Global Guidance for Education on Green Jobs

Connecting Higher Education and Green Opportunities for Planetary Health

UN environment programme

US PARTNERSHIP DECADE OF EDUCATION FOR SUSTAINABLE DEVELOPMENT 2005-2014

TABLE OF CONTENTS

Acknowledgement

Authors

Mari Nishimura (UNEP)
Debra Rowe (US Partnership for Education for Sustainable Development)

Reviewers

The authors would like to thank the many experts that reviewed and contributed to this document:

Tahmina Mahmud (ILO)
Alexander Leicht (UNESCO)
Jun Morohasi (UNESCO)
Kenneth Abraham Barrientos (UNESCO)
Meredith Storey (SDSN)
Hilligje van't Land (IAU)
Isabel Toman (IAU)
Iain Patton (EAUC)
Sam Barratt (UNEP)
Meredith Storey (SDSN)
Thomas Showalter (National Youth Employment Coalition)
Olga Strietska (ILO)
Angus Mackay (UNITAR)
Nikki Hodgson (UNITAR)
Julia Villalba (UNITAR)
Tu Chi Nguyen (World Bank*)
Ashok Sarkar (World Bank*)
Yao Zhao (World Bank*)
Alona Kazantseva (World Bank*)
*The MENA Energy Global Practice team at the World Bank
Samah Elsayed (IRENA)
Zehra Aydin (retired UNEP, Fellow - US Partnership for Education for Sustainable Development)
Hannah Leland (US Partnership for Education for Sustainable Development)
Riccardo Savigliano (UNIDO)
Kenth Mattias Larsen (UNIDO)
Giorgia Epicoco (UNIDO)

Introduction

Over 200 million students are currently enrolled in the higher education system and this number is predicted to double by 2030. Yet, there are currently 71 million unemployed youth struggling to find a job, a situation only exacerbated by the COVID-19 pandemic. . The good news, however, is that the transition to a green economy will add an estimated 60 million new jobs to the market by 2030. According to ILO, "The green transition can generate millions of jobs, but these are conditional on the availability of relevant skills and training."[1]

The pressure that COVID-19 has put on educational and training institutions has already caused significant disruptions in education, including graduation delays and reductions for an unprecedented number of students. Recent improvements in reducing poverty are reversing , particularly among women and other marginalized groups.[2] As well as improving environmental health, an effective transition to a green economy will increase economic vibrancy and improve human well-being.

1 ILO (2019). Skills for a Greener Future: A Global View pg. 188

2 UNDESA (2020). UN Sustainable Development Goals Report 2020 pg.40

Audience and Purpose

The primary audience for this Global Guidance document is the higher education community. However, other educators, NGOs, governments, employers and youth organizations will find this document useful for strategic planning and collaborative efforts with higher education and each other. It provides an overview of the topic with connections to many resources. It includes key actions for educators preparing students to participate in the just transition to a green and more inclusive economy. These actions are essential to prevent large-scale human suffering due to climate instability, ecosystem degradation and economic disruptions. This document also includes vetted resources for senior administrators, curricular developers, organizational staff, educators, and employers.

JUST TRANSITION

"A JUST TRANSITION CREATES DECENT WORK OPPORTUNITIES FOR ALL AND ENSURES THAT SOCIAL PROTECTION EXISTS WHERE NEEDED. IT ALSO INCLUDES MECHANISMS FOR SOCIAL DIALOGUE FROM THE PRIVATE SECTOR AND WORKERS' UNIONS THROUGHOUT POLICYMAKING PROCESSES AT ALL LEVELS." [3]

These key actions and resources support an emerging international trend in curricula and research to emphasize problem-solving for the SDGs. It builds upon preexisting strategies for education (e.g. UNESCO/ UNEVOC) and the current work on greening the workforce (e.g. Green Jobs Publications from ILO, Green Jobs Resources from PAGE). It also supports the fulfillment of national and international commitments and aligns with other resource documents (e.g. The Paris Agreement, Integrating action for climate empowerment into nationally determined contributions, and the UNESCO ESD for 2030 Framework)

3 ILO (2017). SDG NOTE:GREEN JOBS PG. 12

Cross Sector Collaboration

The science of climate change and ecosystem health demands bold changes to our societal norms now. Green growth can be a pathway to inclusive prosperity.[4] To accomplish this, all sectors of society must expand on their previous roles and collaborate with each other. The education sector needs to work closely with businesses, governments, local communities, nonprofit organisations and associations to co-create the vision and implement the plans, policies and processes required for an inclusive green economy. Higher education can act as a convener to encourage cross-sector collaboration. These collaborations have the potential to produce the necessary financing, policies, market demand, training and education of the new and existing workforce. This includes policymakers, investors, and business leaders.[5] According to the UN General Assembly Document, “closer collaboration will also be required across Government ministries in order to devise integrated strategies encompassing public policies in the areas of education, youth, industrialization and rural development.”[6] Labor standards for companies are required to ensure green jobs are safe, have decent pay, and provide opportunities and pathways for career growth.[7] To maintain a healthy green entrepreneurship ecosystem, green entrepreneurship must be supported by all sectors.

