

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

Panel 2.2

Job-rich opportunities in the green transition

Part I

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





UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



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

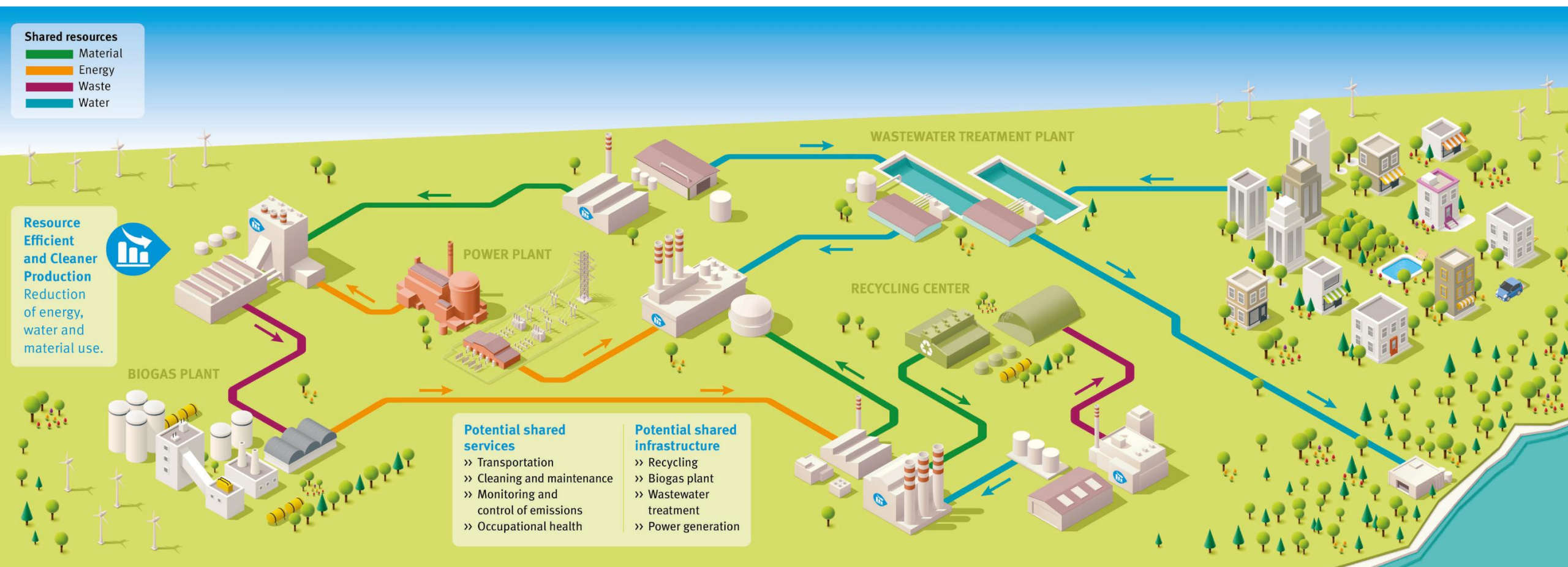


- ✓ Midea: the **no. 1** air treatment company to **develop a long-term cooling solution**
 - ✓ **Eco-friendly, highly efficient and reliable** solution
 - ✓ **High-level training and education** of engineers & management by UNIDO
-
- ✓ First batch of propane-based split AC now being **sold in Europe**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



Eco Industrial Park - Indonesia

- ✓ 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)

