



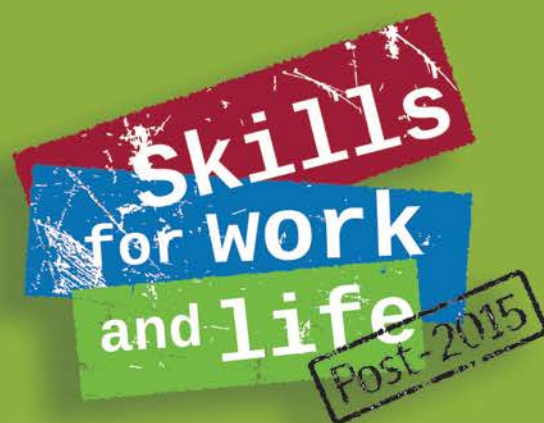
United Nations
Educational, Scientific and
Cultural Organization

UNEVOC

International Centre
for Technical and Vocational
Education and Training

Promising Practices in TVET

Green skills and youth employment



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Introduction

Youth employability and green skills are at the core of UNESCO-UNEVOC's activities. This is why UNESCO-UNEVOC has been collecting Promising Practices in technical and vocational education and training (TVET) from UNEVOC Network members. These Promising Practices illustrate how UNEVOC Network members from around the world are using technical and vocational skills to address two major global challenges that are affecting every country in the world, and are therefore high up on the post-2015 development agenda: making youth employable and achieving sustainable development.

All UNEVOC Network members were invited to showcase how TVET is being oriented to the demands of greening the economy and addressing youth unemployment at the level of their school or institution, their region or their country. The aim of this exercise is to share knowledge of established innovative practices – 'success stories' – that have proven to be effective and that promote TVET in some profound way, either within a particular TVET sub-sector or at local, regional or national level.

The submissions we received were initially reviewed by a team consisting of UNESCO-UNEVOC staff and thematic coordinators from within the Network in each of the five geographical regions of UNESCO (Africa, Arab States, Asia and the Pacific, Europe and North America, and Latin America and the Caribbean). The submissions were reviewed in terms of their impact, innovation and potential for replication using a conceptual framework specifically developed for identifying and analysing Promising Practices. This framework consists of six criteria representing important indicators of a good or promising practice in TVET:

- impact
- innovation and creativity
- knowledge base
- stakeholder engagement
- monitoring and evaluation
- efficiency

Based on this initial assessment, selected Promising Practices were presented and discussed at the regional level during the five regional UNEVOC Network For a on Advancing TVET for Youth Employability and Sustainable Development that took place in 2013:

- 27-29 August 2013, San José, Costa Rica
- 4-6 September 2013, Seoul, Republic of Korea
- 17-18 September 2013 in Abuja, Nigeria
- 28-30 October 2013 in Moscow, Russian Federation
- 19-21 November 2013 in Beirut, Lebanon

Some of the most promising, interesting and inspiring practices from each of the five regions and on each of the two themes – green skills and youth employment – is now being published in this booklet. All of these Promising Practices are going to be discussed at the UNESCO-UNEVOC Global Forum Skills for Work and Life Post-2015 on 14-16 October 2014 to over 250 participants from around the world. The presentations are accompanied by short films as visual evidence of how the practice has been implemented. I hope you will enjoy this glimpse of how members of our global TVET community take different approaches in addressing challenges that we are all facing. We are aiming to make the rest of the Promising Practices available through our online Promising Practices Database. In my view, this is what the UNEVOC Network is all about: learning by sharing and exchanging our experiences.

On behalf of my entire team, I would like to thank all UNEVOC Network members that have taken part in this global exercise for their hard work. We hope that this group work has been useful to you and that you have been able to draw lessons from the success and challenges of your peers, and have been inspired for future initiatives in addressing youth unemployment and making the economy greener through TVET. This exercise has taught us that these are not two issues that can be addressed separately, as young people and the environment represent the basis for a sustainable future. The challenge does not end here, and the Promising Practices Database on our website will continue to be expanded with innovative and promising practices from around the world.

Shyamal Majumdar, October 2014

Youth employment

Skills acquisition and community empowerment programme for youth and women

Contact

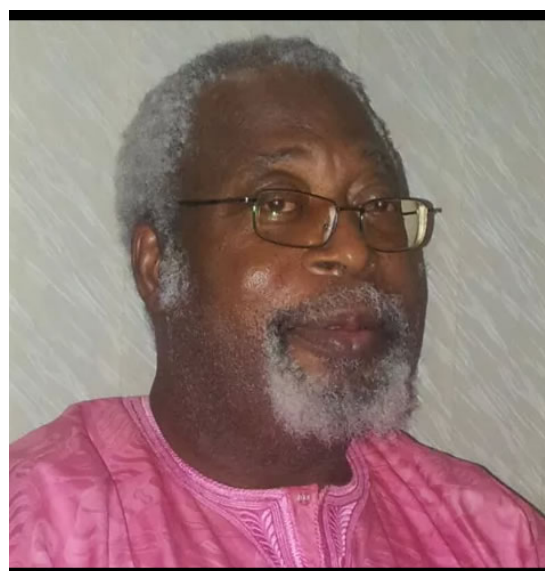
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Summary

The Youth and Women Economic Empowerment Initiative is a membership-based community development scheme, designed to target youth and women through developing entrepreneurship and increasing employability skills. Participants are organized into a network of self-reliant local credit unions through focused trust groups and cooperatives in 180 communities. The programme's objective is to create access to financial services and income-generating opportunities through a network of communities. A memorandum of Understanding between the programme and microfinance banks integrates them as collaborating partners to extend loan facilities to individuals and groups. The loans are guaranteed on the basis of the social capital of the Society for the Development of Rural Economy (SDRE) and to date there has not been any case of repayment delinquency. An evaluation survey conducted among programme participants demonstrated overall satisfaction, particularly in terms of active involvement of the programme's beneficiaries and rated the skills acquired through the programme as relevant in terms of poverty reduction and empowerment. The survey also indicated that the following activities should be further emphasized within the programme: awareness of the business and economic climate in Nigeria; the challenges of micro-credit delivery in entrepreneurship development; team-building at the grassroots level; evaluating market opportunities; and healthcare interventions at the community level.

Background

Over 75 per cent of Nigerians living in poverty live in rural communities. Despite their potential for agricultural production, these small-scale rural producers encounter serious constraints that deny them adequate profit from their efforts due mainly to a lack of basic infrastructure and appropriate knowledge; limited access to

basic inputs for production and services such as access to finance, technical support and business development assistance; and limited ability to favourably influence policies that affect their lives.

