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“Green vocational training” - how can Financial Cooperation support it?

Climate crisis: the economy needs to change.

The Earth is heating up rapidly. The international community’s climate goals no longer seem to be achievable at the moment. Enormous efforts must be made if humanity still wants to be able to influence the course of the global climate crisis and to mitigate its impact on nature and people.

A central task here is the transformation of the economy. Target: a “green economy” “that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities” (UNEP, 2011, p. 16). This kind of transformation includes, among others:

(1) strengthening individual industries (“green sectors”) that offer environmental goods and services (e.g. waste water treatment, waste disposal/recycling or renewable energies);

(2) the continual improvement of the environmental and social performance of all economic sectors, irrespective of sector, size or location, and the reduction of their overall environmental risks (UNIDO 2011, green economy report, p. 14);

(3) the socially-friendly design of this transformation (“Just Transition”).

At the same time, the vision of the “green economy” target is controversial. The term implies a decoupling of economic growth and carbon emissions, which cannot be achieved completely or at sufficient speed worldwide (cf. e.g. Hickel &Kallis 2020). Especially in the Global South, the conflict between growth and climate change mitigation is particularly apparent.

“Green economy” in countries of the Global South?

Developing countries and emerging economies are often particularly affected by the climate crisis. At the same time, poverty and inequality continue to increase in the Global South. The countries are therefore facing a three-fold challenge of a “Just Transition”.
They need to:

(1) significantly improve the living conditions of their population,

(2) adapt to the impacts of climate change,

(3) reduce greenhouse gas emissions and, at the same time, shape the transition to a climate-friendly economy with increasing energy requirements.

A green economy offers opportunities for developing countries and emerging economies, but it also places high demands. Renewable energy sources, such as solar and wind power, offer new, more affordable ways to improve the population’s access to energy. On the other hand, in these countries in particular, there is a lack of infrastructure, government capacity, access to financing, as well as companies and sufficient jobs to make a social-ecological transformation of the economy possible and attractive in the first place. One particular stumbling block – especially for developing countries – is the shortage of skilled workers.



Clean energy technologies as this solar plant in Bevinahalli, India, already offer considerable employment potential.
KfW Photo Archive / Dawin Meckel / OSTKREUZ

No transformation of the economy without experts

Who installs the heat pump or maintains the wind turbine? Who builds and maintains the energy grid? Who works in energy-efficient industrial production or in ecological agriculture?

Qualified specialists are indispensable for “green industries”, but also for the transformation of the entire economy. One example is the energy industry, where more highly qualified specialists are needed. According to the International Energy Agency (IEA, 2022, World Energy Employment, p. 11), clean energy technologies account for over 50% of total employment in the energy industry today. An optimistic scenario predicts almost 40 million jobs for 2030 in the renewable energy industry alone (IRENA,

Renewable Energy and Jobs, 2022, p. 74).



Many conventional professions are expanded by teaching "green skills".
KfW Photo Archive / Jonas Wresch

Designing an economy to be "green" has far-reaching impacts on the quantity and quality of jobs. These positions ("green jobs") require specialists with the necessary skills.

Many developing countries also have growth potential here and therefore a high demand for specialists. Skills needed for the plumber, electrician and roofer professions are required for the installation and maintenance of solar power systems (UNESCO-UNEVOC, 2020, Skills development for renewable energy and energy efficient jobs, p. 17). Solar technology offers great opportunities, especially for the Global South – but so far there has been a lack of skilled workers to put this potential to use.

Is there a need for completely new "green professions"?

The example shows that this is usually not the case. Most "green jobs" are based on tasks and work processes that are largely covered by conventional professions.

For this reason, in Germany for example, in accordance with the principle of integration, the professional handling of technologies, materials and procedures relevant to environmental and climate protection is incorporated into existing professions to as great an extent as possible (e.g. in the fields of metals technology and electrical engineering, or in the commercial sector). This ensures that graduates have opportunities and mobility in the labour market, meets the needs of the economy and does not require a fundamental reform of the vocational training offer.

The exception to this is four separate environmental engineering professions that were developed due to demand from public and private employers in the public utility industry. These are specialists for

(a) water supply engineering;

(b) pipe, sewage and industrial services;

(c) waste water technology; and

(d) recycling and waste management (see also the following figure).