Panel 2.2

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



TERTIARY & VOCATIONAL EDUCATION COMMISSION

STATE MINISTRY OF SKILLS DEVELOPMENT, VOCATIONAL EDUCATION, RESEARCH & INNOVATION - SRI LANKA



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
TVET policy



LMI
Forecasting



TVET
Planning

Greening Coverage



Greening TVET Ecosystem



Labour Market Needs for Greening TVET in Energy Sector

Existing Jobs	Existing Standard & Competency Code	Existing Green Competencies	Links with Industry Sector
Boiler Operator	E40S005 NVQ Level 2 & 3	Checking of oxygen & 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.	Developed and validated by industry representatives.
Electric Motor Winder	E40S003 NVQ Level 3 & 4	Environmental hazards, disposal management, energy saving.	Developed and validated by industry representatives.
Electrician	E40S001 NVQ Level 3 & 4	Environmental hazards, disposal management, energy saving principles.	Developed and validated by industry representatives.
Household Electrical Appliance Repairer	E40S002 NVQ Level 3 & 4	Energy controller systems.Environmental hazards, disposal management, energy saving principles.	Developed and validated by industry representatives.
Linesman (Electrical)	E40S006 NVQ Level 3 & 4	Environmental hazards, disposal management, energy saving principles.	Developed and validated by industry representatives.
Pneumatic Technician	E40S004 NVQ Level 3 & 4	Environmental hazards, disposal management, energy saving principles.	Developed and validated by industry representatives.

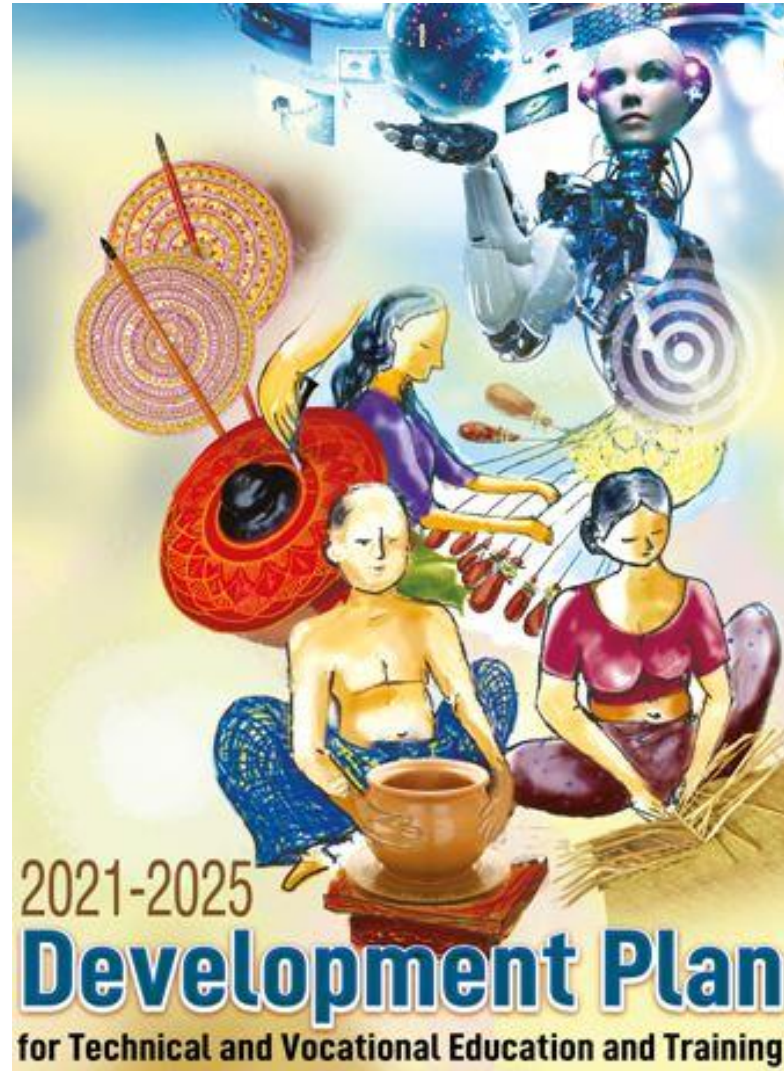
Existing Jobs	Existing Standard & Competency Code	Existing Green Competencies	Links with Industry Sector
Refrigeration and Air Conditioning Mechanic	D29S002 NVQ Level 3 & 4	The refrigerants and chemicals should comply with the following: 1.Sri Lanka Standards for Mechanical Refrigerating Systems used for Cooling & Heating prepared by Sri Lanka Standards Institution in collaboration with the National Ozone Unit of the Ministry of Environment & Natural Resources. 2.The National Policy for Cleaner Production for Sri Lanka drafted by the Ministry of Environment & Natural Resources. 3. Ozone Action Programme of the United Nations Environment Programme. Refrigerant recovery & recycling. Perform refrigerant recovery. Adhere to conditions of the “Environment Protection Acts” (EPA). Safe handling & use of refrigerants, gauges, tools & equipment.	Developed and validated by industry representatives.