Introduction

The Youth and Women Economic Empowerment Initiative is a membership-based scheme aimed at poverty eradication among youths and women at the grassroots communities through entrepreneurship development and increasing employability skills of out-of-school youths and artisans in the Federal Capital Territory (FCT) area. To fast-track economic development at the grassroots level, youths and women are organized into a sustainable network of self-reliant local credit unions through focused trust groups and cooperatives in 300 communities that make up the FCT. Membership is not restricted and is open to all young men and women in the participating communities. Using the trust group principle, people of questionable character are eliminated from membership. Members of this organization pledge to obey an agreed code of conduct on becoming member. At present about 5000 youths and women are members.

The Apex Organization is a democratic organization governed by officers and committees under its own constitution and byelaws. The goals and objectives of the Society (SDRE) include: enterprise development, employment generation and skill enhancement, promotion of traditional arts and craft, promotion of tourism, and inculcating attitudinal change and cultural renaissance in members.

What are the objectives of this initiative?

The goal is to create sustainable access to financial services and income-generating opportunities for low earners, in particular young people and women, by establishing a network of self-reliant local communities. The expected outcomes are to:

- develop a critical mass of empowered entrepreneurs;
- create a sustainable network of self-reliant local micro finance institutions (Credit Unions) offering a full range of financial and non-financial services to their members;
- create sustainable employment and income-generating opportunities at the grassroots;
- create a Technology Park serving as value-addition hub for local products;
- establish marketing systems and market information services for efficient production practice;
- establish a local culture of micro-savings and micro-credits;
- reduce drastically poverty in participating communities; and
- create an avenue for continuous enlightenment of grassroots communities.

How does it work?

The organization is designed for sustainability and self-sufficiency and thus started with a savings-based approach. Membership of each trust-group (consisting of 10-15 people) was self-selected and made up of people who trust each other and are willing to pledge their resources as collateral for each other. The group must observe and follow the following procedures in strict compliance:

- Meeting of each group twice a month and each member is required to attend. The frequency of the meeting may be reduced to once a month as time goes on.
- Meetings serve as avenue to train members on entrepreneurship and how to start and grow their business. Civic and health education are also given occasionally by invited guest speakers.
- Each group elects its own leader, secretary and treasurer whose tenure of office is determined by the members as stated in the constitution.
- The three automatically become the representatives of the group to take part in the discussions and meetings of the working committee of the Society in each area council. A monthly meeting of the working committee is mandatory to discuss issues and concerns of members of the Society.

Members are required to pay a jointly agreed membership fee upon registration. The members are then given a Certificate of Membership and Identity Card. Each member will contribute a CBU (Capital Build Up) at every meeting of the group. This cannot be withdrawn during the membership. The CBU will earn interest to encourage the members and is also aimed at instilling financial discipline in members. It is treated as a contribution towards the retirement benefits of members in their old age. Aside from membership and CBU, the organization also accepts separate savings deposit from members. Such deposits will earn interest and can be withdrawn. Each member holds a passbook to record their CBU, savings, loans and other financial transactions with the organization. Members can apply to loans of up to 10 times their CBU savings. Each

member is assured of compensation in the event of a collapse of the organization. A separate micro-insurance instrument will also cover all loans against natural disasters or if the debtor dies and a help fund that provides assistance in the event of a member's death.

What are the major components of the programme?

a. Enhancement of community agricultural production

Each participating community must designate a 10 hectare plot for community farm where members of the Society cooperatively cultivate and tend the farm. In addition to the community farm, individual members are encouraged to cultivate and plant on their own farm plots. In the off-season, members are encouraged to engage in a non-farm economic activity. They can seek to acquire new skills for this purpose.

b. Skills acquisition and development scheme

Out-of-school youth who wish to learn a vocational skill are given the opportunity to attend intensive theoretical and practical modular courses mounted by the International TVE Institute Utako operated by the FCT Agency for Science and Technology (FAST). Artisans are given the opportunity of upgrading or refreshing their skills at the institute. At the end of each course, the Federal Ministry of Works conducts a Trade Test Assessment and issues certificates to successful trainees. At present FAST is building a database of artisans in the FCT to enable classification into sectorial skills competency levels.

c. Entrepreneurship development and business advisory services

Basic entrepreneurship training is offered to all members at their regular fortnightly meetings. This ensures that successful trainees are prepared to consider self-employment as a viable option after the training. In addition, a more comprehensive entrepreneurship and enterprise development training programme is offered to all members and others who can afford it.

d. Financial intermediation

Members of the Society are encouraged to scout their local environment for business opportunities, to evaluate these ideas and to draw a business plan. These plans are appraised at the area council level by a technical committee after interviewing the member to ascertain that the individual or group has the capability to execute the plan. Successful plans are recommended to participating microfinance banks.

e. Mini Technology Parks for value addition to local products

As primary production activities at the community level increased, the need to plan for local value addition to these primary products arose. It has been proposed that a location in each area council be ear-marked for development into a Mini Technology Park that can ultimately be developed into a Local Export Processing Zone. This calls for provision of market information services for the participants to ensure they produce what the market wants. The first Park, a cassava processing facility located in Abaji, is currently under construction. Technology Parks have been designed to enable value addition activities at the local level. This will lead to the establishment of local export processing zones and accelerated growth of economic activities in the FCT.

Participating partners/collaborators and their roles

1. FCT Department of Economic Planning – MDGs Project Support Unit (PSU): driver of the project and provision of initial funds
2. FCT Agency for Science and Technology (FAST) – International TVE Institute, Utako: provision of skills development programmes
3. The six Area Councils in the FCT: selection of participating communities
4. Staola Agencies Ltd. (Society for the Development of Rural Economy): Organization of participating members into Trust Groups and formation of the Apex Association to ensure active participation
5. Participating Microfinance Banks – HASSAL, FIMS and E-Barcs Microfinance Banks: Mobilization of savings from participants, granting loan facilities and management of loan recovery
6. Development partners (local and international): MDGs National Office, UNDP/UNDAF Abuja, DfID, SURE-P, CBN, Bill Gates Foundation: Provision of financial and technical assistance towards the up-scaling of the project; and sponsorship of skills training.

