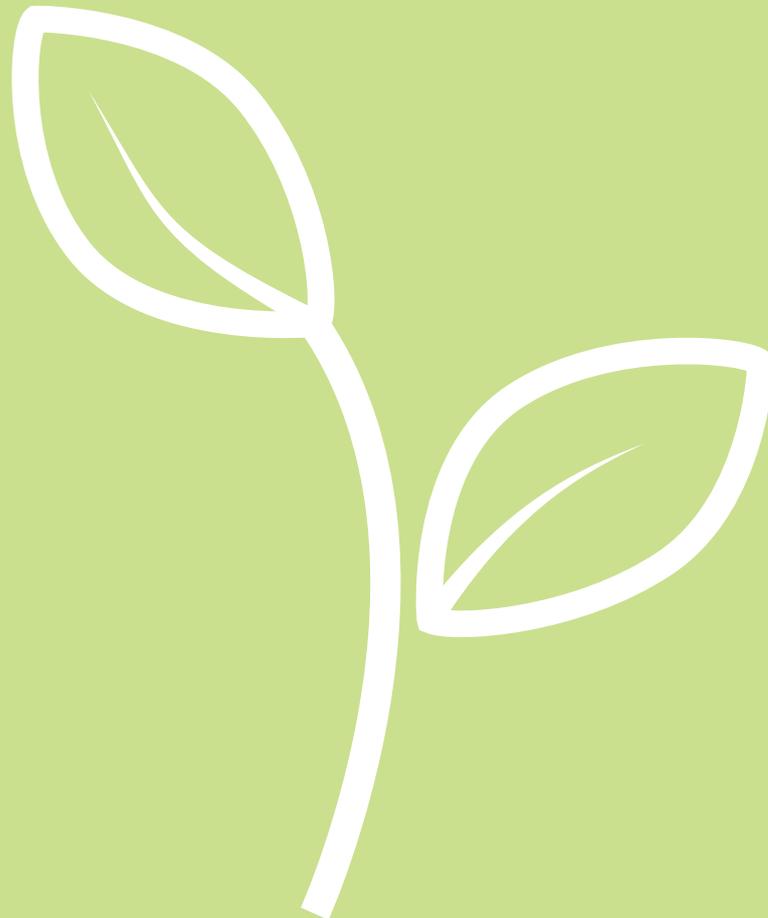




United Nations
Educational, Scientific and
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International Centre
for Technical and Vocational
Education and Training



Greening TVET in Latin America

Virtual conference synthesis report

UNESCO-UNEVOCTVeT Forum, 5 to 11 June 2017

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Published in 2017 by the UNESCO-UNEVOC International Centre, Platz der Vereinten Nationen 1, 53113 Bonn, Germany

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Introduction

The transition towards green economies and the increase in the number of green jobs are but some of the impetuses for international and multilateral organizations to align the purpose and objectives of education and training systems to the 21st century context.

The UN Environment Program (UNEP) has a working definition of a green economy as 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 can be thought of as one, which is low carbon, resource efficient and socially inclusive. Practically speaking, a green economy is one whose growth in income and employment is 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.”

Technical and vocational education and training (TVET) plays a critical role in supporting green growth and sustainable development due to its direct links to the labour market. It is clear that TVET contributes to training workers, engineers and technicians in specific sectors, and that it also has a role to play in supplying the knowledge, skills and competencies required to promote resource efficiency, reduce waste and advance more environmentally conscious practices in numerous occupational fields. It also plays a major role in the development of skills for the renewable energy sectors.

