in our professional activity, we mobilize skills. Some are transversal to several trades or sectors, others are very specific.

At COP 21 (2015 International Climate Conference), the countries of the world committed, through the Paris Agreement, to minimize the consequences of climate change on people, ecosystems and the economy, by limiting global warming to below 2°C by 2100.

For this purpose, each country must commit to drastically reduce its greenhouse gas emissions, which implies a rapid transition to an ecologically sustainable and socially inclusive economy. This implies a considerable investment in training to prepare workers to acquire the skills necessary to practice the trades of this green economy.



The 3 explanations of the new need for skills

The transformations brought about by greener economies affect skill needs in three ways:

1. **Green restructuring.** It is a shift of activities and employment in the economy from a polluting sector to a low-carbon emission sector. For example, the reduction of road transport in favor of rail transport. The reduction of employment in the declining sector will have to be accompanied by a skills development plan to allow retraining and access to jobs created in the sector where demand is increasing. This is not necessarily about new green skills, but about a need to increase the potential of workers able to access growing jobs. This is a quantitative evolution.
2. **The creation of new professions.** The development of new technologies leads to the emergence of entirely new professions. For example, "solar energy technician" is often cited as a new profession that requires the creation of appropriate training courses and an adjustment of qualification systems.
3. **The greening of existing jobs.** As described earlier on, in the traditional sectors of the economy, many jobs have to adapt to the context and new regulations. For example, car mechanics today must have the ability to repair an electric vehicle. Farmers, on the other hand, must know how to produce with less water, fewer fungicides and sometimes learn how to grow new varieties of plants adapted to new climatic conditions. It is a qualitative evolution of skills that is expected.

The transition towards ecologically sustainable and inclusive economies and societies cannot take place if the skills required by new jobs are not available in the labour market. The success of the commitments of the Treaty of Paris therefore depends on investment in training to develop skills in order to meet the new requirements and avoid skills mismatches in the labour market.

► 4-2 : Glossary of sustainable development

What are we talking about ?

Whether it is a question of green or greening jobs, when browsing the job offers and the activity descriptions of the job sheets, it is easy to see that a new vocabulary has been needed in recent years to describe the new activities and skills induced by the greening of the economy. We offer you here a small lexicon, which is not exhaustive, to help you identify the blocks of skills that could be useful for the achievement of your professional project.

Basic skills for green jobs
(source ILO) :

- Environmental awareness
- Waste reduction and management
- Energy and water efficiency



Glossary of sustainable development

(Alphabetical classification – Source: sustainable development vocabulary – French government - 2015)

- **Agroforestry:** An agricultural production method combining tree plantations with other crops on the same plot, with a view to reciprocal beneficial effects.
- **Bioclimatic building:** A building whose layout and design take into account the climate and the immediate environment, in order to reduce the need for energy for heating, cooling and lighting.
- **Biodiversity:** Diversity of living organisms, which is assessed by considering the diversity of species, that of genes within each species, as well as the organization and distribution of ecosystems.