Monitoring and evaluation

Agents from the Agricultural Development Programme (ADP) were seconded to regularly visit and supervise farming activities in participating communities. Regular scheduled and unscheduled visits are carried out by

staff of MDGs PSU to deliver training programmes on production technologies to participants and monitor progress. SDRE staff monitor Society meetings and train group officers to ensure good cooperative practices. Comprehensive evaluation and impact assessment was carried out by a team of experts in 2011 and 2012. In August 2014 a team from Bill Gates Foundation carried out a mid-term M&E exercise on the Yam Improvement for Income and Food Security in West Africa project funded by the foundation. Feedback from these evaluations has been used to fine-tune the strategic delivery of this project.

What has been the impact so far?

The results of the impact assessment showed that all of the participants were satisfied with the programme. They strongly agreed that the project lived up to expectation, the PSU staff were prepared and helpful and that the project provided opportunities for participants to actively participate and apply lessons learnt to improve their lives. They very much appreciated the opportunity to participate in the programme and strongly agreed that they had acquired skills and knowledge and will be able to pull themselves and their families from poverty to wealth. Participants also rated the role of extension agents as very good.

There has been marked improvement in the lives and economic status of participants that have benefitted from training and micro-credits. For example, revenue from the community maize farm in Kpaduma rose from N150,000 in 2010 to N1,100,000.00 in 2012; and most participating yam producers in the FCT have doubled their production within the two years of the intervention. Some pioneer participants on this project have built modest 3-bedroom bungalows for themselves.

Lessons learnt and recommendations to support rural enterprise development

This is a long journey that requires painstaking training, retraining and monitoring to ensure best practices are maintained. It has, however, shown that it is beneficial to all. The following recommendations can be drawn from the programme:

- Promote participatory methods that directly involve local chain actors in decision-making and develop local capacity.
- Stimulate collective action and organization of rural economic organizations with a solid business and market orientation.
- Encourage on-farm intensification, diversification and adding value locally in rural areas, as opposed to extension.
- Strengthen the market for grassroots Business Development Services (BDS) and its coordination.
- Retrain public sector support service providers to deliver a business product to the rural community.
- Generate and promote technologies related to small-scale agricultural production, including information and communications systems, low-external-input-sustainable-agriculture (LEISA), and other value adding intensification, rural electrification, irrigation and water management.
- Promote appropriate forms of diversification based on their level of market access and asset base, including local income generating possibilities and higher value options such as: tropical fruits, vegetables, livestock, handcrafts and eco-tourism.

Could this project be transferred to other countries?

The initiative has confirmed/demonstrated that poverty can best be eradicated when the poor are trained and aided to become productive, when their self-esteem has been restored and they can reconnect with their inner selves and activate their creative abilities and capabilities. The programme has demonstrated a tangible impact on the lives of participants and their communities as well as implementing partners. It is socially, culturally, economically and environmentally sustainable and can be replicated in any community. Hence it is a promising practice that can be replicated elsewhere in the global fight against the scourge of poverty.

Integration of entrepreneurship in the curricula

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Summary

The Centre for Educational Research and Development (CERD) has recognized the importance of entrepreneurship education and the necessity to integrate it into the curriculum. It has been monitoring internal and external initiatives since 2009 and has convinced and involved multiple interested local and international parties from the public, general directorates of education, international organizations and local NGOs to integrate entrepreneurship education in school curricula. In 2011-12, a pilot project in one region of Lebanon was carried out, where the overall situation is alarming, characterized by economic crisis, high dropout rates and pupils with learning difficulties, and a high level of Syrian refugees.

The following activities were implemented as part of this pilot project: training workshops for administrators and teachers in selected general and TVET schools to conduct the pilot phase, and the development of curricula and content of training courses, student books and teacher guides for different grades and stages. Positive outcomes of the initiative include the introduction of the concept of entrepreneurship in general and vocational, formal and non-formal, education; amendments to the curriculum of the third cycle of basic education and of the secondary level; books for students and guides for teachers were edited; training sessions for 40 trainers, teachers, and schools directors were implemented. Currently, a framework of cooperation is under construction in order to exchange good practices and experiences. The training of more than 300 teachers on entrepreneurship in the two coming years is being considered.

Background

The importance of entrepreneurship education and the necessity to integrate it into vocational curricula is well-known. The Centre for Educational Research and Development is concerned by this subject and has been monitoring internal and external initiatives since 2009, and developed a vision for this subject.

CERD has multiplied efforts to convince and involve multiple interested local and international parties from the public sector (Ministry of Education and Higher Education, both General Directorates of Education (Academic and TVET), International Organizations (UNESCO, ILO, ETF) as well as local NGOs and the British Council.

A Higher Committee has been established, chaired by the Minister of Education and Higher Education, the membership of the CERD's President, and the General Directors of General Education, TVET and Higher Education, as well as several ministers' advisors and representatives of concerned International Organizations. In addition, an executive committee (called Panorama) has been established and focused on elaborating an overall vision of this project on how to integrate the concept entrepreneurial education into curricula of education in both general and TVET education sectors.

Until today, several activities have been conducted: such as several training workshops, which included the administrators and teachers in selected schools of general education and TVET to conduct the pilot phase.

Curricula and content of training courses were prepared in addition to students' books and teacher guides for different grades and stages (based on competency-based training) relying on a variety of sources, references and experts in the field, especially the UNESCO resource kit [Starting my own small business](#) and the ILO resources kit [Know about Business](#) (KAB).

The concept of entrepreneurship has been integrated into general education as follows:

- Integrated into all subjects: starting from year 1 to year six
- Integrated into technology subject : from grade 7 till grade 9
- Integrated into economics subject: in the secondary phase
- As a separated subject: in TVET level (BT, TS and the short term courses)

A number of field visits have been undertaken by the team members, in collaboration with experts, in order to monitor the situation and to address some of the gaps.

This project doesn't concern only the public schools, it also involves private schools, where a number, for a number of private schools, training sessions have been elaborated for both teachers and directors.

An internet site dedicated to this project has been launched: www.entrepreneurshipedu-lb.com.

The project did not (and will not) stop at this point. Based on findings, the training of more than 300 teachers on entrepreneurship in the two coming years are taken into consideration.

Due to the uniqueness of the subject and its importance for many of the internal and external stakeholders and concerned bodies, and in order to provide it with a greater support, CERD is currently preparing for a national day for Entrepreneurship Education in October, to elaborate a national chart for entrepreneurship considered as a national guidelines for the strategy of Entrepreneurship Education in Lebanon.