Labour Market Needs for Greening TVET in Construction Sector

Existing Jobs	Existing Standard & Competency Code	Existing Green Competencies in current TVET Standards	Links with Industry Sector
Aluminium Fabricator	F45S003 NVQ Level 2, 3 & 4	Work connected with aluminium fabrication performed to drawings/ sketches/ specifications & instructions as appropriate & to predetermined standards of quality & safety, while observing all the relevant environmental regulations & procedures.	Developed and validated by industry representatives.
Assistant Quantity Surveyor	F45S007 NVQ Level 4	Communicate information about processes, events or tasks being undertaken to ensure safe & efficient working environment.	Developed and validated by industry representatives.
Construction Craftsman (Masonry)	F45S005 NVQ Level 2, 3 & 4	All work should comply with health, safety & environmental regulations. Use of personal protective equipment. Minimizing wastage of material. Ensure safe & efficient working environment. Material used economically, safety precautions taken & accepted, safety regulations followed to avoid unsafe acts & unsafe conditions & to safeguard self, others & property. Avoid dust , small particles, fire smoke, chemical vapour & environmental pollution agents as possible as while working.	Developed and validated by industry representatives.

Existing Jobs	Existing Standard & Competency Code	Existing Green Competencies	Links with Industry Sector
Construction Site Supervisor	F45S006 NVQ Level 4	Communicate information about process, events or tasks being undertaken to ensure safe & efficient working environment. Competencies are utilized in quality control of construction at a construction site in providing security to excess materials therein & keeping work place clean & systematic. Knowledge on environment.	Developed and validated by industry representatives.
Wood Craftsman (Buildings)	F45S004 NVQ Level 2, 3 & 4	Environmental protection requirements identified. Work area cleaned & waste materials disposed of or recycled according to plan/ regulations. Work performed to drawings, sketches, specifications & instructions as appropriate & to predetermined standards of quality & safety while observing all relevant environmental regulations. Communicate information about processes, events or tasks, being undertaken to ensure safe & efficient work environment. Work performed to drawings, sketches, specifications & instructions as appropriate & to predetermined standards of quality & safety while observing all relevant environmental regulations.	Developed and validated by industry representatives.
Bar Bender	F45S001 NVQ Level 2 & 3	Communicate information about processes, events or tasks being undertaken to ensure safe & efficient working environment.	Developed and validated by industry representatives.

Thank You



Dr. Adrian Ang
Senior Manager, Integrative Built Environment
Center, Temasek Polytechnic
Singapore
UNEVOC Centre



Development of a Regulatory Course on Refrigerant Handling for Techcians @ 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

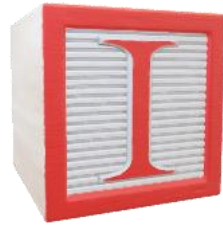


Refrigerant Handling for Technicians Course

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.