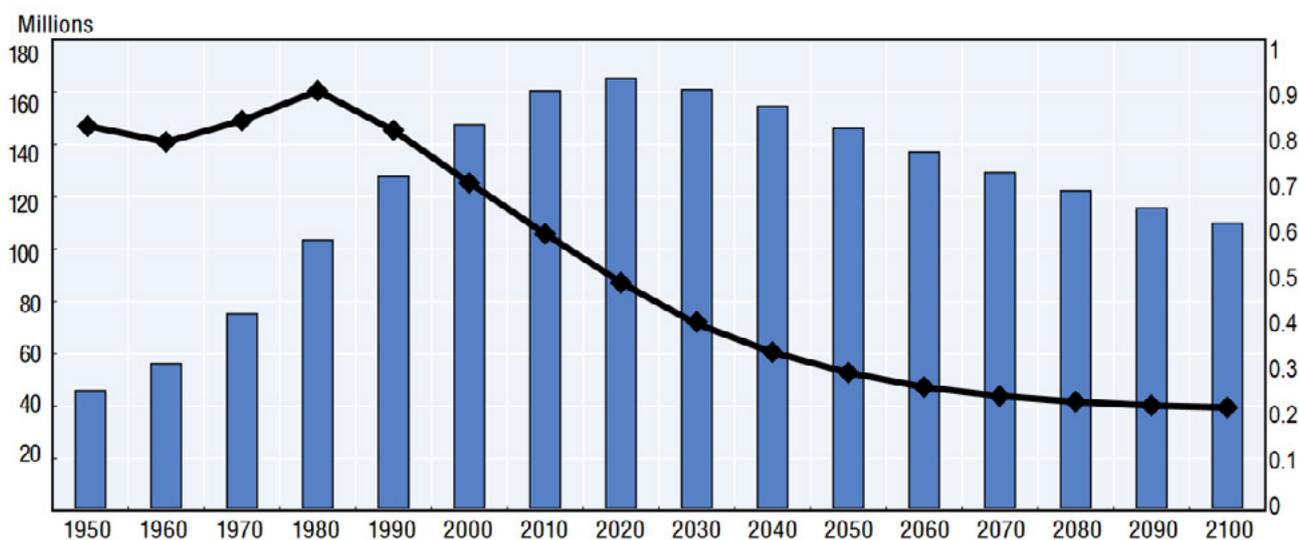
Different researchers affirm that the demand for green skills is increasing around the world as the number of green jobs

increases. For a start, employment figures in the renewable energy sector have over the past years significantly grown; in its 2015 annual review, the International Renewable Energy Agency (IRENA) estimated an increase of 7.7 million direct and indirect jobs in 2014 worldwide (excluding large hydropower) (IRENA, 2015). This represents an 18% increase compared to the number reported in the previous year.

In order to respond to these changes, education and training institutions need to promote greening TVET. It is also essential to develop a common framework founded on a common understanding and goals and objectives. The *Transforming our world: the 2030 Agenda for Sustainable Development*, signed by 193 Member States, establishes a reference guide for the achievement of economic, social and environmental sustainability at a global level. This common framework will also help review and adjust institutional processes, curricula and programme content, as well as instructional and pedagogical processes so that they are green-oriented.

UNESCO-UNEVOC's *Greening technical and vocational education and training: a practical guide for institutions* is one way TVET stakeholders can integrate more green and sustainable principles in their TVET institutions and systems. It primarily targets TVET institutions and helps them understand

Figure 1. Youth population in Latin America and the Caribbean



Source: OECD. 2017.

why it is important to undertake a greening process, and what this entails. The Guide takes a whole-institutional approach and emphasizes the transformations in managing physical resources, transferring green knowledge, skills and competencies through well-designed curriculum and training, and creating awareness and solutions at the community level.

Greening TVET in Latin America

There are a number of contextual factors that need to be taken into account in understanding the ability of Latin American countries to green their TVET systems, economies and society. The following are examples:

Unemployment and skills mismatch

Unemployment rates in Latin America are almost three times higher among young people (11.2%) than among adults (3.7%). Women are especially likely to be unemployed (45%) or work in the informal sector (15%). The Latin American region has the largest skills mismatch between the skills competencies taught and the skills requirements by local economies and businesses require (Manpower group, 2015). This skill mismatch can be divide in three groups (Fiszbein, A; et. at, 2016):

- **Basic skills:** lack of basic literacy and numeracy skills (reading, math and science) etc
- **Technical skills:** low vocational and technical education especially in the following areas:
 - **Essential skills** e.g. PC hardware and software skills, network design, wireless network skills etc.
 - **Advanced skills** e.g. technicians, engineers

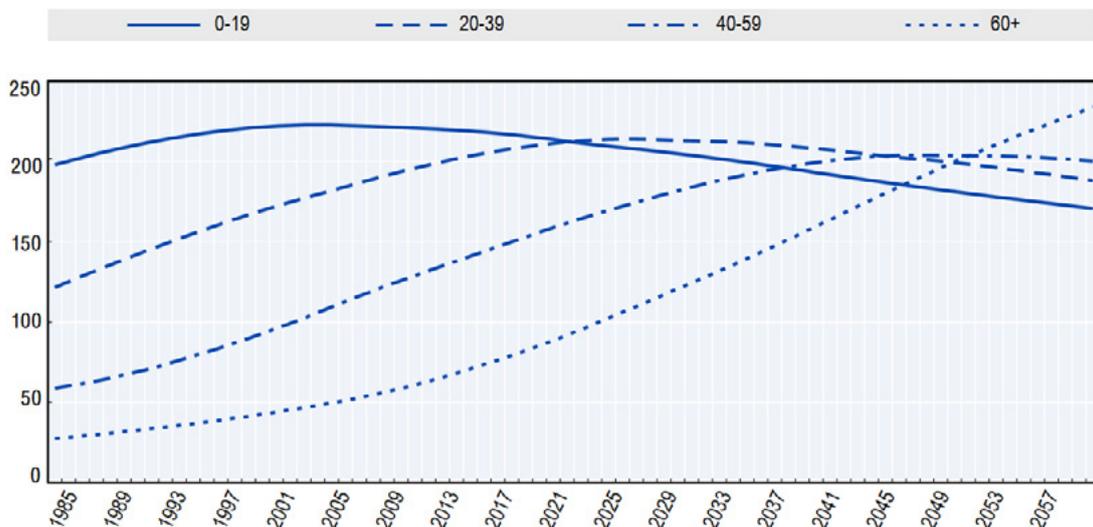
(especially in the areas of physical, biological sciences, mathematics, and computer science), production operators / machine operators, information technology. Women are underrepresented in this area throughout Latin America