Objectives and justifications for the initiative

- To raise the employability of youth in the education system
- To integrate the concept of entrepreneurship in curricula at different levels of both academic and vocational and technical education, in formal and non-formal education.

Target groups

- School students in various academic levels, especially cycle 3 and secondary levels
- Young people in TVET schools and institutes (technical baccalaureate and superior technician levels)
- Youth enrolled in the non-formal education/short term vocational training.

Impacts and outcomes

- Awareness of young people on the importance of entrepreneurship education in social and economic development.

- Development of entrepreneurship mindset and the sense of initiative among young people to raise awareness of the importance of work and employability, and the realities of labour markets necessary to guide them towards a professional required career options.

Measurement and reports of the outcomes

The pilot project started from the academic year 2011 –2012. Amendments to the curriculum of the third cycle of basic education (Technology subject) and of the secondary level (economics subject) were applied. Books for students and guides for teachers were edited and training sessions for trainers, teachers, and schools directors was implemented.

A team of supervisors from the Ministry of Education and Higher Education, the International Labour Organization (ILO) and CERD followed up and monitored the implementation of this project in order to spot any weaknesses.

The project and its results have been presented in numerous conferences, seminars and workshops that took place in Lebanon, Bahrain, Belgium, Italy, Slovenia and Croatia, acclaimed by many international bodies and international organizations. Currently, a framework of cooperation is under construction with SEECEL in Croatia (carrying out a similar project in eight countries from Eastern Europe) in order to exchange good practices and experiences.

A detailed report on the progress of the project (December 2012) has been produced and a special site for the project set up: www.entrepreneurshipedu-lb.com.

Success indicators and innovation

- The elaboration of two committees: the higher committee and the executive committee, to pursue all aspects of the projects
- The involvement of many local and international organizations (ILO, ETF, UNESCO) in the planning, design and implementation of the project.
- The introduction of the concept in all levels of education: in general and vocational education, in both formal and non-formal paths. The integration had many aspects according to educational levels:
 - Integration into all subjects (basic education),
 - Integration into one subject (cycle 3 and secondary level)
 - As a separated subject in higher levels and Vocational and technical education.
- Training of 20 trainers in general education and 20 in TVET
- Training 8 supervisors of General education and TVET to monitor the teachers when applying the pilot project.
- Amendments to the curriculum of the third cycle of basic education (Technology subject) and of the secondary level (economics subject) were applied.
- Editing books for students and guides for teachers.

Due to the positive echoes and the success of this project, it is necessary to disseminate it all over the institutions and schools in the country. This requires preparing teachers for that. Therefore, it requires the existence of policies that provide continuity in this area.

Stakeholder engagement, cooperation

- Ministry of Education and its directorates: contributed to the administrative organization and supervision of the project through the Higher Committee
- Educational Centre for Research and Development: provided expertise in the field of curriculum development and training material and training of trainers
- UNESCO: contributed to the follow-up processes and provide numerous references to curricula and training material in addition to the financing of a large section of the initiative
- UNEVOC Centre - Higher Industrial Technical Institute: provided expertise and contributed to the preparation of training material and training
- International Labour Organization (ILO): contributed to the provision of expertise and different sources of information for the preparation of curricula and training materials and training of trainers in the general education and the TVET

- European Training Foundation (ETF): contributed to the provision of expertise and follow up the implementation of project as well financing a large part of the training workshops for teachers in general education and TVET and the wages of some experts
- Development for people and nature Association: contributed in financing of some training workshops for teachers in the private schools.

Efficiency of the initiative

In order to manage and implement the project, a higher committee was created chaired by the Minister of Education and Higher Education, and the membership of the CERD's president and the general directors of general education and VET and higher education as well as some minister's advisors and representatives of the concerned international organizations.

An executive committee has been established, it was composed of representatives from

- Center for Educational Research and Development
- General Directorate for General Education – Guidance & Monitoring directorate
- General Directorate of Vocational and Technical Education
- International organizations.

Costs

The cost of the project included what has been paid to the experts, trainers and various logistical supplies since 2011. The costs of this project was around 300.000\$ (US Dollars) distributed as follows:

- 200.000\$: experts, trainers and training material
- 100.000\$: training workshops and accessories

The main difficulties faced resulted from some of the administrative routine in addition to a teachers' strike that led to stop the lessons for more than 50 days.

Monitoring and evaluation

The process of monitoring and evaluation of this project has been done through several initiatives and measures, including:

- The detailed report and recommendations resulting from this project.
- Presentation of the project and its results in numerous conferences, seminars and workshops that took place in Lebanon, Bahrain, Belgium, Italy and Croatia. It has been appreciated by many international organizations when it was introduced.
- Currently, an initiative to generate the pilot project and to establish a whole national strategy is ongoing.
- Monitoring and evaluation for the countries policies and initiatives supported by the European Union to promote and generate small and medium enterprises has mentioned this project as a factor that raised the rank of Lebanon in this issue.

ICT-enabled career guidance and job matching to enhance youth transitions in Sri Lanka

Contact

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Summary

The ICT-enabled career guidance service is a web-based tool that provides comprehensive information on the labour market and TVET courses. It was launched as part of a national initiative by the Ministry of Youth Affairs and Skills Development. The system is linked to Sri Lanka’s National Career Guidance and Counseling Centre and a network of District Career Guidance Centers across the country.

The initiative primarily targets prospective TVET students, in particular rural youth, by assisting them in assessing their individual job interests and aligning these preferences with the skills required on the labour market. This national model links a range of services and stakeholders in the field of career guidance and labour-market information and is an innovative approach in the Sri Lankan context.

The National Career Guidance and Counseling Centre is responsible for monitoring the numbers of students using the tool and requesting the Centre’s services. The tool is being promoted in schools with the support of the Ministry of Education. This tool would be suitable for transfer to other contexts in Asia and beyond as social, economic, geographic or cultural aspects play a limited role in its use. The political will and institutional capacities to effectively coordinate and harmonize activities on a national and district level are an important requirement for the success of the initiative.



Introduction

Sri Lanka has been successful in embedding social protection measures into its economic policies during the past, which has resulted in higher human development indicator rankings. However, it has been less successful in generating productive employment for youth. As a result, despite the overall unemployment rate being a respectable 4.2% in the year 2011, unemployment among educated young men and women remains significantly high.