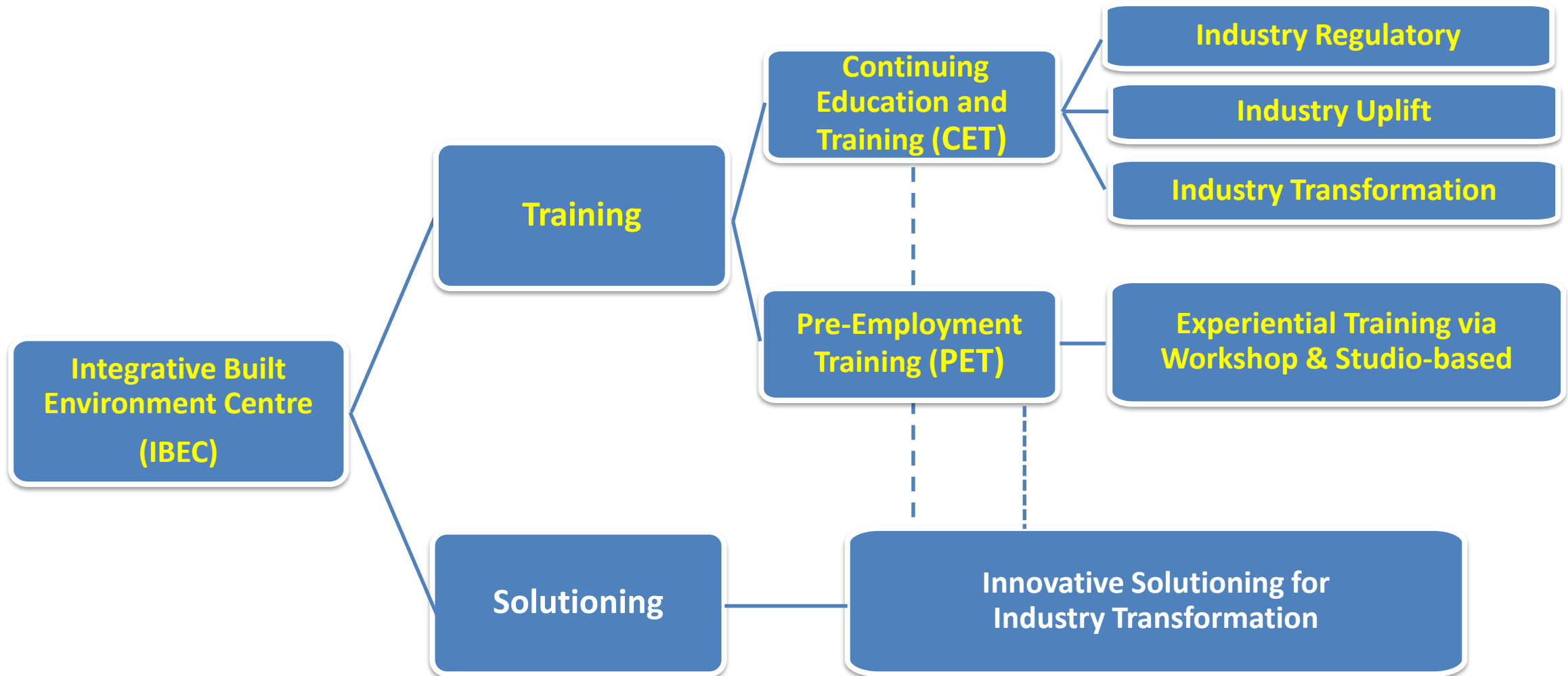
Integrate

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



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 (RES D) 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