4 GGGI (2020). The Promise of Green Growth: A Pathway to Prosperity While Achieving National and Global Ambitions

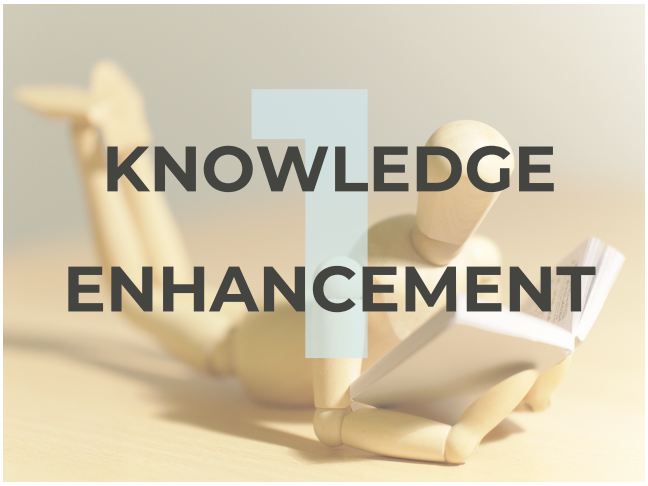
5 Platform for Advancing Green Human Capital (2017). Advancing Green Human Capital - A Framework For Policy Analysis And Guidance

6 Zabin, et. al. (2020) Putting California on the High Road: A Jobs and Climate Action Plan for 2030

7 Decent Jobs for Youth (2019) Thematic report on Growing Green - Fostering a Green Entrepreneurial Ecosystem for Youth

Three Key Actions

Higher education institutions of all types can help students reach their academic and professional potential via **three key actions:**



Across curricula in all majors and degrees, include environmental sustainability and learning outcomes related to growing an inclusive green workforce and economy. This way, students are prepared for the growing numbers of green jobs.[8] Such curricular updates will also help students make decisions that support an inclusive and green economy in their adult roles as consumers, community members, employees or employers, family members, and investors.

For Educators and Trainers: Through enhanced professional development, equip educators, trainers and other staff with the ability to teach students the competencies and skills required for green jobs.For Students: Through curricular updates, include change management competencies and specific green skills so students are prepared to green the local and global economies.

Strengthen ties between potential employers, educators, and students to gain employers' input for curricular updates and increase job placements.

Resources for each of these key action areas are included below. We now have a crucial opportunity to create a more sustainable future. We must advance to greener education and workforce development for every country, by changing business-as-usual and building back better. This will help resolve our urgent unemployment issues while creating more equitable employment opportunities.

8 ILO (2016). What is a green job?

Green Jobs

ILO **defines** Green Jobs as decent jobs that contribute to, preserve, or restore the environment, be they in traditional sectors such as manufacturing and construction, or in newer and quickly growing green sectors such as renewable energy and energy efficiency. These jobs include the technicians educated through technical institutions and the business managers, marketers, financiers, engineers and others typically educated through the universities. Green jobs help:

- Improve energy and raw materials efficiency
- Eliminate greenhouse gas emissions
- Eliminate waste and pollution
- Protect and restore ecosystems and human health
- Support adaptation to the effects of climate change[9]

9 ILO (2016). What is a green job?

Green Job Opportunities

Every country is well-suited to benefit from the green jobs opportunities. Globally, green jobs are growing more quickly than other jobs. Some of these quickly growing job areas with significant positive environmental impacts include:

Built Environment: Technology, Energy, Transport, Buildings and Infrastructure

✔ Renewable energy sector employed 11.5 million people in 2019.[10] With added investment, jobs in renewables could reach 42 million by 2050 with another 21.3 million in energy efficiency and 14.5 million people in jobs related to power grids and energy flexibility.[11]

✔ Infrastructure sectors where energy services are key inputs. eg. construction, transportation and sanitation.

Natural Environment: Agriculture, Forestry, Fisheries and Watershed Management

✔ Organic farming, sustainable agriculture and green food manufacturing are more labour intensive than conventional production.