The prime responsibility of the Sri Lankan Ministry of Youth Affairs and Skills Development (MYASD) is to formulate national policies and implement youth development programmes to skill young people as future leaders by providing necessary vocational and technical training, developing their entrepreneurial and leadership skills, and offer socio-cultural activities. In order to achieve these goals the Ministry has embarked on developing a range of career guidance and counseling activities to assist young people make informed career choices.

This project has included systematically disseminating career information and linking the [TVET Guide](#) that contains all course information and other information on youth transitions and finding suitable jobs for TVET graduates. In particular, the Ministry of Youth Affairs and Skills Development with the support of the Tertiary and Vocational Education Commission (TVEC) has implemented a web-based career guidance and job matching system attached to the National Career Guidance and Counseling Centre and a network of Career Guidance centres across the country.

What are the objectives of this initiative?

The main features and aims of the initiative are to:

- provide help in making career choices for new and prospective students by providing web-based career interest test that can be taken at any of the Career Guidance and Counseling (CGC) Centres within the network and on the website
- Disseminate the link to the TVET Guide to help prospective students access information on training
- Match job demand from the world of work with supply from the TVET sector
- Facilitate registration for a TVET course online
- Extract labour-market statistics on supply and demand and provide input to the analysis of TVET demand; forecasting future projections on training
- Provide Job outlook for adequate information on careers on different sectors
- Link District CGC Centres to disseminate information regarding career profiles and employment opportunities
- Improve language compatibility in Sinhala, Tamil and English for better accessibility.

What is the target group?

The target is young, prospective or new students from schools and TVET centres at national, provincial and district level. Specifically, rural youth are targeted for career guidance. In addition, human resource managers from companies and firms are potential finders of suitable and skilled people using this system. Parents and teachers of the prospective students and career guidance and counselling officers are also users of the system.

What is innovative about this project?

The project is innovative in the Sri Lankan context in that it enables improved access and strengthened capacity by providing a unified career guidance and job matching system to align supply and demand for labour in Sri Lanka while attracting students to career guidance and counseling.

This project has been a turning point in Sri Lanka for addressing unemployment of TVET graduates. After further expansion and with the necessary support from all stakeholders, the outcomes of this project are foreseen to provide enormous economic and social benefits.

The initiative provides a 'connected' solution with a range of services that together will assist young people make good transitions. It is a multi-stakeholder approach which connects students, TVET centres and employers with the National Career Guidance and Counselling Centre for better provision of career guidance and employment opportunities. Awareness, support, interest and usage of the system by the relevant parties are enabling factors in the context of unified career guidance and job matching system.

What has been the impact so far?

National impact is highly expected during the implementation phase. There are 25 District CGC centres and another 250 CGC centres operating under this District Network. The programme has been conducted secondary school-level programmes and students are connected with their nearest CGC centre for face-to-face guidance. Staff of CGC centers are the interface between school to TVET at the rural level. The online career interest test has been promoted in these school programmes and individual counselling sessions at CGC centers. Numbers are collected to National Center for monitoring at the provincial level. The major outcomes expected are support school graduates to choose preferred path of study and direct them to close by TVET centre which has the particular course.

School-level awareness programmes are conducted regularly with the support of Ministry of Education. Different Career Path Maps are prepared for selected emerging sectors, such as ICT, Hotel and Tourism and Construction etc. for more information. Through this initiative the Ministry intends to enhance the transition of young people in Sri Lanka by reducing the gap between school to training and training to employment.

What have been the challenges and lessons learnt?

During the design and development phase of the system, one challenge was to obtain stakeholder support and provision of necessary resources.

A committee has been put in charge of implementing and operating the project, chaired by the Additional Secretary of the Ministry. Monthly progress review meetings are conducted to monitor and evaluate the progress of the activities chaired by the Additional Secretary of the Ministry of Youth Affairs and Skills Development. In addition, a suggestion box, a customer feedback form and a suggestion book were introduced at the centre as a way to collect used feedback.



The demand for services of the CGC centres is increasing due to promotional activities that have been undertaken within and outside the TVET system. This is in line with new government initiatives to develop a technology stream in the school system and establishing 'University Colleges' throughout the country. The service of CGC network will be crucial and challenging in the future to cater for increasing demand.

Could this project be transferred to other countries?

This programme could easily be adapted according to different political, social, economic, geographic or cultural environments and customized to make it transferrable to other contexts. The usage of the online CGC system has been increasing after the adoption of a new web software, and after several promotional activities within and outside the TVET system through various means. This worked well due to support from the leading implementing agencies under the directives from the ministry and by assigning sufficient human resources and infrastructural facilities. An effective monitoring and evaluation system has been providing relevant feedback for the continuous development of this unified system. Support from the network and necessary stakeholders is highly important when implementing the solution.

Knapsack to briefcase. Youths making the seamless transition into the world of work

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Background

Since its inception, HEART Trust has evolved to become the National Training Agency (NTA) in 1992. The HEART/NTA through its collaboration with the National Council on Technical Vocational Education and Training (NCTVET) has aided the development of exceptional curricula which comprise career development, communication, on-the-job training programmes as evidenced by the school leavers training opportunity programme (SLTOP) work study, and work experience programmes, simulations in training labs, apprenticeship programme for technical skills and entrepreneurship. To date, more than 613,000 individuals have been trained and over 200,000 certified by NCTVET. These individuals now serve scores of organisations at several different spectrums within the hierarchies of international, medium and small businesses.

HEART Trust/NTA has reshaped and restructured its approach to achieving its mandate and therefore now boasts twenty-eight HEART institutions, seventy-nine Community Training Intervention (CTI) programmes, numerous nationwide partnerships and special projects in the sectors of hospitality, wellness and beauty services, construction services, automotive services, creative arts, agriculture and ecological sciences, information and communication technology. Within the last three years, the NTA has forged strategic alliances with local and international stakeholders.

Summary

The School Leavers Training Opportunities Programme (SLTOP) was designed to help secondary school graduates make the transition from knapsack to briefcase. It provides the opportunity for such graduates to be exposed to various sectors through the guidance of the HEART Trust, National Training Agency (NTA). The HEART act of 1982 permeates the main tenets of the programme to afford on-the-job training in its truest form to a typical school leaver who may not have been exposed to a work environment. Consequently, career development is an integral component which allows a seamless transition into the world of work, as it seeks to

elicit appropriate professional behaviour through conscious career decision making. The programme reinforces the notion of training with a purpose, to impact the nation's developmental milestones.

