WorldSkills Conference 2021

Track: Skills for Green Jobs
WELCOME

Parallel session 2.2
Job-rich opportunities in the green transition - Showcase of business and TVET providers’ engagement

Moderated by:
Kenneth Barrientos (UNESCO-UNEVOC)
Robert Parua (UNESCO Beijing Cluster Office)
Session showcase

1. Trends in business re-structuring impacting skills and job-rich potential: a snapshot (UNIDO)

2. TVET providers’ initiatives in responding to green skills demand of the labour market (Sri Lanka, Singapore, Indonesia)

3. Reflection
Job-rich opportunities in the green transition showcase of business and TVET providers’ engagement

Dr. Janaka Jayalath
Deputy Director General, TVEC
SRI LANKA

Dr. Adrian Ang
Sr. Manager, IBEC School of Engineering
SINGAPORE

Dr. Riccardo Savigliano
Chief, Agro-Industry and Skills Development
UNIDO

Mr. Martin Stottele
Team Leader, RESD Project
INDONESIA

Fr. Brian Butanas
Technical Director, Don Bosco Balamban, Cebu
PHILIPPINES
Job-rich opportunities in the green transition

Part 1
Dr. Riccardo Savigliano
Chief, Agro-Industry and Skills Development Division
UNIDO
Job-rich opportunities of the green transition – Showcasing business and TVET providers’ engagement

Trends in business re-structuring impacting skills and job-rich potential: a snapshot

Riccardo Savigliano, Chief, Agro-Industries and Industrial Skills Development Division, UNIDO
A bit of history about ozone depletion

1974: Rowland & Molina

1985: Vienna Convention

1987: Montreal Protocol & CFC phase-out

1991: Multilateral Fund

2007: HCFC Phase-out

2016: HFC phase-down (Kigali Amendment)
UNIDO & Midea - Partnership

10-year partnership to bring environmentally friendly air conditioning products to the market and to scale

Investment in R&D and US$ 7 million for the product line

Challenges of introducing propane-based ACs into the market:
Standards and skilled technicians
UNIDO & Midea - Achievements

- Midea: the no. 1 air treatment company to develop a long-term cooling solution
- Eco-friendly, highly efficient and reliable solution
- High-level training and education of engineers & management by UNIDO
- First batch of propane-based split AC now being sold in Europe by Midea
UNIDO Eco-Industrial Park Programme

for sustainable industrial zones
An holistic approach

- Following the **Resource Efficient and Cleaner Production (RECP) model**
- An **eco-industrial park** is a community of manufacturing and service businesses located on a common property
- **Transition** from industrial to **eco-industrial**
- **Industrial symbiosis** to fosters inclusive and sustainable development through **outward integration**
- **550 SME-staff** from the EIPs trained, **417 industrial park management staff trained**
First EIP with a **Vocational School (SMK School at MM2100)** as part of the park

**330 companies** are part of the park

- Liaison between education and industry
- **850 students intake** per year – currently **2500+ students enrolled**
Eco Industrial Park - Indonesia

Curricula based on industry demand (automotive, electrical, mechanics, hospitality, accounting, industrial electronics)

80% graduates’ employability by companies within the park

Partnership with private sector (apprenticeships in Japan and Germany, i.e. Bosch)

Steam engineering lab (in cooperation with Indian company: utility management, steam management and auditing)
Job-rich opportunities in the green transition

Q&A
Panel 2.2

Job-rich opportunities in the green transition

Part II
Dr. Janaka Jayalath
Deputy Director General, TVEC Sri Lanka
UNEVOC Centre
Modelling multi-stakeholder engagement to enact policy and forecast labour market needs for greening VT in energy and construction sectors in Sri Lanka

Dr. Janaka Jayalath
Deputy Director General
INTRODUCTION

• Asian cultural values value green jobs and protecting the environment as 70% of the assets in the rural sector.
• Greening TVET helps more environmentally conscious practices;
• The Urban population has been seen to damage the environment due to production of goods and other service activities. Most export oriented companies take this seriously and join themselves with CSR initiatives.
• A ‘green’ workforce will enhance the profitability of the enterprise;
• Sri Lanka to seize the potential for job creation by providing skills needed in the new green sectors;
• Disadvantaged groups in the labour market (young people, women, persons with disabilities, rural communities and other vulnerable groups) require targeted support to develop their potential knowledge and skills for green jobs.
• Small and medium firms are scattered all over the island. They are not concerned since the profit margins are low; no time and no organisational culture; belongs to the informal sector; occupational safety and health are poor.
POLICY AND FORECASTING TOOLS FOR LMI