- ▶ **Biofuel:** Fuel consisting of industrial derivatives such as gases, alcohols, ethers, oils and esters obtained after processing products of plant or animal origin.
- ▶ **Carbon footprint:** An indicator that aims to measure the impact of an activity on the environment, and more particularly the greenhouse gas emissions associated with this activity. It can apply to an individual (depending on his/her lifestyle), a company (according to its activities) or a territory.
- ▶ **Carbon offsetting:** A set of financial or technical measures to offset, in whole or in part, carbon dioxide emissions into the atmosphere that are due to a specific activity and could not be avoided or limited.
- ▶ **Circular economy:** Organization of economic and social activities using modes of production, consumption and exchange based on eco-design, repair, reuse and recycling, and aimed at reducing the resources used and the damage caused to the environment.
- ▶ **CO2 capture and storage:** The process of collecting carbon dioxide (CO2) produced in factories and transporting it to a storage location to prevent its release into the atmosphere.
- ▶ **CSR (Corporate Social Responsibility):** Voluntary integration by companies of social and environmental concerns. A company that practices CSR will therefore seek to have a positive impact on society while being economically viable.
- ▶ **Eco-certification:** A procedure that guarantees that a product or manufacturing process takes into account, according to corresponding specifications, the protection of the environment; by extension, the warranty itself.
- ▶ **Eco-design:** Design of a product, good or service, which takes into account, in order to reduce them, its negative effects on the environment throughout its life cycle, striving to preserve its qualities or performance.
- ▶ **Eco-district:** Urban area developed and managed according to sustainable development objectives and practices that require the commitment of all its inhabitants.
- ▶ **Eco-driving:** A set of driving practices that allow the motorist to reduce the vehicle's energy consumption and limit wear and tear.
- ▶ **Eco-industry:** Industry that offers products or services aimed at improving or protecting the environment, or that uses environmentally friendly processes.
- ▶ **Ecological footprint:** An indicator that assesses the natural resources needed to produce what an individual, population or activity consumes and to assimilate the corresponding waste, conventionally bringing it back to the surface of the Earth that makes it possible to provide it.
- ▶ **Eco-tax:** Tax levied on a good, service or activity because of the damage they are likely to cause to the environment.
- ▶ **Energy mix:** Distribution, generally expressed in percentages, of primary energies in the consumption of a country, a community, an industry.

- ▶ **Environmental audit:** Evaluation of the functioning and effectiveness of a management system put in place to ensure the protection of the environment.
- ▶ **Green growth:** Economic growth that respects the natural environment, and aims, through specific actions or innovations, to remedy the damage caused to it.
- ▶ **HSE (Health and Safety Environment):** In the company, the HSE manager assists the management in the risk assessment and the development of a strategy in compliance with the regulations.
- ▶ **Hybridization:** Combination of two engine techniques to ensure the propulsion of a motor vehicle.
- ▶ **Image greening:** Abusive attribution of ecological qualities to a product, service or organization.
- ▶ **Organic farming:** An agricultural production method that excludes the use of synthetic substances, such as pesticides, drugs or synthetic fertilizers, and genetically modified organisms.
- ▶ **Own site:** Right-of-way assigned exclusively to the operation of transmission lines.
- ▶ **Piggyback transport:** Intermodal transport of goods, using road vehicles transported on wagons.
- ▶ **Positive energy building:** A bioclimatic building designed to produce on average more energy than it consumes.
- ▶ **Solar collector:** A device that receives solar radiation and transforms its energy into heat that it transmits via a heat transfer fluid.
- ▶ **Transferable Emission Allowance Scheme:** A scheme that imposes greenhouse gas emissions on companies that limit their greenhouse gas emissions into the atmosphere, while allowing them to sell their supernumerary rights to other companies.
- ▶ **Waste recycling:** A set of waste transformation techniques after recovery, aimed at reintroducing all or part of it into a production cycle.
- ▶ **Waste-to-energy recovery:** Use of heat produced by waste incineration, mainly for electricity generation and heating.

► 4-3 : Examples of green training programs around the world

What are we talking about ?

The development of environmental skills is an ecological and societal issue. Numerous examples around the world prove the high employment potential induced by the green economy and, in particular, its ability to improve the living conditions of the most disadvantaged if they can benefit from support towards new skills. This chapter aims to illustrate this potential with a few examples. (ILO studies in 2019).

Burkina Faso: National Biodigester Program

Since 2010, a state structure has been promoting the “biodigester” device to the families of livestock farmers in the country, which makes it possible to produce biogas for domestic use (lighting and cooking) from livestock excrement. The biodigester, which makes it possible to sequester methane, therefore leads to a reduction in greenhouse gas emissions. The residues of the system are used as compost for the agricultural production of the family. They thus contribute to reducing the use of chemical fertilizers by 45%.