The SLTOP is intended for graduates between the ages 17-23 years with at least two Caribbean Secondary Examination Certificate (CSEC) subjects, who have not been exposed to the competency-based training. Participating graduates are retained by firms for one to three years and depending on their performance and the firm's human resource capacity, based on these variables permanent employment may result. The programme has spanned some fifteen years and has been amended to reflect NCTVET standards, through the provision of level one to three competency-based certification; the National Vocational Qualification of Jamaica (NVQJ).

Also, to foster a collaborative environment between Employers and the Agency a monitoring component is the key success indicator. Hence, school leavers within income generating situations are monitored to not only ensure their successful completion of the programme, but also to alleviate developmental challenges that are inevitable, due to their inexperience in navigating the task environment of various sectors. As a consequence, some activities or initiatives afforded by the implementation of the programme in participating firms include: job analysis for capacity building within firms and job evaluation against the competency standards to ensure there is no skills mismatch.

Programme objectives

The programme is significant to the Jamaican TVET system because it provides a template to build the on the job assessment framework. The objectives are as follows:

- To improve the transition into the work environment for high school graduates.
- To introduce graduate who would not have been otherwise considered
- To ascertain feedback from industry regarding the job readiness of trainees/graduates
- To provide the experience to both parties of on-the job training and evaluated the outcomes
- To foster a collaborative environment for distance learning.

Target groups

1. **Secondary school graduates** (17-23 years) who are exposed to formal education, most exit at grade ten, while some at grade eleven. It is likely that the latter would have Cambridge A-levels and Caribbean Advanced Proficiency Examination (CAPE). It is common for graduates to exceed the minimum SLTOP requirement of two CSEC subjects. Most graduates are inclined to advance to university, however given financial constraints may opt for this programme because it provides them with the opportunity to earn while they learn.
2. **Employers with legitimate businesses** who are tax compliant and desirous of positively impacting the nation's youths. The majority of participating employers tend to have large wage bills and contribute significantly to the NTA through the 3 per cent levy imposed by the government. Participation guarantees a rebate from the government which provides an incentive. Employers assume the role of trainers, coaches and mentors to the high school graduate attached to a firm.

Programme impact

Given that the European Union has emphasized that the ideal worker for developing countries 'is one who is academically inclined and exposed to technical vocational education', the educational impact of the programme on the development of the future workforce is of mega proportions. Hence, the successful transition of youths will result in a more well-rounded and diverse workforce in years to come, which should have a positive impact on the country's productivity level, thus attracting international investors. Under the CARICOM SME arrangement Jamaicans classified as skilled artisans may move across the Caribbean, hence this programme has the potential to supply the economic demand of the not only Jamaica, but also the region, as hospitality participants in particular, are usually poised to move to university and successfully complete.

Within Jamaica there is a social and cultural stigma that Technical Vocational Education and Training (TVET) is for slow learners and high school dropouts, however with more academically proficient students participating over time the stigma will change. To channel national interest in the programme success stories are highlighted to emphasize the programme's value proposition and promote it as a platform for success.

Measurement and outcome report

The outcomes have been measured and recorded by HEART Trust/NTA established databases such as: Trainee Information Management Systems (TIMS), Learning Management Systems (LMS) and more recently Training Management System (TMS). Over the span of the programme these databases have captured the numbers enrolled in the programme, completed and certified. (See graph below: the numbers attached to firms in 2011/2012 & 2012/2013).

YEAR	ENROLMENT	COMPLETION	CERTIFICATION
2011-2012	1022	371	168
2012-2013	1491	477	275
TOTAL	2513	848	443

Success indicators and innovation

Enabling factors for innovation

- The global trends in social learning which has resulted in the growth of usage of innovative technology as well as, the integration of technology in the learning environment to achieve optimal learning outcomes.
- In the local economy, Government's endorsement of the use of technology as a teaching aid in the learning environment will encourage public acceptance

The introduction of technological interface in Distance Learning (DsL) in the form of the Moodle platform is timely, given the global transformation of continuous learning practices and its acceptance in Jamaica. Within Jamaica the integration of DsL would improve the level of cooperation of graduates/participants in specific skill areas and allow for better monitoring of assignment submissions, as well as, encouraging value-added interactions among participants through the creation of on-line communities of learning catering to various learning styles.

Critical success factors

A renewed focus on the programme to improve monitoring initiative which would positively impact job attachment for high school graduates is a most important success factor. Improved programme monitoring would elicit maximum participation of the direct supervisors, who would be held accountable to ensure that training outcomes are achieved. This participation would reduce training related costs. Additionally, the introduction of systematic impact analysis would ensure the formulation of key performance indicators in keeping with economic demand.

Stakeholder engagement, cooperation

Programme execution requires the input of three stakeholders, namely secondary schools, employers and HEART Trust/NTA.

Secondary Schools within formal education system:

- Participate through the National Career Development and Life-long learning policy to facilitate access to career information through the guidance counselling unit

Employers or Businesses which are tax compliant:

- Provide a stable work environment which encourages personal and professional learning and development
- Provide on the job training to the participating high school graduate
- Endorse TVET approaches to building workforce competences

HEART Trust/NTA:

- Provides certification upon successful completion through collaboration with National Council on Technical Vocational Education and Training (NCTVET) standard
- Public Relations and Network Marketing of the programme to sustain it
- Project Management approach to ensuring efficient programme execution

Efficiency of the initiative

As precedence, a formalized management structure has always been in place for the programme. The structure may have been revised several times over the programme life-cycle for greater efficiency and sustainability. However, in recent times a project management methodology has been applied to effectively monitor the programme's activity within the participating firms.

The management structure resembles Likert's participative approach because a social learning and motivation through incentives method is taken. Currently, the programme has a manager, a lead coordinator (Industry Liaison Officer/ Placement Coordinator), five (5) Industry Liaison Officer performing monitoring and broker services and an Administrator (Training Support Officer) and support staff one year contract (two participants on the SLTOP) for the South East 1 region which spans Kingston, St Andrew and St Catherine.

Programme structure

Potential graduates interface the National Training Agency at planned career fairs and activities within their secondary schools. It is typical for graduates to apply for the programme during their deliberations about whether to attend university or community college, usually after Caribbean Secondary Education Certificate (CSEC) results are available. Graduates are expected to have at least two (2) CSEC subjects, but given the level of competition owing to the programme's popularity usually students with six (6) or more subjects are easily attached to firms. Once, selected to participate in the programme, applicants are engaged in a workshop/orientation where they are exposed to employability skills, interview techniques, resume writing, as well their assessment schedules.