✔ Adoption of sustainable management practices accounts for 362-630 million of employment gains by 2050.[12]

✔ Sustainable agri-business and fisheries affect the entire value chain to be more innovative and sustainable, using climate-smart technology to mitigate and adapt to climate change and sustainable procurement.

The soon available Clean Energy Employment Assessment Tool from the World Bank helps countries assess future direct and indirect job growth due to the emerging green economy.

10 IRENA (2020). Renewable Energy and Jobs Annual Review

11 IRENA (2020). Global Renewables Outlook 2020

12 FAO (2012). Green Jobs for a Revitalized Food and Agriculture Sector

Green Entrepreneurship

Many of the jobs necessary for an inclusive and green economy do not yet exist and can be created by green entrepreneurs. Many career pathways have already been created by green entrepreneurs: energy managers and energy auditors, solar photovoltaic manufacturers, clean cooking stove providers, and carbon offset retailers, to name a few. **Youth in the informal economy as well as students can be more successful in the green economy if they have learned entrepreneurship skills and an entrepreneurial mindset.**

Green Lens for Every Job

Green and sustainability jobs go beyond the solar designer or the wind generator installer that many people characterize as a green job. There are hundreds of green and sustainability jobs categories. A quick job search shows tens of thousands of job postings, but green jobs go beyond the existing job postings. Green jobs produce goods or provide services that benefit the environment or use fewer natural resources. This means any job that includes choices about how and which resources to consume can be green jobs, from simple choices like ordering office supplies to choosing energy sources and complex product development.

Students can bring their sustainability literacy to any job to help create a greener economy, acting as a **green intrapreneur for organizational change**. To be successful at greening a company, students need to understand how to assess the organization's formal and informal power structure as well as its products and processes, find the opportunities to shift the organization to greener practices and build the coalition of support necessary to create the changes. **Helping students learn to be systems thinkers and effective change managers is a key component of quality education for a green economy**.

Further, students help create an inclusive and green economy when their education prepares them to **apply this knowledge not only to their professions but within their adult roles as consumers, voters, community members and investors.**

Resources for Actions

What Can Higher Education Do Now?

This section explains what universities, TVETs and other educators can do. Employers, NGOs, governments and youth organisations will also find this information useful.

The strategies and resources below help implement the three key actions, build student interest in green and sustainability jobs, grow student talent to build a sustainable future, and connect them to job opportunities. Many of the suggested resources also include promising practices from leading institutions. Students can simultaneously build their employability skills and contribute to the sustainable development solutions, thereby producing a healthier economy and environment and more social well-being.

- **Curricular Content Changes**: Integrate environmental sustainability concepts and green career pathways information throughout the curricula and co-curricular programming in TVET and universities so all students understand our urgent sustainability issues and have the knowledge and motivation to create and participate in solutions, including:
    - ✔ SDGs and Green Economy Core Concepts: Students understand the SDGs including the potentials for an inclusive green economy as part of the reorientation framework. There are many resources available to educators e.g. Education for Sustainable Development Goals: learning objectives, Introduction to the Green Economy, UNESCO-UNEP-ILO Youth Xchange – Green Skills and Lifestyles Guidebook
    - ✔ Self-concept and Motivation: Students continue to build their sense of who they want to be in the world during their higher education experience. If they aspire to help build an inclusive, sustainable and green economy, then they will use the knowledge productively. Educators need to address this explicitly to provide students with the necessary motivations.

- **Professional Development Offerings**: Provide materials, professional development opportunities, and incentives to participate for faculty and other relevant staff about environmental sustainability and green jobs, including but not limited to the teaching of specific sets of green skills. Utilise materials from UN CC: Learn, PAGE - Learning for a Green Recovery, SDG Academy - Work and Employment for a Sustainable Future, UNEVOC, the Sustainability Education and Economic Development Resource Center, Accelerating Education for the SDG in Universities (SDSN), projects from the European Union's Erasmus+, UVED (Virtual University of Environment and Sustainable Development, France) and others. Your faculty and staff can sign up for upcoming webinars and a discussion series providing some of this professional development.

- **Career Advising**: Share how bringing a green lens to any job is worthwhile and necessary, and provide resources on career pathways and job posting sites to career advisors, faculty and students. (e.g. Green and Sustainability Jobs: What Career Advice is Needed)

- **Standards and Accreditation**: Work with academic societies and professional associations to integrate green topics into requirements for the major and accreditation criteria - examples include accreditation in engineering and the Disciplinary Associations Network for Sustainability.

- **Institutional Alignment**: Adapt performance appraisal criteria for senior administrators and other key positions to include the integration of environmental sustainability into tertiary education. Designed by over a dozen professional associations in higher education, this primer provides descriptions and examples of what senior administrators can accomplish. This call to action describes the inclusion of sustainability into job descriptions and performance appraisals.