This new economic sector generates employment using new skills. The various associated professionals, bricklayers, well-diggers and specialized salespeople benefit from semi-formal training of 2 to 3 weeks to acquire the new techniques necessary for the implementation of biodigesters. In 2019, more than 8500 had already been built.

Kyrgyz Republic: Certification of Sustainable Forestry

In the Kyrgyz Republic, more than one million people live in or near forested areas, and their well-being depends directly on forest resources. Today, wood consumers around the world are aware of climate issues and want guarantees that the forest products they buy do not destroy forests or exploit people. To meet these demands, forest products certification programs have been created. The FSC (Forest Stewardship Council) is an international organization that accredits certifiers.

In 2014, the Association of Forest users and land users of Kyrgyzstan, in conjunction with the State Agency for Environmental and Forest Protection, launched a project to certify forest products through the FSC. As early as 2016, FSC consultants visited Kyrgyzstan and provided preparation courses to trainers and tenants of pilot plots for an audit in August 2017. 80 people were trained in FSC international standards. The Kyrgyz Republic is now recognized as a pilot country on certification and sustainable, inexhaustible and responsible forest management.

Guyana: Towards 100% renewable energy

Guyana is one of the first states on the planet to choose to switch to 100% renewable energy in the short term: 2025. This transition aims to mitigate the negative effects of climate change, as well as reduce dependence on energy imports.

All identified areas of investment opened up new employment opportunities and involved a considerable effort of vocational training to prepare all the necessary professionals in the field of hydropower, wind, bagasse, biomass, solar, biofuels and biogas.

▶ 5

Sustainable entrepreneurship



Creating your own job in the green economy

Basic advice for green business starters

Ideas for sectors where to create your green business

► 5-1 : Creating your own job in the green economy

What are we talking about ?

Green or sustainable entrepreneurship is a great opportunity for young entrepreneurs to make a difference and build a future that suits them. It is an opportunity to contribute to "changing" the progress of the economic world, by offering innovative products or services that help people adopt a more ecological and sustainable lifestyle. This allows you to create your own job, in line with your values, your skills, your ambitions, etc



By investing in the green or circular economy, young entrepreneurs often have a double ambition: to have both a social and environmental impact. They promote local products, in a short circuit approach, but also a job creation approach at the local level by promoting regional skills and know-how. Beyond the environmental purpose, the green entrepreneur considers the societal purpose at the heart of his strategy. The impact in terms of development is real; the purpose is to support local development and create sustainable jobs.

Green entrepreneurship is a necessity. To have any hope of achieving the Sustainable Development Goals, simply adapting existing companies will not be sufficient. A new economic momentum is essential to meet the global environmental challenges. It is a commitment that encompasses economic activities, technologies, products and services that limit greenhouse gas emissions, reduce the ecological footprint, minimize pollution and save resources. Innovation is often at the center of projects to design efficient and sustainable ecological solutions, which will help replace traditional modes of production and transform the economy to limit global warming.

Challenges and opportunities

The environmental and social context generates a large number of applications, ideas and wills, among younger and older people, to embark on the creation of green businesses. If opportunities exist that can promote their realization, important challenges are also to be taken into consideration by the project leader.

► Challenges :

- **Getting informed :** As green business projects are often in new sectors, or even in very innovative niches, there is little information available allowing the new entrepreneur to prepare their project and in particular market research.