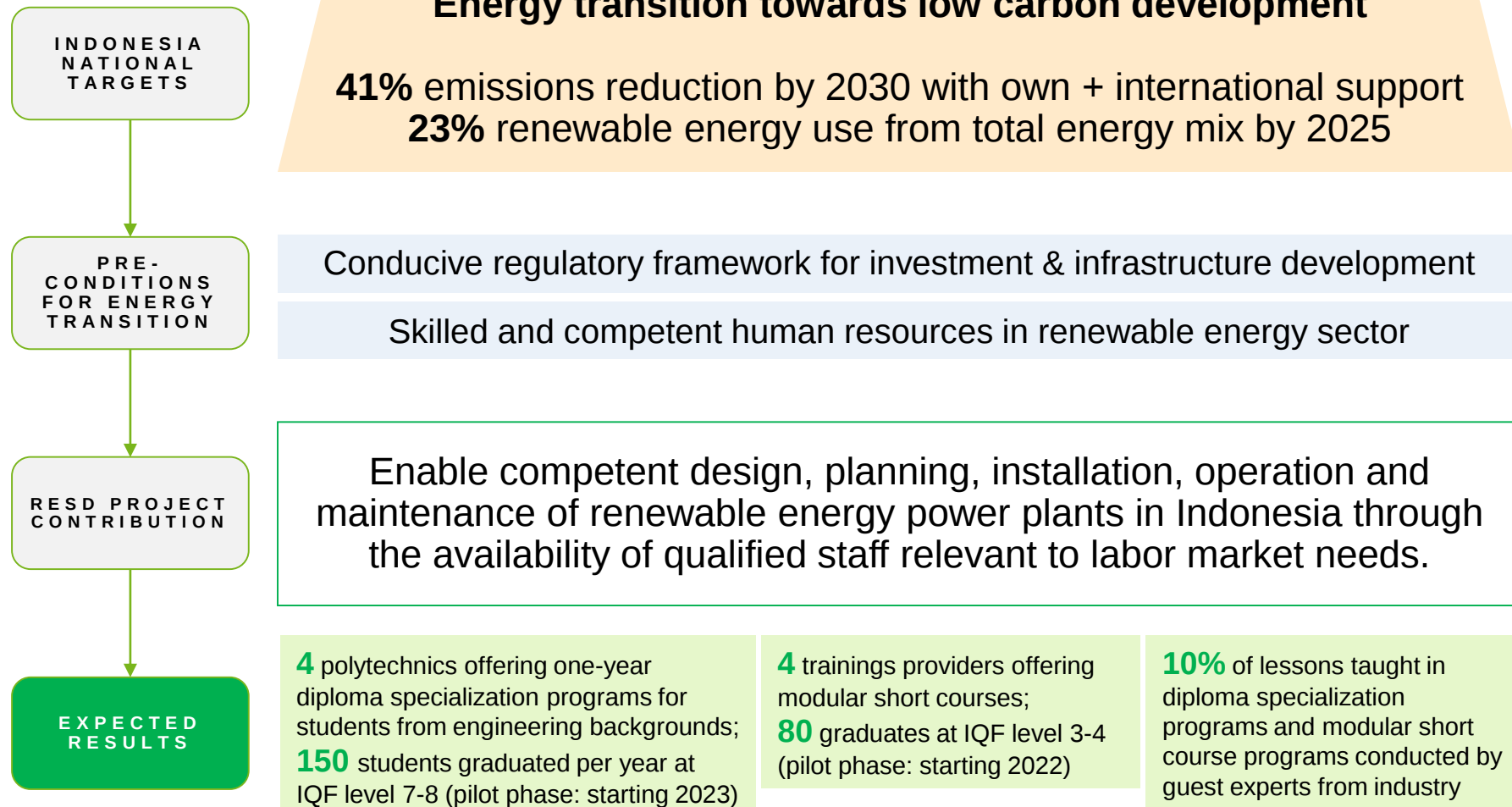


Implemented by





Indonesia energy targets and RESD's contribution





How does RESD address skills demand in Indonesia's RE sector?

Labour Market Scan 2019: Skilled staff demand estimation

Sub-Sector	Current Employees	Current Demand	Future Demand (estimate 2025)
Solar	2,500	2,500	+ 2,500
- Off-grid and rooftop solar PV - On-grid (utility scale above 2 MWp)	2,400 65	2,500 0	+ 2,400 + 100 ⁵
Solar diesel hybrid	?	?	+ 200¹
Hydro	2,250	+ 250	+ 2,000³
Wind	100	0	+ 100 ²
Bio	2,500	+ 500	+ 2,000
Marine power ⁴	50	+ 10	+ 50
Geothermal ⁴	n/a	n/a	n/a
TOTAL	-	+ 3,300	+ 6,800