• TVET Policy
  – Greening TVET policy

• LMI Forecasting and TVET Planning
  – LMI Bulletin
  – VET Plans (Sectoral & Provincial)
  – Development Plan
  – Detailed Action Plan
Greening Coverage

- Individuals
- SME
- Govt. and Corporates

Greening TVET for Greening Jobs
Greening TVET Ecosystem

- Green NCS
- Greening Elements in Curriculum
- Sustainable Development
- TVET Delivery
- Greening Practices at Workplace
- Green Workforce
- Improve Productivity and Save Nature
## Labour Market Needs for Greening TVET in Energy Sector

<table>
<thead>
<tr>
<th>Existing Jobs</th>
<th>Existing Standard &amp; Competency Code</th>
<th>Existing Green Competencies</th>
<th>Links with Industry Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiler Operator</td>
<td>E40S005 NVQ Level 2 &amp; 3</td>
<td>Checking of oxygen &amp; carbon dioxide content and temperature of flue gas, if gas analyzer available and adjusting air/fuel ratio. Methods of analyzing flue gases. Perform methods of adjusting air/fuel ratio. Cleanliness and tidiness of the boiler house maintained by following good housekeeping practices.</td>
<td>Developed and validated by industry representatives.</td>
</tr>
<tr>
<td>Electric Motor Winder</td>
<td>E40S003 NVQ Level 3 &amp; 4</td>
<td>Environmental hazards, disposal management, energy saving.</td>
<td>Developed and validated by industry representatives.</td>
</tr>
<tr>
<td>Electrician</td>
<td>E40S001 NVQ Level 3 &amp; 4</td>
<td>Environmental hazards, disposal management, energy saving principles.</td>
<td>Developed and validated by industry representatives.</td>
</tr>
<tr>
<td>Linesman (Electrical)</td>
<td>E40S006 NVQ Level 3 &amp; 4</td>
<td>Environmental hazards, disposal management, energy saving principles.</td>
<td>Developed and validated by industry representatives.</td>
</tr>
<tr>
<td>Pneumatic Technician</td>
<td>E40S004 NVQ Level 3 &amp; 4</td>
<td>Environmental hazards, disposal management, energy saving principles.</td>
<td>Developed and validated by industry representatives.</td>
</tr>
<tr>
<td>Existing Jobs</td>
<td>Existing Standard &amp; Competency Code</td>
<td>Existing Green Competencies</td>
<td>Links with Industry Sector</td>
</tr>
<tr>
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</tr>
</tbody>
</table>
## Labour Market Needs for Greening TVET in Construction Sector