- ▶ **Training** : In the same way, if the project is based on a new green profession or new skills, the training offer is less abundant than in traditional trades.
- ▶ **Being competitive** : Products from green companies are often more expensive than the products from the traditional economy they replace, because they are often produced in an artisanal and non-industrial way. There is a challenge in convincing the consumer to buy green and sustainable, rather than industrial and disposable.
- ▶ **Financing the project** : It is often complex for an entrepreneur to set up his financing plan. This is often even more difficult for green economy entrepreneurs. Indeed, the usual financing structures (banks) do not like risk-taking. They are often more suspicious of an innovative project than of a project in the traditional economy.
- ▶ **Opportunities** :
 - ▶ **A promising market** : The need to green the economy is an opportunity for project leaders. Regulatory changes banning, for example, single-use plastics, encouraging the insulation of buildings or the consumption of organic products, call for the creation of new companies capable of satisfying the market. New possibilities need to be explored and encourage innovation. Materials that were thrown away yesterday can now constitute a source of new wealth. Finally, the consumer is asking for products that better correspond to his values and concerns to contribute to the greening of the economy, even if it means paying more, for a local, sustainable and socially responsible product.
 - ▶ **New financing models** : Beyond traditional financing structures, new mechanisms are developing to finance green economy start-ups. Competitions awarding grants are often organized, NGOs are involved in sponsorship or micro-credit, and local authorities also help to financially support projects promoting job creation at the local level. Finally, crowdfunding systems, via digital platforms, largely contribute to mobilizing individuals to finance new projects.
 - ▶ **Support programs and networks** : In order to maximize the chances of success of the company, it is important that the creator can be supported in the preparation and implementation of their project. It can be difficult for the future creator to navigate the ecosystem of support structures and devices that can be very numerous and rarely coordinated. We can identify :
 - ✓ Measures supported by the State, often via the public employment service
 - ✓ Training structures or NGOs specialized in business creation
 - ✓ Networks of entrepreneurs that promote exchanges, the sharing of experiences, sponsorship and make it possible to find partners,
 - ✓ Accommodation and consultancy structures, often financed by local authorities, which welcome new companies in the early stages of their activity: incubators, fab-labs, company hotels, coworking spaces, etc.

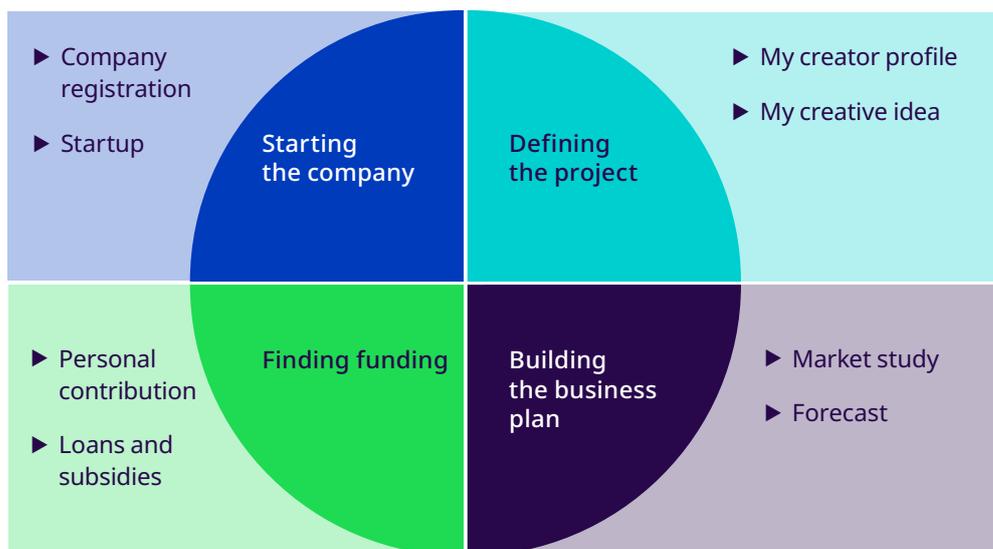
► 5-2 : Basic advice for green business starters

What are we talking about ?

The methodology of starting a business is a complex process that would require a complete guide. The purpose of this chapter is therefore not to provide you with all the necessary advice. It is simply a question of making you aware of the logic of the approach, so that you get an insight of what it implies. As with the other chapters, useful sources and links to go further are offered at the end of this guide.

Main stages of creation

In a very succinct way, we can summarize the steps of business creation in 4 steps, as in the diagram below.



Defining the project : this is to verify that your creative idea is compatible with your personal project .