- **Emerging skills** e.g. green jobs (renewable energy, green construction, greener materials, recycle), etc.
- **Soft skills:** Latin American educational systems tend focus on academic achievements rather than the development of soft skills

Demographic

According to Pinto-Aguirre (2015) the demographic bonus is the potential economic growth created by changes in the age distribution of a population. As fertility declines steadily for several decades, the age distribution of the population shifts from a youth-age structure to another dominated by a large group of working-age young adults, providing an opportunity for economic growth and reducing poverty due to the increase in available labour. TVET must go beyond only facilitating the transition from school to work, and should play a key role in transforming education systems to allow young people to contribute to the transition towards sustainable and inclusive economies and societies.

Figure 2 show the demographic situation in Latin American and the Caribbean, and the changes that are expected to occur in the dynamic of this population by 2030.



Source: OECD, 2017.

Objectives and scope

The virtual conference was held from 05 to 11 June 2017 on the UNESCO-UNEVOC TVeT Forum, and provided a platform to discuss how Latin American countries are responding to climate change policies and the role that inclusive technical and vocational education and training has to play.

Importantly, the virtual conference addressed the socio-political, economic and environmental links that need to be taken into account when looking at the actions being carried out by Latin America countries with regard to climate change and achieving the goals set in the 2030 Agenda for Sustainable Development.

The discussions also focused on issues related to the development of competencies needed for the transition towards sustainable economies and societies, as well as the role of education in strengthening or developing these needs. The virtual conference also shared and discussed a number of examples.

Structure of the virtual conference

The discussions that took place during the virtual conference were structured into four threads, each addressing a different topic. Each thread discussed a number of questions.

- i. Links between social, economic and environmental factors for sustainable development**
 - What are the links between social, economic and environmental factors to sustainable development, and how can Latin America's demography help?
 - What are the main links that need to be addressed to achieve sustainable, harmonious and integral development?
- ii. Country responses to the global climate-change policy agreements**
 - What political or other measures are Latin American countries taking to respond to climate change?
 - What role does education and training play in addressing sustainable development?
- iii. Labour market changes in Latin America and other factors TVET should take into account**
 - What are some of the labour market changes happening in Latin America?
 - What challenges hamper TVET systems to contribute to the transition towards sustainable development?
- iv. Future skills requirements and emerging markets**
 - In which sectors can green jobs play a key role?
 - What are the technical and professional skills that should be developed in Latin America to support sustainable development?

Past virtual conferences

The virtual conference build on the previous three virtual conferences organized on the topic of greening TVET:

- [Greening TVET for Sustainable Development \(2012\)](#) which analyses global trends concerning greening TVET, and gave clarification on green jobs and skills.
- [Greening TVET: Qualifications and Implementation Strategies \(2013\)](#) addressed strategies to promote and implement green skills development.
- [Greening TVET in the context of climate-change policy developments \(2015\)](#) focused on the implications of global policy development in green jobs.

Summary of the discussions

Links between social, economic and environmental factors for sustainable development

Participants discussed the following when assessing the links between social, economic and environmental factors for sustainable development:

- I. **Linkages between factors.** It is important to establish linkages between: (i) the production sector and education sector; (ii) the education sector and curriculum development; (iii) curriculum development and quality control; and (iv) linkages between institutions.
- II. **Discourse on sustainable development.** Participants were concerned that discourse on sustainable development was being used for political or economic goals. This affects the way Latin Americans see the relationship between nature and development. For example, the National Reserve of Copper and Associates (RENCA), a 46.000 square kilometer reserve in the Brazilian Amazon between the states of Amapá and Pará, was recently opened by means of a presidential decree to commercial exploitation (mainly mining). The official statement declares that the objective is to attract new investments, generate wealth for the country as well as income for society and promote jobs based on the precepts of sustainability.
- III. **Social barriers and freedoms.** In order to achieve sustainable development, basic rights, personal well-being and freedoms (political, socio-cultural, and economic and security) must be guaranteed. Taking into account Boyce's (1994) hypothesis that social and economic inequalities are determining factors in explaining environmental quality, virtual conference participants mentioned that factors such as the lack of education, drug trafficking, violence, and inequalities of opportunity do not allow the establishment of foundations for sustainable development in the region. In addition, in some countries young people who have had access to education have no bright future, which sometimes isolates them and does not allow them to contribute to societal transformations. There are also a number of demarcated geographical areas that are under the control of drug cartels, gangs, guerrillas or governments that do not support all social groups.
- IV. **Inequalities in education.** From primary schools to universities, many institutions in Latin America are becoming privatized. As investment in public education declines, the educational gap between

those who can afford private schooling and those who depend on a public education increases. Worse still, state universities conduct entrance exams that are passed to a greater degree by privately educated students located in urban areas, than by public educated students from the urban marginal and rural areas. For example, Costa Rica has a baccalaureate exam where the results of the tests conducted in 2013 show 92% of the students from private education passed, as opposed to 70% of the public schools students passed. This limits the future job opportunities of the public school students, posing a challenge to developing sustainable and inclusive societies and economies.

Country responses to global climate-change policies agreements

The Intergovernmental Panel on Climate Change (IPCC) defines climate change as “a change in the state of the climate which through the use of statistical evidence can be identified by changes in the mean and / or variability of its properties and which persists for a Period, typically decades or more. This change may be due to natural internal processes, external forces or persistent anthropogenic changes in the composition of the atmosphere or in land use.”

Countries in Latin America tend to have higher per capita emission rates than average Kyoto Protocol countries. Moreover, due to changes in land use and forestry, the region's emissions have almost tripled the global average.

Climate change should not be analyzed solely from the perspective of emissions however, and the region also faces other challenges. These include limited access to useable water, increased flooding or severe drought, reduced yields in agricultural areas, threatened biodiversity loss, displacement of populations at risk areas, and so on.

Virtual conference participants were presented a case study from Costa Rica to further the discussion.

Participants in the virtual conference believed that government should play a central role in facilitating interactions between various actors to develop actions that respond to climate change. These actors are government, civil society, educational and non-educational institutions and the environment in which they operate. The discussions emphasized that it is the government's task to provide the basic conditions for achieving the Sustainable Development Goals through fair legislation. Here we must clarify two aspects; (i) in many Latin American countries governments are primarily responsible for developing legislation; and (ii) fair legislation not only in terms of equality, but also free of corruption that is prevailing in the region.

Using the Costa Rican case study as a tool to generate ideas on how governments can take action, the virtual conference examined the approaches being made by in different countries to respond to the demands of climate change policies. Action points were drawn based on these examples:

- I. **Make climate change a priority.** Many participants were of the opinion that one of the ways to make climate change a priority is by declaring it a national security issue, for example, a food security that needs urgent response. Rising sea levels affect human settlements along the coasts of the Pacific and Atlantic Ocean, and human settlements on islands are especially at risk. Moreover, alterations in the life cycles of marine flora and fauna, fishing and coral reefs due to the increase in sea temperature, are already affecting the natural resources, and the communities that depend on these resources for livelihood, such as agriculture and tourism. In countries like Bolivia and Peru there is already a decrease in the amount of useable water, while Costa Rica and Colombia are experiencing floods and droughts. This has a direct impact on yields, which leads to serious problems of food security in the region.
- II. **Develop institutional frameworks to tackle climate change.** For example in Mexico, the Mexican Strategy on Climate Change establishes principles, goals and lines of action to build a climate-resilient society. Mexico's long-term climate strategy aims to start a profound transformation in the economy, addressing issues related to climate change and promoting more inclusive sustainable development. The government has established vulnerability and short-term scenarios, as well as lines of action that guide long-term adaptation work based on three main axes: social, ecosystems and productive spheres. The strategy identifies crosscutting themes critical to long-term climate policy, including the need for market-based approaches to carbon pricing, more innovation, more research and the development of new technologies, and the need to construct mechanisms to ensure the participation of society and the private sector.
- III. **Develop non-punitive measures for non-compliance.** For example, the ROBIN project (Role of Biodiversity in Climate Change Mitigation) uses novel modelling techniques to assess future climate impacts on Latin America. It focuses on how policy can maximize carbon benefits (for REDD+ type schemes), while avoiding damage to biodiversity, other ecosystem services and preventing unforeseen consequences for human wellbeing and natural systems.
- IV. **Market climate change as a social responsibility.** Virtual conference participants considered that a positive approach that focuses on a sense of responsibility and survival will 'sell' better in Latin America. Currently countries such as Costa Rica, Mexico, Brazil, Ecuador, Bolivia, Panama, Guyana, and Suriname have a pilot ROBIN project that incorporates this approach.
- V. **Establish targets and other measures.** The establishment of realistic and measurable targets for the