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

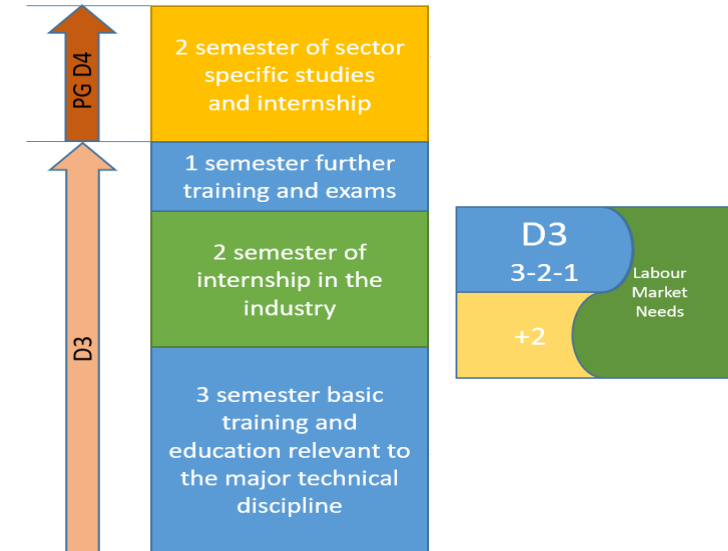
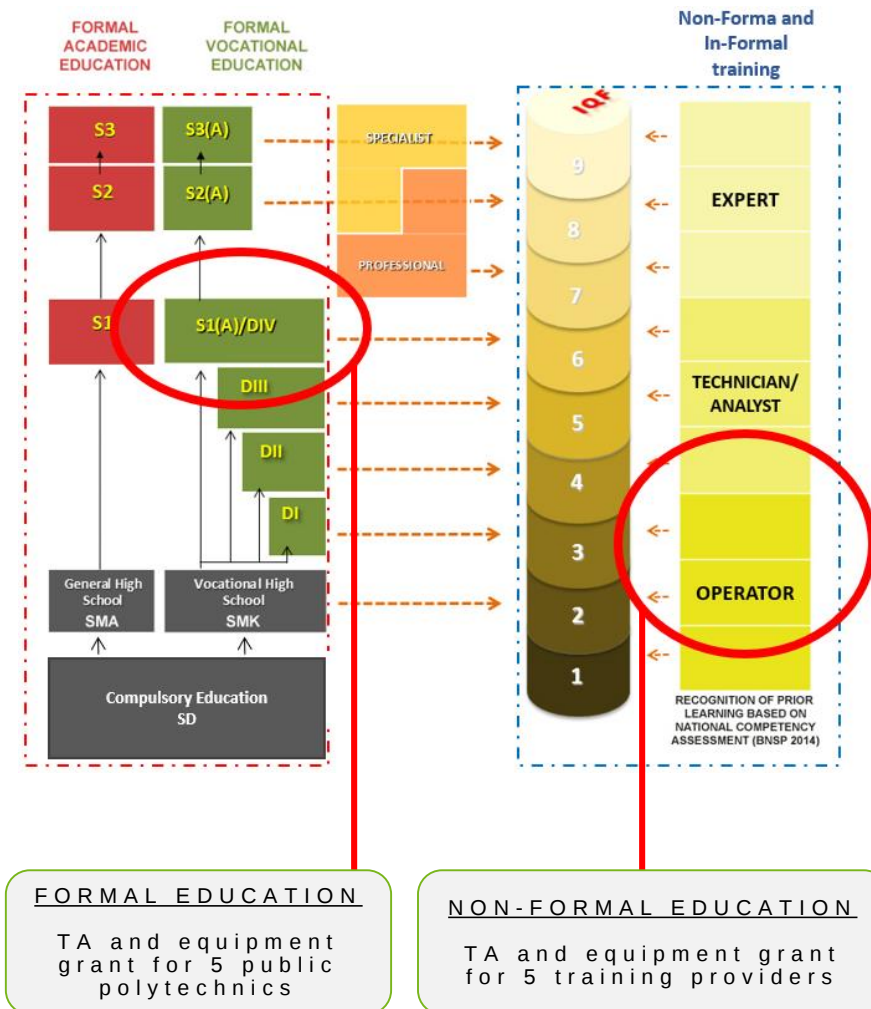
³ Assuming there is a staff turn-over of 15%, and new hydro power plants are put to operation (mostly basic qualifications)