- **My creator profile :** your motivations for creation, your assets (skills, qualities, experiences ...) , your constraints (family, health, mobility, status, environment) , strengths and weaknesses, etc
- **My creative idea :** activity, products or services, targeted customer base, market, competition ... according to your current knowledge

Building the business plan :

Market study: I check that my project meets the needs of the market and I define my commercial strategy: product, prices, customers, distribution method, suppliers, competition, opportunities, constraints, etc

- ▶ **Evaluating the forecast :** I determine whether my project is profitable and financially feasible.
 - ✓ Measuring the profitability of the project: estimating turnover, estimating expenses, estimating the projected income statement and cash flow.
 - ✓ Evaluating financing needs: premises, equipment, vehicle, works, etc
 - ✓ Identifying financing sources: personal contribution, loans, subsidies, etc
- ▶ **Determining the most suitable legal, fiscal and social framework for my project.**

Finding funding : By relying on your business plan, you approach the funders to convince them of the interest and profitability of your project.

Opening the company : You have obtained your funding, it is time to complete the registration formalities of your company and start the activity.

▶ 5-3 : Ideas for sectors where to create your green business

What are we talking about ?

In absolute terms, the opportunities for business creation in the green economy are endless, especially since the sector is particularly prone to benefit from innovative approaches: new products, new approaches. However, some professions or sectors are more conducive to the creation of enterprises (individual or larger enterprises) thus meeting the aspirations of those who want to contribute to sustainable development, by being their own boss.

In addition to the information given on green and greening professions in the previous chapters, we provide here a number of ideas to create an activity, as well as a number of sources to consult from publications and sites specialized in several countries.



A few non-exhaustive examples :

Agriculture - livestock :

- ▶ Manufacture of compost from food waste, etc
- ▶ Organic market gardening
- ▶ Organic aquaculture

Handicraft :

- ▶ Repair, restoration and resale of recycled products: household appliances, telephones, furniture
- ▶ Manufacture and marketing of natural, non-toxic beauty products
- ▶ "Waterless" vehicle washing
- ▶ Organic catering: from local products and from organic farming

Commerce :

- ▶ Bulk grocery store, organic and local products
- ▶ Clothing: sale of second-hand clothes
- ▶ Bookstore: sale of used books, games, toys, etc
- ▶ Sale and repair of bicycles

Construction :

- ▶ Construction of housing with sustainable materials: wood, mud bricks or adobe, straw...
- ▶ Installation of insulating materials for walls and roofs
- ▶ Equipment and construction of positive energy buildings

Waste management :

- ▶ Collection, sorting and resale of recyclable materials: metals, plastics, precious metals (from mobile phones ...)
- ▶ Reuse of products from recycling: ink cartridge refill, etc

Water :

- ▶ Creation and marketing of purification filters from natural fibers: coconut, hair, etc
- ▶ Creation and marketing of drinking water purifiers

Energy :

- ▶ Manufacture of vegetable charcoal
- ▶ Recovery of domestic oils for refining and use as fuel

Industry :

- ▶ Manufacture of biodegradable or edible containers or utensils to replace single-use plastic products
- ▶ Manufacture of furniture from sorted and recycled materials

Services :

- ▶ Facilitation of sustainable development awareness training
- ▶ Eco-organization advice to companies
- ▶ Educational animation of environmental awareness
- ▶ Animation of workshops to learn how to repair household appliances by oneself
- ▶ Eco-tourism

Transport :

- ▶ Car-sharing and carpooling service
- ▶ Green taxi / bike taxi
- ▶ Delivery by non-polluting vehicle: cargo bikes



Some useful information offering examples and/or support :

- ▶ <http://www.jeunes-entrepreneurs-verts.org/>
- ▶ <https://jeclimate.francophonie.org/>
- ▶ <https://www.goodplanet.org/fr/programmes/action-carbone-solidaire/>
- ▶ <http://www.ecostarhub.com/nature-accelerator/>
- ▶ <https://abanangels.org/> African business angel network
- ▶ https://www.ilo.org/empent/areas/start-and-improve-your-business/WCMS_436192/lang--en/index.htm
- ▶ ILO training on green entrepreneurship : (3316) Marek Harsdorff Green Entrepreneurship ILO Seminar - YouTube
- ▶ Green Business Booklet : [wcms_624881.pdf \(ilo.org\)](#)

▶ 6

How can I prepare for my future in the green economy ?