Country case study: Costa Rica

In 2007 Costa Rica's Ex-President and Nobel Prize recipient, Oscar Arias Sanchez, announced that the country would embrace Carbon Neutrality for the bicentennial of Independence by 2021. The aim is to achieve a balance between economic, population and consumption growth, respect, care and preservation of nature, as well as an improvement in the quality of life of the habitants.

To this end, a mitigation programme and an action plan with specific and sectoral strategies for GHG reduction were developed. This includes budgeting, laws, and incentives, and measures to promote biofuels, hybrid vehicles, and clean energy.

reduction of GHG, such as the Mexican case where a 50% reduction in emissions was set, or the Costa Rican case with the Carbon Neutrality proposal, is necessary. The establishment of mitigation and adaptation prevention measures for relevant sectors (hydric agriculture, livestock forestry and fisheries, industry, services) are urgent.

VI. Establish legislative frameworks to deal with urbanization. It is necessary to establish ordinances that take into account existing resources and considers public health in urban development. Latin America is the most urbanized of the developing regions and one of the most urbanized regions in the world. In 2010, 83% of the Latin America population resided in cities, and this number is expected to rise to 86% in 2020. More than 20% of the population of Latin America is concentrated in the largest city of each country (Warn, W, eta alt, 2014). With total populations of over 10 million, Buenos Aires, Rio de Janeiro, Sao Paulo and Belo Horizonte already are megacities, and Bogotá, Lima and Santiago have close to 10 million living in them. This rapid urbanization, increased demand and supply of resources and social and health services, puts pressure on the already stretched physical, social and regulatory infrastructure, increasing risks and vulnerability. In Latin America, internal migratory flows - as well as immigration - are directed primarily at cities. Migrants, particularly those with low socio-economic status, are often particularly vulnerable, as they are more likely to live in areas at risk to the environment. They also are likely lacking in local knowledge, networks and assets and, therefore, are less prepared to deal with and avoid the impacts of these hazards. Conflict and generalized violence drives migration in certain areas, from rural to urban areas and between and within urban areas in informal settlements, where health issues, pollution, violence and lack of basic services (water, electricity) are scare. Environmental factors including land degradation and desertification may also play a role as a migration drive and they will be located in urban areas. For example, a significant proportion of the population of the landslide and flood susceptible favelas of Rio de Janeiro are migrants from the dryland areas in northeast Brazil.

Labour market changes in Latin America and other factors TVET should take into account

UNESCO's Strategy for TVET (2016-2021) recognizes the need to develop skills that facilitate the transition towards green economies and sustainable societies as one of priority areas in the coming years.

Green jobs, in addition to sustainable-orientated policies and technologies, can contribute to minimizing certain sectors' environmental impact while supporting economic growth. This requires upgraded and specialized knowledge, skills, training and / or experience of the workforce to meet the skills demands and seize the available employment opportunities.

Additionally, green jobs can also help ensure decent work for all. The notion of decent work in the context of green jobs and economies calls upon integrating environmental aspects into work processes to make jobs and transition to green jobs just and greener, promote employment for all and improve the quality of jobs.

Technically speaking, in a fully sustainable economy, all occupations incorporate "green" elements. Green jobs are a combination of new jobs and existing occupations that are being retrofitted with skills to help reduce the impact of human beings on the environment, promote sustainability and enable the efficient use of energy and resources.

Green jobs are new jobs and existing occupations that are being retrofitted with skills to promote sustainability

The virtual conference raised six challenges that education and training systems in Latin America are facing which may affect the efforts of the countries to provide the skills required for green jobs:

- I. **Urbanization.** Mega-metropolis are developing without proper planning, causing the emergence of serious environmental and social crises. Rapid urbanization also presents serious challenges to education systems because of:
 - structural differences between larger developed urban zones (i.e. metropolis and cities-region) and smaller urban and rural zones
 - high degree of concentration of "modern" economic, social and cultural activity in the rich dominant poles, while the rest suffer from sub-development
 - uneven appropriation of new technologies
 - gap in the quality of life in terms of availability, infrastructure, equipment and services.
 - increasing inequality in the values and aspirations of the actors and social groups between the rich and poor zones
 - continuous stagnation of any real effort to integrate both groups to better support all
- II. **Environmental and natural resource degradation.** The implications of accelerated degradation and destruction of natural resources in places where there is high concentration of population, has long-term consequences. Education systems, with particular focus on skills development to make current occupations greener, play an important role. For example in the development of skills in the construction sector where the crosswind can be used to reduce dependence on air conditioners, as well as teaching programmes on food production in confined spaces, ways of recycling and management of greywater such as the use of eco-gardens.