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

STRATEGIC
PARTNERS



PILOT
IMPLEMENTATION
PARTNERS



Private sector + employers association + sector associations



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



THANK YOU

Martin Stottele (RES D Project Team Leader): resd@gfa-group.de

Panel 2.2

Job-rich opportunities in the green transition

Q&A

Panel 2.2

Job-rich opportunities in the green transition

Part III- Reflection



Fr. Brian Butanas
Technical Director
Don Bosco Balamban Inc. Cebu
Philippines

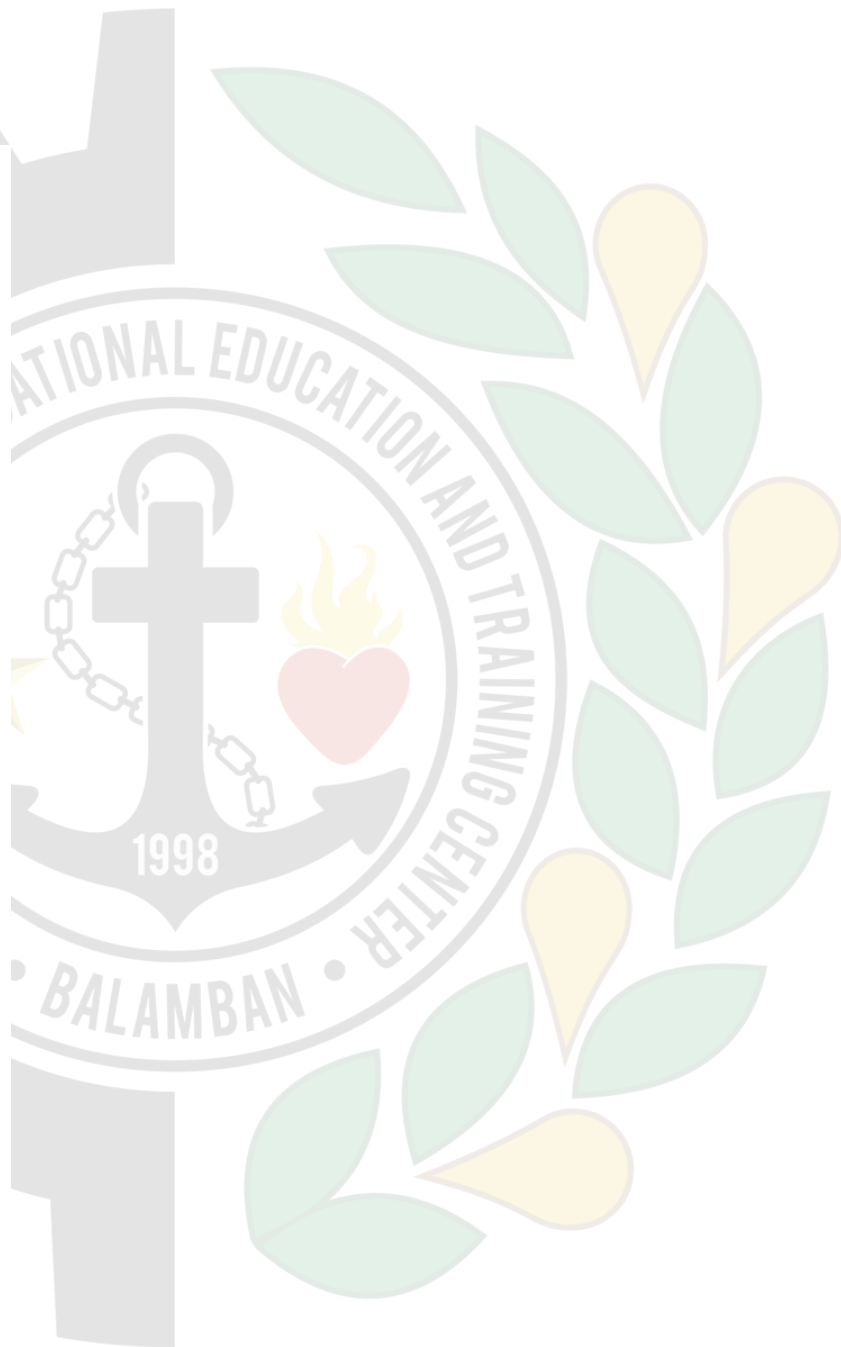
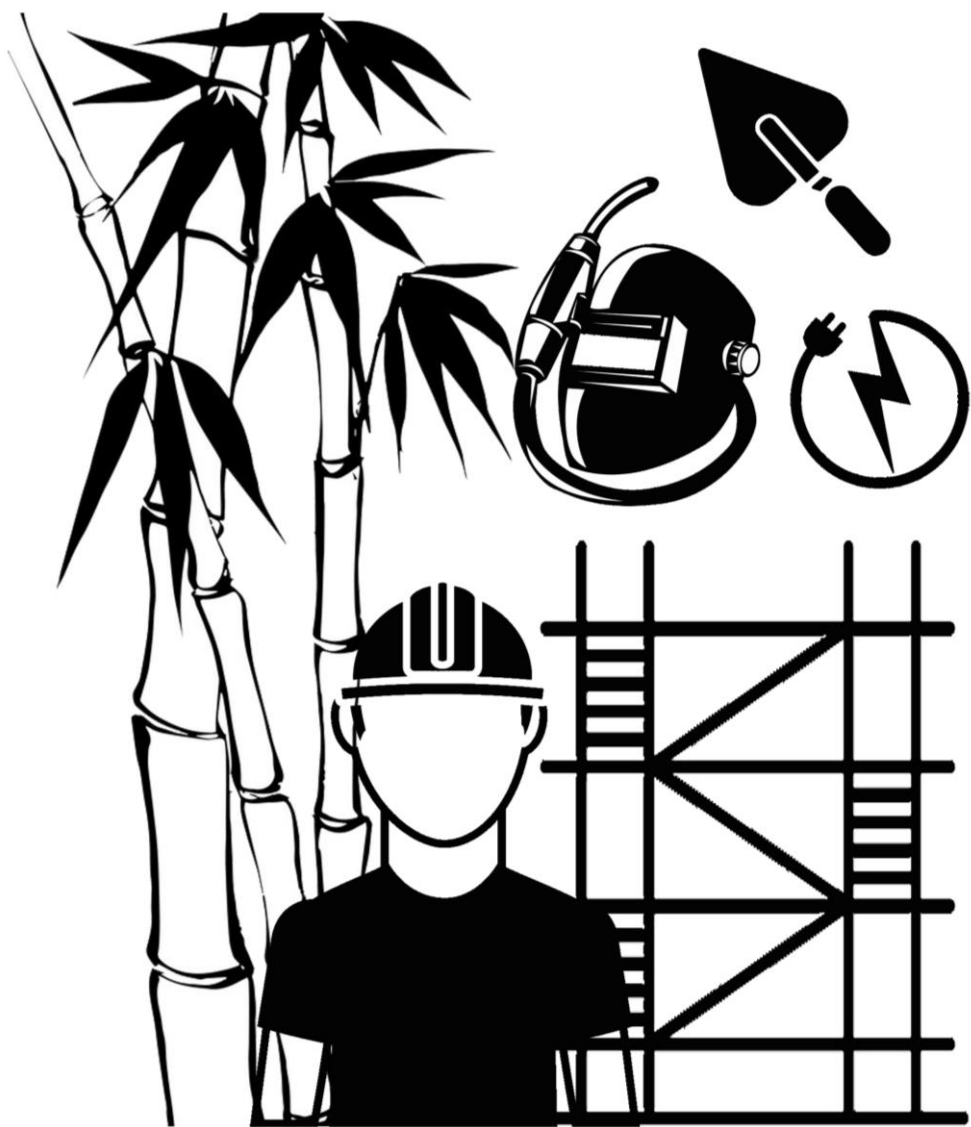


DON BOSCO TVET CENTER – BALAMBAN, CEBU



DON BOSCO TVET CENTER – BALAMBAN, CEBU





Panel 2.2

Job-rich opportunities in the green transition

Q & A

Thank you