Institutional Assessment: Utilize assessment tools to guide the institutions' actions regarding green workforce development, such as the Green Genome self-assessment and the Greening TVET Monitoring and Assessment Framework. These assessments (in the appendices of these two resources) cover what an integrated approach to sustainability, greening the workforce and economic development would look like, and how a college would know whether it was making progress toward long-term systemic change. While originally designed for TVETs/community colleges, these assessments include a whole institution approach and apply to all higher education institutions.

- **Curricular Changes**

✔ Change Agent Competencies: Update all existing curricula and design new curricula to include within the learning outcomes the competencies needed to be an effective change agent for the SDGs and the creation of an inclusive, green economy. While TVETs and universities both have specific skills to teach for green jobs, universities have a crucial role in helping students become change agents to create the transitions we urgently need. A rich literature on this topic is creating an emerging consensus calling for the teaching of the following key competencies across all academic disciplines: Strategic -thinking, Values-thinking, Futures-thinking, Systems-thinking, Integrated problem-solving, Interpersonal and Intrapersonal[13] Students need to learn about climate change and other SDG topics in ways that build their agency for effective action. Applied at scale, this will shift the conceptualization of education outcomes from being 'issue-based' to 'action-based'[14]. Educators also need to better develop, train and support students to conduct societally relevant research.[15]

✔ Civic Engagement: Include civic engagement in curricular so students understand how to advocate for organizational and governmental policies necessary for the transition to an inclusive green economy e.g. Green Growth Knowledge Platform, Teach the Future, Beyond Doom and Gloom: Climate Solutions, Green Industrial Policy: Concept, Policies, Country Experiences, Green Economy Textbook.

✔ Entreprenuership: Include green entrepreneurship skills in curricula e.g. Start and Improve Your Business Programme and Green Business Booklet by ILO, Addressing Climate Change Innovation by WIPO, Youth Employment and Entrepreneurship by UNEVOC, How to Start an Eco-Friendly Small Scale Business by WWF, MOOC based on the Handbook and Workbook for Green Entrepreneurs in the Mediterranean by UNDP, Women Entrepreneurs as Key Drivers in the Decentralised Renewable Energy Sector: Best Practices and Innovative Business Models by ARE, A Handbook for Energy Entrepreneurs by UNEP*

13 Brundiers, K., Barth, M., Cebrián, G. et al. Key competencies in sustainability in higher education—toward an agreed-upon reference framework. Sustain Sci 16, 13–29 (2021).

14 De Meyer et al (2021) Transforming the stories we tell about climate change: from 'issue' to 'action', IOP Publishing Ltd Environmental Research Letters, Volume 16, Number 1

15 Mary Ann Rozance et al 2020 Building capacity for societally engaged climate science by transforming science training, Environ. Res. Lett. 15 125008

* Please note: Annexes are outdated in this otherwise useful document

✔ Green Jobs Skills: Update (and design new) curricula to include skills needed for green jobs utilizing employer input and related publications e.g. Green Jobs Publications from ILO, especially Skills for a Greener Future: A Global View, Powering Jobs Census: 2019 from Power for All, Clean Energy Workforce US, Knowledge and Skills Statements for Greening Career Clusters. It is important to prevent a skills and jobs mismatch. Include ongoing updates of changes in job skills via job task analyses and information from labor and employer groups. It's important to communicate with local employers to clarify what skills are desired by employers. For example, some solar and wind employers want students to learn basic mechanical, electrical, and safety skills for initial employment, and complete the rest of the training within the company.

Incorporate information on present and projected skills shortages. Teach students the specifics of how to help grow the inclusive, green economy e.g. green finance, solar jobs task analyses, and skills development for renewable energy and energy efficient jobs, leveraging skills to build on existing industries and knowledge/skills for a circular economy.

Teach students the specific skills related to their career pathway at all TVET and technical/training institutions with a whole institution approach i.e. Greening technical and vocational education and training: a practical guide for institutions, and Green skills and innovation for inclusive growth. While designed for the TVETs, these documents are also applicable to universities.