Preparing my project

Tips for your job search

► 6-1 : Preparing my project

What are we talking about ?

The first 5 chapters of this guide aimed to provide you with insights into the realities of the green economy, opportunities, types of trades and skills. If after reading these few pages, your plan is still to orient your professional choice towards these professions, in this last chapter, we offer you a number of tips to develop and implement your strategy, in 6 steps:

1. My 3 dream jobs :

- Based on reading the previous chapters, on your knowledge, on discussions with your family members, etc. Make a list of all the jobs that attract you to the green economy. Then select the 3 that interest you most.

2. Who am I ?

- Make your professional portrait. Identify your interests, strengths, expectations, skills, values, constraints and priorities from a professional perspective.



3. I investigate the trades :

- Before choosing a profession that will commit you for several years, or even for your entire professional life, it is essential to discover all its facets. It is time to investigate each of your 3 dream jobs.
- **Documentary research** : find out on the internet, at your employment agency about the following points for each profession:
 - Required training and prerequisites
 - Labour market situation
 - Working conditions
 - Main activities
 - Recruitment procedures

- ▶ **Surveys of professionals** : This is the only way that will allow you to be confronted with the realities of the profession. Meet 2 or 3 professionals for each trade and ask them the following questions:
 - ▶ Can you describe a working day for me? What are your main activities?
 - ▶ Your working conditions? (Work patterns, working hours, etc)
 - ▶ What do you like the best about your job?
 - ▶ What do you like the least?
 - ▶ What skills and knowledge are needed for this job?
 - ▶ What advice would you give to someone who wants to move into this profession today?
 - ▶ Could you direct me to colleagues who would also agree to answer my questions?

4. I choose my future job :

- ▶ After drawing your professional portrait and investigating your 3 dream trades, you have all the elements to make your choice. The purpose is to determine the profession that will best suit your profile, your environment and your aspirations.

5. I assess my training needs :

- ▶ Do I already have all the skills (or qualifications) necessary to practice the profession I have chosen?
- ▶ If not, you will have to look for training organizations that can provide you with the required skills, compare them and then make a choice.

6. I choose my future status: employee or entrepreneur :

- ▶ If you plan to create your own business to practice the chosen profession, we advise you to refer to chapter 5 of this guide on "sustainable entrepreneurship" and to identify in your local environment the different organizations capable of supporting you.
- ▶ If you want to practice your future profession as an employee, the next step, after possible training, will be the organization of your job search strategy.

► 6-2 : Tips for your job search

What are we talking about ?

If the choice of your profession is clear and solid and you have all the skills to practice it directly, you can now devote yourself to the job search. You will then have to implement the classic approaches:

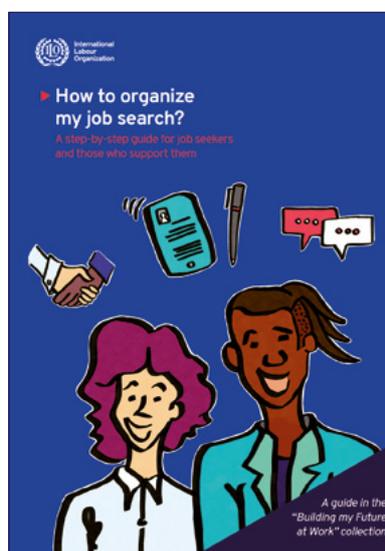
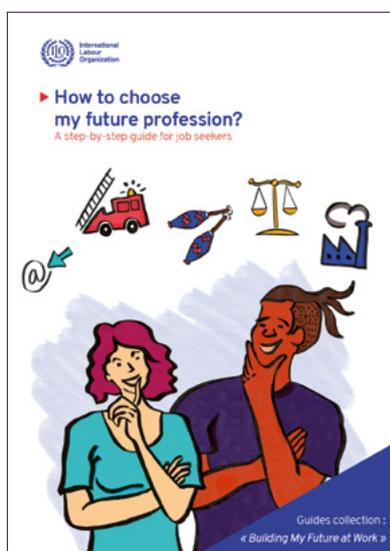
- Build your tools: CV, letters, interview techniques, etc
- Define your market
- Target companies to contact
- Develop your research strategy by mobilizing all the useful modalities, including of course the internet, social networks and " green networking", etc