To be considered for job attachment applicants are required to attend interviews within participating firms. Where a selection is not made, interview rating sheets are reviewed to determine the challenges preventing an applicant from landing the job. To provide support, a career development professional is contracted to work with an applicant experiencing challenges at the interview stage. This professional engages the applicant in face to face consultation and may seek to perform a psychometric assessment to provide full counselling and guidance on a chosen career path. An applicant attached to a firm and where training has commenced is referred as a trainee.

Once trainees are 'in-training', monitoring is executed through various means, including face-to-face - firm visits, workshops, in office meetings; telephone and text messaging; electronic media – e- mails, social networking and teleconferencing. Trainees' participation in scheduled training and assessment activities are also monitored to ensure that they are on the path for completion of full National Vocational Qualification (NVQ), where necessary, counselling interventions are planned to minimize dropout rates. Monthly reports highlighting monitoring initiatives are prepared and submitted.

Cost implications

The National Training Agency's operations are funded by the 3% Levy imposed on employers from which all associated programme costs are debited. *The information provided does not represent the total cost borne by the NTA but rather gives an account for one of five regions.*

Human resources: Within South East Region (SER) 1 (1699. 2 km) upper Kingston, St Andrew and St Catherine staff allocations are as follows: manager, lead coordinator (Industry Liaison Officer), five Industry Liaison Officers, Administrative Assistant, Training Support Officer, Support Staff, at a minimum four (4) part-time trainers and assessors.

Unit/ No	PERSONNEL	SALARY RANGE (gross)
1	Manager	\$2.2-2.8 mill
1	Industry Liaison Officer	\$1.6-2.2 mil
1	Training Support Officer	\$1.7- 2.2 mill
1	Administrative Assistant	\$1.0 - 1.3 mil
1	Support Staff	\$240,000- \$280,000
1	Trainers	Rate of (\$1671 Level 1) (\$1838 Level 2) (\$1921 Level3)

Financial resources

Tax Rebate amounting to \$600.00 per month per trainee is deducted from the wage bill of participating firms and within the SER 1 at least one hundred and four (104) firms were eligible for refund during the financial year 2012-2013. Other Cost items included:

- Orientation, workshops and training sessions throughout the programme as required
- Career materials such as workbooks, hand-outs, journals for students and other career resources
- Logistics and transportation for participant attending workshops
- Lunch and stipend for those participants retained by HEART

Challenges and barriers to implementation

- Buy-in and acceptance by employers due to financial constraints and cultural preferences
- Fair treatment of trainees (practice of employing trainees to mitigate high remuneration costs)
- Job readiness of trainees negatively impacting firms productivity
- Negative stigma associated with the HEART brand
- Social and cultural bias towards TVET

Monitoring and evaluation

For the most part the programme has been evaluated by the NTA. The research department conducted a study in 2006 to capture how many completers were able successful retain jobs.

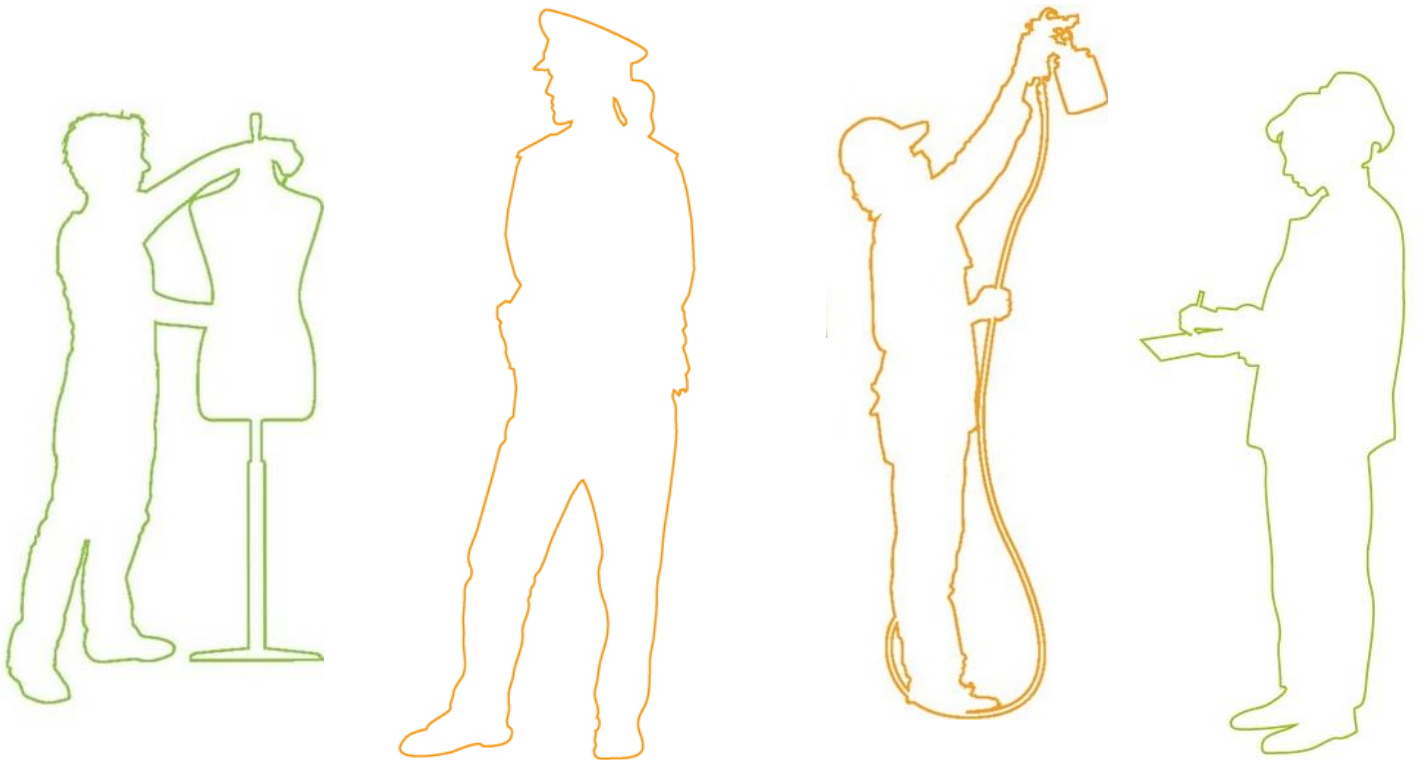
The study answered several questions; however the one of particular interest is stated as follows: How many jobs did participants obtain and to what extent did they obtain employment in jobs related or unrelated to training received?