Dry season bean production in drought-affected Nicaragua, made possible by the use of excess rainwater collected in reservoirs during the rainy season, and used for irrigation in the dry season.

The project is run by the CIAT, an organization that aims to help develop countries make farming more competitive, profitable, and resilient through smarter, more sustainable natural resource management. To learn more about the organization and its work, please visit <http://ciat.cgiar.org/>



Fundación Paraguaya is a non-governmental organization in Paraguay, and has been member of the UNEVOC Network since 2013.

Through their self-sufficient schools model, Fundación Paraguaya educates rural and low-income youth, and transforms them into entrepreneurs who can potentially lift themselves and their families out of poverty. Sustainable development is a key element in all their curriculum.

To learn more about their self-sufficient school model, please visit http://www.unevoc.unesco.org/go.php?q=PP_FP

- III. **Skills mismatches.** The skills being taught in education and training in Latin America often do not respond to the needs of the labour market. Moreover, educational systems are often not able to incorporate and teach new skills and technologies, which are needed for emerging jobs. TVET systems need to be more flexible in incorporating new skills, and need to be aligned to the needs of enterprises. The TVET system should not only focus on the short-term goals and needs, but also teach skills useful for the medium- and long-term goals and objectives of sustainable development.
- IV. **Lifelong learning.** Virtual conference participants noted that TVET should also not only focus on technical and vocational content, but also include other skills that are useful for lifelong learning. The sustainability component should be present all along the education cycle and throughout the process of training students.
- V. **Social factors.** Family education also plays an important role in achieving the Sustainable Development Goals (SDGs), and education and training systems must realize that education should not only be formal, but should also impact the whole community and social fabric.
- VI. **Public-Private Partnerships.** It is urgent to create ecosystems that allows the generation and development of synergies between the productive, educational and public sectors. It is also necessary that educational ecosystems approach those industries with environmentally friendly practices and that they approach the communities where they are located. This would achieve the protection of the environment, the promotion of good practices, and the transfer of knowledge.

TVET and the transition to green economies and societies in Latin America

Virtual conference participants emphasized the importance of harmonizing economic, social and environmental policies to support sustainable development. When discussing the potential of TVET to contribute to furthering the transition towards green economies and the creation of more green jobs, three priority areas were identified:

- **Knowledge and innovation.** Developing an economy based on new knowledge and innovation is important. For example, in some areas bananas waste are used for the construction of pallets, which helps reduce

the use of forest material and the better use of waste production. Moreover there are studies for the use of insect larvae that are produced from the waste of pickings like pineapple and that can be used for the feeding of fish and hens in substitution of the traditional concentrate, which reduces the costs of production, reduces the emissions and solves an environmental problem such as crop residues. TVET has a key role to play in teaching skills that can help implement but also develop innovative ideas.

- **A more resource efficient, greener, and competitive economy.** Abundant resources, favorable regulations and multilateral initiatives are fostering international collaboration for the implementation of sustainable technologies. As costs of renewable technologies are reduced (i.e. wind, photovoltaic), they promote a favourable investment climate, allowing local markets to be competitive and grow. Likewise, the region is in need of finding new ecological solutions to development problems characterized by pollution, water scarcity, waste disposal and traffic congestion in its cities. In addition, the younger demographics are more willing to head the necessary changes, which in turn presents an opportunity for TVET.
- **Employment and mobility.** Fostering an economy with a high level of employment and a cohesive social structure. While the notion of “social cohesion” is understood as one that takes into account giving everyone access to job opportunities and participating in society, the objective is to enable people, especially those from poor and marginalized backgrounds, to take advantage of the opportunities and achieve upwards social mobility. Through relevant education and knowledge regional needs, this allows the population to move towards a better status of wealth, occupation, education and social improvements. An example of the above are the so-called “Intelligent Comforts” (CECI) developed in Costa Rica. CECI is a national network of Intelligent Community Centers located in different parts of the country that offer diverse services and courses to the community. Currently, CECIs give priority to basic training in the use of Internet, applications, email, English, video conferencing, courses for business development and entrepreneurship. In the future, they may serve as a platform for the implementation of courses related to green technologies.