" Green Networking " :

As presented in the previous chapters, the green economy is the subject of many initiatives at the global, national or local level. These institutional or individual initiatives create a continuous movement conducive to the birth of new projects, new companies and therefore new jobs. For a green job seeker, as well as for a new business creator, it is important and useful to participate in what we call "green networking". That is to say, to rub shoulders with local actors of the green economy, to make oneself known and to undertake a watch on initiatives and projects.

Important :

To prepare your project, as described in the previous 6 steps, or to organize your job search, you can consult the detailed advice available in the ILO guides, available free of charge as a downloadable version on the ILO website.



Sources used for this guide

- ✓ United Nations: What is climate change? What is climate change?
<https://www.un.org/fr/climatechange/what-is-climate-change>
- ✓ ILO: What is green employment?
https://www.ilo.org/global/topics/green-jobs/news/WCMS_325251/lang--fr/index.htm
- ✓ ILO: Skills required for green jobs :
https://www.ilo.org/skills/projects/WCMS_141062/lang--fr/index.htm
- ✓ ILO: ILO's Green Jobs Agenda :
https://www.ilo.org/global/topics/green-jobs/WCMS_344815/lang--fr/index.htm
- ✓ ILO : Frequently Asked Questions on Green Jobs :
https://www.ilo.org/global/topics/green-jobs/WCMS_214247_FR/lang--fr/index.htm
- ✓ National Observatory of Jobs and Professions of the Green Economy :
<https://www.ecologie.gouv.fr/observatoire-national-des-emplois-et-metiers-leconomie-verte>
- ✓ OECD: Agriculture and the Environment :
<https://www.oecd.org/fr/agriculture/sujets/agriculture-et-environnement/#:~:text=Ses%20effets%20n%C3%A9gatifs%20sont%20graves,att%C3%A9nuent%20les%20risques%20d%27inondation.>
- ✓ OECD: Moving Heavy Industry Towards Sustainable Production: :
<https://www.oecd-ilibrary.org/sites/5d193312-fr/index.html?itemId=/content/component/5d193312-fr>
- ✓ FAO : Reducing the impact of fisheries on ecosystems :
<https://www.fao.org/responsible-fishing/background/reducing-impact-ecosystems/fr/>
- ✓ CIDJ : Directory of trades : <https://www.cidj.com/orientation-metiers>
- ✓ Vocabulary of sustainable development 2015 Terms, expressions and definitions published in the Official Journal Prime Minister Commission for the enrichment of the French language
<https://www.culture.gouv.fr/Thematiques/Langue-francaise-et-langues-de-France/Nos-missions/Developper-et-enrichir-la-langue-francaise/Enrichissement-de-la-langue-francaise-toutes-nos-publications/Vocabulaire-du-developpement-durable-2015>
- ✓ ILO: Frequently Asked Questions on Just Transition :
https://www.ilo.org/global/topics/green-jobs/WCMS_824705/lang--fr/index.htm
- ✓ ILO : A Green and Job-Creating Economy :
https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms_638147.pdf
- ✓ ILO: Green jobs for young people :
https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms_638147.pdf
- ✓ ILO: Fostering a Green Entrepreneurial Ecosystem for Youth :
<https://www.youthforesight.org/resource-details/Publications/466>