<table>
<thead>
<tr>
<th>Existing Jobs</th>
<th>Existing Standard &amp; Competency Code</th>
<th>Existing Green Competencies in current TVET Standards</th>
<th>Links with Industry Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium Fabricator</td>
<td>F45S003 NVQ Level 2, 3 &amp; 4</td>
<td>Work connected with aluminium fabrication performed to drawings/ sketches/ specifications &amp; instructions as appropriate &amp; to predetermined standards of quality &amp; safety, while observing all the relevant environmental regulations &amp; procedures.</td>
<td>Developed and validated by industry representatives.</td>
</tr>
<tr>
<td>Assistant Quantity Surveyor</td>
<td>F45S007 NVQ Level 4</td>
<td>Communicate information about processes, events or tasks being undertaken to ensure safe &amp; efficient working environment.</td>
<td>Developed and validated by industry representatives.</td>
</tr>
<tr>
<td>Construction Craftsman (Masonry)</td>
<td>F45S005 NVQ Level 2, 3 &amp; 4</td>
<td>All work should comply with health, safety &amp; environmental regulations. Use of personal protective equipment. Minimizing wastage of material. Ensure safe &amp; efficient working environment. Material used economically, safety precautions taken &amp; accepted, safety regulations followed to avoid unsafe acts &amp; unsafe conditions &amp; to safeguard self, others &amp; property. Avoid dust, small particles, fire smoke, chemical vapour &amp; environmental pollution agents as possible as while working.</td>
<td>Developed and validated by industry representatives.</td>
</tr>
<tr>
<td>Existing Jobs</td>
<td>Existing Standard &amp; Competency Code</td>
<td>Existing Green Competencies</td>
<td>Links with Industry Sector</td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------</td>
<td>-----------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Construction Site Supervisor</td>
<td>F45S006 NVQ Level 4</td>
<td>Communicate information about process, events or tasks being undertaken to ensure safe &amp; efficient working environment. Competencies are utilized in quality control of construction at a construction site in providing security to excess materials therein &amp; keeping work place clean &amp; systematic. Knowledge on environment.</td>
<td>Developed and validated by industry representatives.</td>
</tr>
<tr>
<td>Wood Craftsman (Buildings)</td>
<td>F45S004 NVQ Level 2, 3 &amp; 4</td>
<td>Environmental protection requirements identified. Work area cleaned &amp; waste materials disposed of or recycled according to plan/ regulations. Work performed to drawings, sketches, specifications &amp; instructions as appropriate &amp; to predetermined standards of quality &amp; safety while observing all relevant environmental regulations. Communicate information about processes, events or tasks, being undertaken to ensure safe &amp; efficient work environment. Work performed to drawings, sketches, specifications &amp; instructions as appropriate &amp; to predetermined standards of quality &amp; safety while observing all relevant environmental regulations.</td>
<td>Developed and validated by industry representatives.</td>
</tr>
<tr>
<td>Bar Bender</td>
<td>F45S001 NVQ Level 2 &amp; 3</td>
<td>Communicate information about processes, events or tasks being undertaken to ensure safe &amp; efficient working environment.</td>
<td>Developed and validated by industry representatives.</td>
</tr>
</tbody>
</table>
Dr. Adrian Ang
Senior Manager, Integrative Built Environment Center, Temasek Polytechnic
Singapore
UNEVOC Centre
Development of a Regulatory Course on Refrigerant Handling for Technicians @ Temasek Polytechnic

October 2021

Dr. Adrian Ang, LEED AP
Senior Manager
Integrative Built Environment Centre
School of Engineering
Greening Temasek Polytechnic

Curriculum

Collaborations

Campus

Community
Refrigerant Handling for Technicians Course

From 2022 onwards, companies that carry out the installation, maintenance or decommissioning of water-cooled chillers will be required to deploy at least one certified chiller technician.

“We have worked closely with Temasek Polytechnic and industry partners to develop a training and certification programme for chiller technicians. This two-day programme has been designed to be practical and relevant to the industry and will cover the processes for handling and recovering refrigerants from chillers.”

Minister of State, Ministry of Home Affairs & Ministry of Sustainability and the Environment, September 2021

Identifying

In line with the Environmental Protection And Management (Amendment) Bill, a pool of technicians will have to be trained on how to recover and recycle refrigerant.

Integrate

This regulatory course will bring together and align all stakeholders (building owners, chiller manufacturers, technicians etc.) for a common cause.

Implement

Course materials were formulated by Temasek Polytechnic with inputs from various stakeholders and equipping of training facilities with relevant equipment.
Overview of IBEC Offering

Training

Integrative Built Environment Centre (IBEC)

Solutioning

Continuing Education and Training (CET)

Pre-Employment Training (PET)

Innovative Solutioning for Industry Transformation

Industry Regulatory

Industry Uplift

Industry Transformation

Experiential Training via Workshop & Studio-based
Industry Regulatory Training

Lift and Escalator Inspector Course
- Jointly offered by the IES Academy and Temasek Polytechnic,
- Required to qualify as a BCA-recognised lift & escalator inspector.