Job sectors with the largest demand for vocational skills in Latin America

After discussing the challenges Latin American countries face to promote green growth and jobs, the discussion focused on areas that present the most demand in the Latin American region. A poll was conducted for this purpose. The poll focused on selected sectors that are considered to be potentially important and most pertinent for creation of green jobs in the region and have potential. The sectors included energy, construction, industrial, agricultural, transport and the services sectors (tourism and its various practices). The sectors analyzed were selected based on their importance and representation of the region.

- **Renewable energy sector.** The renewable energy sector was selected as it is expected to grow over the next years. For example, solar energy is expected to grow from 4.0 GW in 2017, to 5.9 GW in 2018, 7.8 GW in 2019, 9.1 GW in 2020 and 10 GW in 2021. Among the market leaders driving solar energy are Brazil, Chile, Mexico, Argentina and Colombia (AMI Perspectivas, 2017).
- **Construction sector.** The construction sector, which includes housing construction and building materials, is one of the largest sectors. Over the last years improvements to make housing construction more environmentally friendly have been made in Mexico, Peru, Colombia, Argentina and Panama (Moody’s Investors Service, 2016).
- **Tourism sector.** The region is classified as one of the best tourist destinations. In 2015 alone, 41 million international tourists arrived, representing a 5% growth. The travel and tourism industry in Latin America has an incredible potential to help generate growth, create jobs and enable regional development (World Economic Forum, 2017).
- **Agricultural sector.** The region is a net exporter of raw materials, presenting an opportunity for the development of green technologies in areas such as:
 - Technological tools for the planning and management. Geographic information (GIS) and remote sensing (SR) offers the opportunity to bring together information derived from a variety of sources in a single place. It can be particularly useful for land planning, especially when users have different perspectives and preferences in a specific territory. In the same way, SR techniques are a valuable tool for monitoring (i.e. vegetation, water bodies, etc.), especially when a single institution is in charge of monitoring a wide area
 - Agricultural practices and livestock. The development of bio pesticides that reduce their potential for evaporation or their percolation potential to surface waters thus reducing effect gases or pollution
 - Agri-environmental modeling. For decision-making through the development of tools to support the diagnosis of system conditions or through the implementation of low impact precision agriculture
 - Waste management. The agricultural sector is one of the greatest producers of organic and inorganic waste. It is urgent to develop technologies tending to “zero waste” that make it possible to recover or previously purify non-recyclable waste. Increasing efficiency offers ease of maintenance, security, and offers financial incentives to implement these methods in the future
- **Transport sector.** Despite the fact that the transport sector remains the largest contributor of CO2 emissions,

there are green initiatives in Bogotá, Buenos Aires and Fortaleza that show that the region is trying to reduce this.

Poll results

Participants were first asked to identify the relevant sectors that technical and vocational education and training could contribute to greening. Participants were able to pick more than one sector.

The results show that virtual conference participants placed a lot of importance on agricultural sector (85%), as it deals with food shortages, as well as its ‘greening potential’ throughout its value chains. Next participants believed that the industrial sector was the most important (62%). Interestingly, participants thought of the transportation sector, which is the number one cause responsible for the major emissions in the region, as the third most relevant sector.

Participants were then asked to identify which specific curricular areas technical and vocational education and training should focus on. Participants were asked to classify it according to high, medium, and low priority areas.

Technical and vocational education and training provides a variety of skills. With regards to the development of the green economy, participants were asked to identify the types of skills that are most relevant. Figure 5 shows that participants believed that students needed to have innovation skills to

Figure 3. Relevant sectors for TVET in Latin America, as identified by virtual conference participants

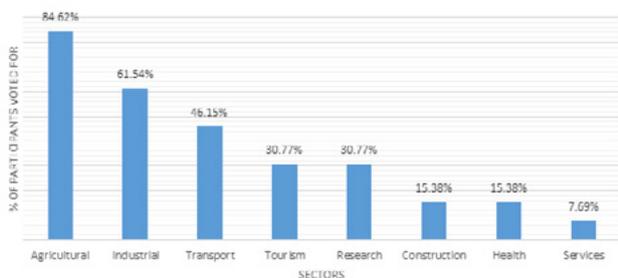
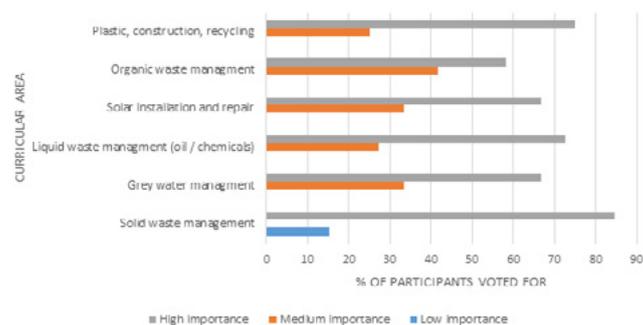