The example makes it clear: the professions are not necessarily new – the novel factor is primarily the increased quality of the professional skills required in the economy. This quality is reflected in the concept of "green skills", which can be broken down as follows:

– inter-professional green basic skills (a *must* in all professions) and

– in-depth job-specific skills for the professional handling of "green" materials, technologies and procedures relevant to the "green economy".

These types of skills are important for companies to operate more sustainably on the one hand and for people to have access to "green jobs" on the other.

Good vocational training that focuses on sustainability

Vocational training, i.e. professional education and training, is required here. Its task is to prepare people for a qualified job in the world of work in any case. In doing so, it not only imparts the technical skills required for qualified employment, but also improves social skills and strengthens the personality of the trainees.
Vocational training plays a key role in the transformation of the economy. In Germany, for example, the shortage of skilled workers is already threatening the energy transition.

"The specialist situation in the areas of plumbing, sanitation, heating, air conditioning and energy technology is tense, above all due to the switch from oil and gas heating to heating systems with renewable energies or to heat pumps..." (German Federal Ministry for Labour and Social Affairs, Skilled labour strategy of the Federal Government, 2022, p. 12). A well-functioning education and professional training system is therefore an essential prerequisite for a "green economy".



Source: own presentation, Dr Mertineit

However, vocational training itself must also change in order to make an optimal contribution to the social-ecological transformation. This change is called the "greening" of vocational training. "Green vocational training" (GTVET) imparts targeted skills for a sustainable economy. It is "a cross-cutting issue that plays a role in any occupational sector: in industry, handicraft, agriculture, forestry, fisheries, services and administration.

GTVET contributes to the transition to green economies and green societies by providing green competencies in a holistic approach including formal, non-formal and

informal learning environments." (UNESCO-UNEVOC 2014)

"Green vocational training" therefore does not stand in contrast to "conventional" vocational training. Rather, it is an expression of a new perspective in vocational training, with the aim of promoting "green" professional skills that can be used to shape the working and living environment in terms of sustainability. In other words, good vocational training is always "green" today.

"Green TVET" comprises three components:

(1) professional: teaching skills that make a positive contribution to sustainability (e.g. installing, maintaining and repairing wind or solar power plants);

(2) pedagogical and educational: action-based and research-oriented forms of learning and the promotion of the ability and willingness to actively participate in the sustainable design of the company's working environment;

(3) (infra-)structural: on the one hand, it is about the sustainable orientation of the vocational training system itself. On the other hand, learning locations in vocational training (corporate locations, vocational training facilities, inter-company vocational training centres, etc.) are also required to align themselves sustainably (e.g. through socially and ecologically oriented building management).

Green vocational training should be applied to all three components in order to sustainably promote it.
In this case, the following applies: The content of the training should not be overloaded. Specific (green) skills can also be acquired later in the course of lifelong learning.

Is "green vocational training" also possible in developing countries and emerging economies?

Green jobs and skills are becoming increasingly important from a development policy perspective. The relevance of skilled workers for a green transformation has led the G7 to demand a clear commitment to "green skills and jobs" from its members. The Federal Ministry for Economic Cooperation and Development (BMZ) and other donors are also promoting green vocational training to improve the conditions for a climate-neutral economy.

Whereas in Germany, however, a well-functioning vocational training system can be used, and existing vocational training offers can be modified, many developing countries still need a vocational training system that adequately trains specialists for the economy.

It is therefore important to take into account the following success factors when promoting "green vocational training" in developing countries:

- the transformation of the economy through vocational training is politically desired and linked to national sustainability and climate protection strategies;
- data on the national skilled workforce requirements of a developing "green economy" is available in order to be able to identify sectors and educational institutions eligible for promotion;
- there are functional vocational training structures and demand-oriented vocational training offers;
- qualified teaching and training staff are available and can be further trained to teach green skills.

How can Financial Cooperation support green vocational training in partner countries?

If our partner countries share the interest in a sustainable, green transformation of their national economies, there are good starting points for promoting green vocational training at different levels of intervention, especially under the conditions mentioned above. At a political-strategic macro level, a meso level that integrates aspects of "green vocational training" into financing mechanisms, as well as at an infrastructure level where environmentally friendly buildings serve as a learning space and illustrative example.