2. Fire Safety Manager Course
- Jointly offered by SCDF and Temasek Polytechnic
- National Certification course

3. Refrigerant Recovery Course
- Jointly offered by NEA and Temasek Polytechnic
- Mandatory training course for chiller technicians
- Currently TP is the only IHL for this course
Thank You
谢谢 你
Terima kasih
நன்றி
Mr. Martin Stottele
Team Leader, RESD Project
Indonesia
RENEWABLE ENERGY SKILLS DEVELOPMENT (RESD) PROJECT

World Skills International Conference

26 October 2021

Mandated by
Swiss Confederation
Federal Department of Economic Affairs, Education and Research EAER
State Secretariat for Economic Affairs SECO

In partnership with

Implemented by
GFA Consulting Group
Indonesia energy targets and RESD’s contribution

**Energy transition towards low carbon development**

- 41% emissions reduction by 2030 with own + international support
- 23% renewable energy use from total energy mix by 2025

**INDONESIA NATIONAL TARGETS**

**PRE-CONDITIONS FOR ENERGY TRANSITION**

Conducive regulatory framework for investment & infrastructure development

Skilled and competent human resources in renewable energy sector

**RESD PROJECT CONTRIBUTION**

Enable competent design, planning, installation, operation and maintenance of renewable energy power plants in Indonesia through the availability of qualified staff relevant to labor market needs.

**EXPECTED RESULTS**

- 4 polytechnics offering one-year diploma specialization programs for students from engineering backgrounds; 150 students graduated per year at IQF level 7-8 (pilot phase: starting 2023)
- 4 trainings providers offering modular short courses; 80 graduates at IQF level 3-4 (pilot phase: starting 2022)
- 10% of lessons taught in diploma specialization programs and modular short course programs conducted by guest experts from industry
How does RESD address skills demand in Indonesia’s RE sector?

Labour Market Scan 2019: Skilled staff demand estimation

<table>
<thead>
<tr>
<th>Sub-Sector</th>
<th>Current Employees</th>
<th>Current Demand</th>
<th>Future Demand (estimate 2025)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solar</td>
<td>2,500</td>
<td>2,500</td>
<td>+ 2,500</td>
</tr>
<tr>
<td>• Off-grid and rooftop solar PV</td>
<td>2,400</td>
<td>2,500</td>
<td>+ 2,400</td>
</tr>
<tr>
<td>• On-grid (utility scale above 2 MWp)</td>
<td>65</td>
<td>0</td>
<td>+ 100&lt;sup&gt;5&lt;/sup&gt;</td>
</tr>
<tr>
<td>Solar diesel hybrid</td>
<td>?</td>
<td>?</td>
<td>+ 200&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Hydro</td>
<td>2,250</td>
<td>+ 250</td>
<td>+ 2,000&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Wind</td>
<td>100</td>
<td>0</td>
<td>+ 100&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Bio</td>
<td>2,500</td>
<td>+ 500</td>
<td>+ 2,000</td>
</tr>
<tr>
<td>Marine power&lt;sup&gt;4&lt;/sup&gt;</td>
<td>50</td>
<td>+ 10</td>
<td>+ 50</td>
</tr>
<tr>
<td>Geothermal&lt;sup&gt;4&lt;/sup&gt;</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>TOTAL</td>
<td>-</td>
<td>+ 3,300</td>
<td>+ 6,800</td>
</tr>
</tbody>
</table>

1. Assuming the technology is picking up and about 20 power plants above 1 MWp are installed (island solutions)
2. Assuming the same amount of wind power will be installed until 2025
3. Assuming there is a staff turn-over of 15%, and new hydro power plants are put to operation (mostly basic qualifications)
4. Specialised university graduates and operators with general engineering subjects (geothermal is close to oil and drill)
5. If current investment and administrative hurdles can be removed, it could be 10 fold
Positioning in Indonesian education framework & project approach

Project principles to ensure sustainability:

- Systemic approach whereby stakeholders use existing procedures
- Existing state budgets are activated
- Building on existing programs (D3→D4)
- Multidisciplinary program
- Desired professional profiles defined by private sector
- Support TVET institutions and private sector in cooperation, and not taking over
Project Partners

Private sector + employers association + sector associations
THANK YOU

Martin Stottele (RESD Project Team Leader): resd@gfa-group.de
Job-rich opportunities in the green transition

Panel 2.2

Q&A
Job-rich opportunities in the green transition

Part III - Reflection
Fr. Brian Butanas
Technical Director
Don Bosco Balamban Inc. Cebu
Philippines
DON BOSCO TVET CENTER – BALAMBAN, CEBU
DON BOSCO TVET CENTER – BALAMBAN, CEBU
Job-rich opportunities in the green transition

Panel 2.2

Q & A
Thank you