Table 1. Skills needs by sector

Sector	Skill		
	Professional	Technical	Soft
Agricultural	e.g. environmental engineers	Knowledge about laws and regulations	Capacity for innovation, teamwork
Industrial	e.g. food specialists	Knowledge of laws and regulations and trade liberalization	
Transportation	e.g. mechanics	Knowledge about production and processing of materials	
Tourism	e.g. sustainability experts	Knowledge about marketing	
Construction	e.g. environmental civil engineers	Knowledge about buildings and construction, production and processing of materials	

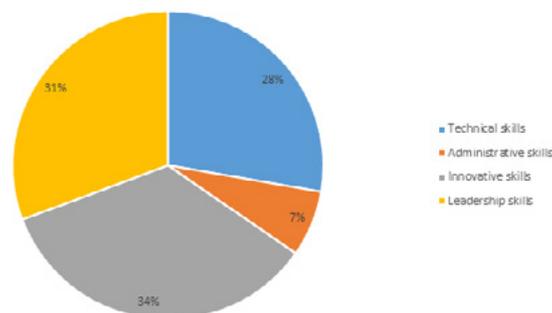
Figure 4. Priority curricular areas for greening TVET in Latin America and their importance, as identified by virtual conference participants



drive change (34%), closely followed by leadership skills (31%). Interestingly, technical skills and competencies was only thought of as third most important (28%), followed by administrative skills (7%).

The poll however also suggested that participants think that employees often feel the skills offered through TVET are not corresponding to the needs of the labour market. Table 1 show the skills needs in each sector.

Figure 5. Skills required for the green economy in Latin America, as identified by virtual conference participants



Conclusion and recommendations

The one-week virtual conference discussed the links between social, economic and environmental factors for sustainable development and country responses to global climate-change policies. It also looked at labour market changes in Latin America, and the role of TVET to contribute to sustainable development.

The first thread discussed the links between social, economic and environmental factors to sustainable development. Although participants believed that all factors were important, they stressed that the transition towards sustainable development must take into account the socio-economic situation in Latin America. High unemployment and increasing poverty have resulted in a society and economic system in many Latin American countries that is not inclusive. Moreover, urbanization, societal problems including gang violence, and the privatization of the education systems, pose challenges to realizing inclusive and sustainable growth. Participants noted that TVET should not only enable citizens to become part of the labour market, but also empower them to participate as citizens in the transition towards sustainability.

The role of the government in promoting sustainable development was discussed in the second thread. Virtual conference participants believed that the government plays an important role in developing political instruments and national plans that help guide the transition towards sustainable development. The Costa Rican and Mexican case studies were presented as examples of this.

Participants believed that the government plays an important role to transition towards sustainable development

Labour market changes and other factors TVET should take into account were discussed in the third thread. Participants highlighted that it was important for TVET developments to take into account the effects of rapid population growth and other socio-economic developments in Latin America. In particular, the virtual conference discussed the impact of the rural-urban, industrial-agricultural, and public-private education divides that exist in Latin America.

Lastly, the fourth thread discussed the role of TVET to contribute to the transition of green and inclusive societies and economies. Participants agreed that key to this transition is to improve technical and vocational education and training systems to make them more responsive to the current and future skill demands in the Latin America region. Similarly, the systems must be oriented to the principles of sustainable development.

The discussions during the virtual conference also showed need for further research, and it is recommended to conduct an in-depth study of the inter-sectoral links that promotes the generation of green jobs, and the technological transfer to the sectors that are most in need of them (i.e. construction, tourism, energy, and agriculture).

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About the moderator

Irene Alvarado is an Agronomist and holds a Master's degree in Business Administration and a Doctorate in Economics with emphasis on environmental economics, recently completing a sub-specialization in Renewable Energies. She currently teaches courses in the area of Business Development, specifically focusing on Project Evaluation and Environmental Economics.

She currently coordinates the EARTH University Entrepreneurship Programme, and is Director of the Board of Directors of the Costa Rican Foreign Trade Promoter (PROCOMER). She is also a permanent member of the Advisory Board of the New York-based Sustainability.

She has served as General Manager of Export Companies, was President of the North Caribbean Tourism Chamber, has represented Costa Rica in Sustainability, Education and Management panels for change in the tropics, and is the recipient of international awards for her research in Field of endeavors.

Her research work focuses on two areas: the analysis of new market structures for the development of agricultural products in green economies, and the promotion of entrepreneurial capabilities for young people.



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Number of participants: 121

Male: 73

Female: 48

Number of countries present: 46

UNEVOC Network members: 29

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