Approach levels for Financial Cooperation projects

Level/approach	Approach
Macro level	At macro level, "green vocational training" could be embedded in vocational training standards and national vocational training strategies as part of criteria-based sector financing programmes and work could be done to link them to national strategic approaches to climate change mitigation and/or sustainable development.
Meso level	At meso level, aspects of "green vocational training" can be integrated into funds for education financing as a possible criterion in the context of financing networks and cooperation in vocational training.
Infrastructure	All new buildings to be built or renovated should be prime examples of environmental friendliness, energy and resource efficiency as well as sustainability. If the training focuses on the area of construction / building services technology or renewables, the principle of sustainable buildings means that sustainable learning elements should be applied. All environmentally friendly features of the new or renovated buildings should be clearly visible and accessible so that they can be incorporated into vocational training programmes as best practices.

Source: own presentation, Dr Klaus-Dieter Mertineit.

In the case of "green education infrastructure", complementary measures should ensure that it is used optimally and put to good use. On the one hand, this involves the appropriate qualification of teaching staff with the aim of making the green building and equipment features available in lessons. On the other hand, it is also about organisational consulting. This refers to the introduction and application of the holistic approach to the sustainable development of vocational training facilities ("Greening TVET institutions approach") and the guarantee of a sustained, efficient use of energy and resources. Collaboration with Technical Cooperation is particularly suitable for these approaches, as shown in the example below in Vietnam.

Overall, attention should be paid to ensuring that FC's promotion of "green vocational training" is not restricted to individual, specialised new vocational profiles, but is fundamentally geared towards strengthening sustainability in vocational training.



Vocational training student performing practical exercises with a switching system, Vietnam
KfW photo archive / photothek.net

Project example: Vocational training reform in Vietnam
The “Competence centre for green vocational training” is the first vocational school institution in Vietnam to be set up that concentrates on education and advanced training in professions in this form for a green, sustainable economy. The project aims to promote training and education geared towards the need for a green and sustainable economy. Graduates of secondary school and employees can receive further training here. The project has substantial spillover effects on other regional vocational training institutions. As part of the project, the Vocational College of Machinery and Irrigation in Dong Nai is being expanded with the construction of additional buildings, primarily training workshops, and their equipment and furnishings. The aim is to pay particular attention to energy-efficient and resource-conserving criteria when building and procuring the machines.

Project example: Western Balkan Challenge Fund
To improve the employability of vocational school students, KfW established the Regional Challenge Fund on behalf of the Federal Ministry for Economic Cooperation and Development (BMZ). The fund works in Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia. It promotes consortia of state-accredited vocational schools and private companies there that can apply for support from the fund for joint vocational training projects. This applies both to better infrastructure and equipment as well as to the training content and further training of teachers. After the great success of the first round of tenders, the second round will focus primarily on awarding projects that include “green” vocational training elements as well.

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What definitions do we use?

There are no internationally agreed definitions for the various terms relating to the “green economy”. FC uses the following descriptions to define the terms.

“Green economy”
“A green economy is one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. [...] . In its simplest expression, a green economy is low-carbon, resource efficient, and socially inclusive. In a green economy, growth in income and employment are driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services. [...]”(UNEP, Green Economy Report 2011, p. 16)
However, the concept of the “green economy” is controversial. Critics point to empirical studies showing that the postulated decoupling of resource consumption from GDP has never been achieved at a global level, and it is unlikely that absolute decoupling of economic growth and carbon emissions can be achieved at a sufficient pace worldwide. (cf. e.g. Hickel & Kallis 2020; Weizsäcker 2017; Maxton 2018)

“Green jobs”
“Green jobs are decent jobs that contribute to preserving or restoring the environment, whether in traditional sectors such as manufacturing and construction or in new, emerging green sectors such as renewable energy and energy efficiency. Green jobs help: improve energy and raw materials efficiency; limit greenhouse gas emissions; minimize waste and pollution; protect and restore ecosystems; support adaptation to the effects of climate change.” Source: ILO 2016

“Green professions”
Fourteen dual vocational training professions in agriculture and forestry are combined under this designation. These professions are considered “green” because they are mainly carried out in “nature” or pertain to animals and plants, but not in the sense of a “green economy” or sustainable development.

“Green skills”
“The knowledge, abilities, values and attitudes needed to live in, develop and support a society which reduces the impact of human activity on the environment” (CEDEFOP, Green skills and environmental awareness in vocational education and training 2012, p. 20)

“Greening TVET”
“Greening TVET [...] is a cross-cutting issue that plays a role in any occupational sector: in industry, handicraft, agriculture, forestry, fisheries, services and administration. GTVET contributes to the transition to green economies and green societies by providing green competencies in a holistic approach including formal, non-formal and informal learning environments.” (UNESCO-UNEVOC 2014)