- **Pedagogy**: Use applied projects and applied research as high impact learning practices:

✔ Focus on Solutions: Utilize the Key Components of Quality Assignments. Help faculty and staff improve student learning by creating applied projects and research assignments relevant to existing real world green economy issues.
✔ Transdisciplinary: Include interdisciplinary approaches and use the campus and communities as a living laboratory to help develop the green and inclusive economy.
✔ Applied Learning: Equip students with opportunities to apply skills and knowledge necessary to pursue green careers via real world projects and applied research, connected to communities and employers using models like Educational Partnerships for Innovation in Communities with specific projects (e.g. helping an HVAC company start a solar division, conducting energy audits for businesses and NGOs, providing and/or assessing the effectiveness of workshops for the community on mitigating/adapting to climate change) The upcoming international version of For Good will connect real world projects with interested students.
✔ Institutional Incentives: Create reward structures for more applied learning and applied research (e.g. applied research journals and pedagogy for applied projects valued more in credit toward tenure and promotions)

- **Career Pathways Advising**: Have faculty advisors and career advisors/offices share with students information about: 1) green career pathways 2) bringing a green lens to any job and 3) entrepreneurial opportunities e.g. Green and Sustainability Jobs: What Career Advice is Needed, Sustainable Energy Jobs Platform.

  ✔ Skills Awareness: Organise a "Skills day for Green Economy" - invite professionals, as well as program alumni or others who are representative of the institution's student body in technical sectors as guest speakers and workshop leaders
  ✔ Access to Job Listings: Provide job listing sites eg. Green and Sustainability Job sites and Career Resources
  ✔ Green Careers Resources: Provide resources to explore green jobs, skills/competencies, and career pathways e.g. IRENA's Renewable Energies and Jobs - Annual Review, The Sustainability Education and Economic Development (SEED) Resource Center, Nature Hires: How nature-based solutions can power a green jobs recovery
  ✔ Gender Disparity: IRENA's survey on women in renewables found that women represent only 32% of the RE workforce. Of this 45% are in administrative roles, 35% in non-STEM technical roles and only 28% in STEM jobs. Addressing this requires targeted actions including scholarships, mentoring, and early exposure for girls well before they reach higher education.[16] Feature resources for women to close the gender gap in clean energy and green economy careers e.g. Women at the Forefront Programme, Women Take Next Step for Energy Sector Leadership, African Women in Energy Development Initiative, Women of Renewable Industries and Sustainable Energies, Powering Equality: Women's entrepreneurship transforming Asia's energy sector
  ✔ Entrepreneurship: Feature resources that demonstrate green entrepreneurship e.g. Meet Entrepreneurs Leading the Transition to a Green Economy
  ✔ Communications: Signpost on campus so that people can explore and understand the need for students to be educated for green jobs e.g. Green Jobs Poster, Ecoleaders Career Center Poster

 IRENA (2019), Renewable Energy: A Gender Perspective. IRENA, Abu Dhabi

- **Student - Employer - Faculty Connections**:

  ✔ Career Days and Apps: Organise opportunities for students to learn about green career pathways by meeting potential employers and engaging with programme alumni as role models and for networking. Provide broader access to this information 24/7 via mobile phone apps.
  ✔ Employer Engagement: Organize recruiters' visits to campus to promote green job opportunities, enhance job placements and continuously improve curricula. Help employers understand how to connect effectively with higher education e.g. Ways Employers can Connect
  ✔ Apprenticeships etc.: Increase the number of apprenticeship opportunities, on the job learning and internship opportunities related to green careers
  ✔ Job Shadowing: Organise accredited job shadowing programme between students and employers
  ✔ Green Businesses Development: Offer workshops and convene conferences for business owners about how to grow their business and improve their profits by going green. Have trade associations, Chambers of Commerce and local governments co-host. Students can make professional connections and help businesses develop their green potentials during subsequent applied learning and research projects.

- **Curricular - Career Connections: "**Successful human resources development will require better connections between education and employment so as to turn qualifications into jobs."[17] Curricular and programme developers should include the projected jobs in a growing green economy and the anticipated skill sets required when designing curricula. University leaders can develop an important interface between future oriented employers, program alumni and curricular developers to facilitate an ongoing dialog to advance these new skill sets. Utilizing a tripartite system that incorporates government, future oriented businesses, and organized labor can develop curriculum that is responsive to the needs of firms and create pathways to sustainable livelihoods.

17 UN General Assembly Document A/72/292 (UNGA, 2017). Human resources development for the twenty-first century Report of the Secretary-General pg. 16

Invitation

By sharing these opportunities and utilizing the above resources, we can build back better and address both environmental health and youth unemployment through our higher education and workforce development systems. To complement these resources, UNEP is facilitating a Community of Practice for Greening the Workforce with webinars and international virtual discussion meetings for educators, administrators, and youth. Additional resources, best practices from countries, institutions and educators, success stories, and solutions to barriers will be discussed during these virtual meetings. Please sign up here for more information.

Congratulations on all your efforts to help build a more inclusive green economy.

Please contact UNEP-YEA (unenvironment-yea@un.org) for more information and assistance.