Acknowledgements :

Thank you to all ILO colleagues who contributed to the finalization of this guide and in particular to :

- ▶ Amaal BANI AWWAD from Aman's Jordan office
- ▶ Hae Kyeung CHUN of the SKILLS branch
- ▶ Mariela DYRBERG, EMPLAB Branch
- ▶ Moustapha Kamal GUEYE, Head of the GREEN JOBS Unit
- ▶ Tahmina MAHMUD from the GREEN JOBS unit
- ▶ Pedro MORENO DA FONSECA from the SKILLS branch
- ▶ Michael MWASIKAKATA, Head of SERVICES Unit
- ▶ Anna-Karin PALM OLSSON, SERVICES Unit
- ▶ Felix WEIDENKAFF from the Bangkok office in Thailand
- ▶ Lena Xinyu YAN, from the Youth Unit.



What is the ILO ?

The International Labor Organization is the first specialized agency of the United Nations United Nations (UN). It was established in 1919.

The ILO brings together representatives of governments, employers and workers from 187 member States to set international standards, develop policies and design programs to advance social justice and promote decent work for all women and men around the world.

Professional life rarely takes the form of a straight and unhinged path. Moving from school to work is often a complex first step. Then succeeding in keeping a job throughout one's life is often difficult because of the economic environment, the evolution of professions or one's own aspirations. Life is made up of transitions that must be managed. In its 2019 Future of Work report, the ILO calls for "greater investment in institutions, policies and strategies that will support people in their future professional transitions".

By creating the collection of guides "Building my future at work", the ILO offers practical, operational tools to support everyone in managing their professional transitions. This guide is the 3rd in the collection.

Already published :

- ▶ How do I choose my future job ? [Practical guide: How to choose my future profession? Step-by-step guide for job seekers \(ilo.org\)](#)
- ▶ How do I organize my job search ? [Practical Guide: How do I organize my job search? A step-by-step guide for job seekers and those who accompany them \(ilo.org\)](#)

What is the ILO's climate action ?

The ILO has been working on green jobs for many years. In 2007, at the International Labour Conference, the REPORT of the ILO Director-General highlighted the promotion of a socially just transition to green jobs as a key area of work for the ILO. In March 2009, the Director-General said: "It is time to move towards a high-employment, low-carbon economy. Green jobs carry with them the promise of a triple dividend: sustainable businesses, poverty reduction and a job-oriented economic recovery. He introduced the presentation document of the ILO's 1st Green Jobs Program. Since then, the ILO has continued to invest in the subject, participating in international work and summits and launching in 2015, the "Green Initiative", as part of the ILO's commitment to sustainable development. Its main objective is to provide support to countries for the creation of a large number of better quality green jobs.

One of the levers of action is the creation of knowledge. This involves producing flagship reports and guidelines, as well as global, regional, national and sectoral studies on the links between labour and environmental issues. This makes it possible to promote the sharing of knowledge between countries, in the service of project development.

In 2015, world leaders, led by the UN, adopted the 17 goals of the 2030 Agenda for Sustainable Development (SDGs), to end poverty, protect the planet and ensure prosperity for all. In the same year, the 195 countries present adopted the Paris Climate Agreement as the conclusion of COP 21.

In defining its Green Jobs Program, the ILO has organized itself to support the world's states in its efforts to promote environmentally sustainable socio-economic development. The program promotes the creation of green jobs around the world as a means of generating decent jobs and income opportunities with a reduced impact on the environment, and better addressing the challenges of climate change and resource scarcity.

Over the past 30 years, the concept of green jobs has become an international agenda. Through the Green Jobs Program, the ILO is proud to help lead the world towards greener and more decent jobs.



Read :

Microsoft Word - Guiding Principles for a Just Transition to Environmentally Sustainable Economies and Societies for (ilo.org)