45 per cent of the 235 respondents indicated that they were employed by the same firm in which they were placed for training. This suggests that there is almost a 50% chance that trainees will gain employment at the same firm in which they were placed hence the strong support that on-the-job training opens perhaps the best opportunity for an individual to gain a job.

Interestingly, of the 150 persons currently employed, 71 persons or 47% were still employed at the same firm placed for training. This number also represents a retention rate of 67% of the 106 persons who said they were employed by firm in which they were placed.



The Vocational Orientation Programme of the Federal Ministry of Education and Research (BMBF)



Summary

In Germany employers generally have difficulties recruiting junior talent and report that thousands of apprenticeship positions remain unfilled. Several factors contribute to this: a mismatch between school leavers' qualifications and the demands of firms, an undersupply of apprenticeships in the most desired occupations, but also the fact that young people do not know enough about the world of work and the different alternatives the job market can offer them. They are also not very aware of their own interests and talents and find it difficult to make choices.

The Occupational Orientation Programme (BOP) is a German career guidance programme to support school-leavers in their transition from school to apprenticeship or work. Since its inception in 2008, it has reached out to more than 660,000 school leavers. The basic idea of BOP is to encourage intercompany training centres to cooperate with schools to provide early work-oriented learning opportunities for lower-secondary pupils. The programme is supported by BIBB through evaluation, technical and scientific steering, monitoring achievements and needs for revisions.

The programme helps to extend the children's competencies through the experience of practical work in different occupations. It is motivating for pupils who leave school early, as they gain self-confidence and self-awareness. It initiates and promotes contact between employers and schools, and contacts between trainers and pupils. It also contributes to improving the image of TVET.

Aims and methods of the Vocational Orientation Programme

Girls and boys who know their abilities and their professional interests will be more successful when it comes to their future career choice. Provision of early vocational orientation will together with fostering of key competencies support smooth transitions from school to work.

The Vocational Orientation Programme of the Federal Ministry of Education and Research (BMBF) "Promoting vocational orientation in inter-company and comparable VET centres" supports secondary school pupils by providing timely and systematic preparation for the various career options prior to their graduation.

The programme is targeted towards pupils who are seeking to graduate from school at the lower secondary level, leaving school after Year 9 or 10 and probably enter dual vocational education and training.

The Vocational Orientation Programme comprises a potential analysis, which usually takes place during the second half of Year 7, and funding for workshops in Year 8.



The **potential analysis** is an assessment of personal, social and methodological competence; in other words, core skills that are significant to everyday life. The primary focus is on activity-oriented procedures such as assessment centre exercises or work samples. Participants are given an opportunity to identify their own skills, predispositions and interests. During these exercises, pupils are observed by trained assessors on the basis of pre-defined behavioural criteria and are subsequently provided with individual feedback in one-to-one meetings. There it is jointly discussed what kind of steps could be useful to strengthen the individual competences and how they might fruitfully contribute to the ongoing vocational orientation process. The results of the analysis of potential are documented and subsequently serve as a basis for continuing individual support for the pupils.



During the two-week **workshop** phase of the programme, the boys and girls are given the opportunity to gain practical experience in at least three occupational fields. The VET Centres offer at least 5 occupational fields out of 2 records – one covering Manufacturing/Crafts/Technology and the other covering Services/Economy/Social Services. The Pupils are instructed by professional training staffs. The trainers provide regular feedback to the pupils on their performance and strengths in each occupational area. The young people gain a first idea of what might expect them in working life. That way they realise why school learning is important. In many occupational fields pupils produce a piece of work which they can take home. This provides motivation and is a source of pride in their performance.

At the end of the Vocational Orientation Programme a certificate is awarded. It can be submitted as part of later job or work placement applications. The Vocational Orientation Programme enables young people to make a more conscious and considerate choice when it comes to selecting their work placement and subsequent training occupation in Year 9. They gain a broader range of career choice options and improved prospects to find a training occupation that makes a good fit.

The objective of the Vocational Orientation Programme (BOP) is to offer a vocational orientation process that will enable pupils to paint a realistic picture of their own abilities and interests as well as to gather practical experience in a variety of occupational fields.

The precautionary approach adopted by the programme aims to reduce the dropout rate while lowering the number of unplaced training applications during the transitional phase.

Funding guidelines stipulate that the measures are conducted at an inter-company training centre or at a comparable institution with experience in the provision of initial vocational education and training. The inter-company vocational training centres are firmly anchored in the German vocational education and training system. In addition to the traditional learning venues in the dual system – company and vocational school – they represent a third learning venue that ensures a systematic link between vocational practice and vocational theory. Learning venues in the Vocational Orientation Programme must have workshops capable for content specific training.

The Federal Institute for Vocational Education and Training (BIBB) is in charge of overall programme management. Institutions apply for funding to the BIBB and conclude a cooperation agreement with the participating schools for the implementation of the programme. Furthermore BIBB supports the programme by providing evaluation and academic research and technical expertise. It also monitors progress and identifies any amendments that may be required.

The Vocational Orientation Programme forms part of the BMBF “Educational Chains Initiative”, the objective of which is to link the various vocational orientation funding instruments like the links of a chain.



Programme figures (as of July 2014)

BMBF-funded projects: more than 1,000

Pupils involved: 660,000

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Green skills

Integrated waste management plan for car mechanic shops

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Introduction

The Instituto Nacional de Aprendizaje (INA) is an institution dedicated to developing capacity and providing professional training services. It works together with various production sectors to help them improve productivity and competitiveness by offering training services and professional education. It also sets objectives in different fields, one of which being to align professions with environmental considerations. Because it is active in all territories of Costa Rica, it has a strong impact on the social, economic and cultural life of Costa Rica, which it uses to help achieve Costa Rica's goal to become carbon-neutral by 2021.

In this context it was considered necessary to tackle the management of waste that is generated in car mechanic centres and repair shops. To address this, INA conducted an in-depth investigation in order to assist the transportation sector find solutions to the serious problem of soil contamination happening during the reparation of motor vehicles. In 2010 the Centre of Car Mechanics undertook research on "Waste management in automotive service shops in Costa Rica" to learn more about how automotive waste is managed throughout the country. The answers to the following questions displayed a generally low level of environmental awareness:

	A lot	Somewhat	Not at all
To what degree is the organization familiar with the topic of environmental management?	16	44	9
	23%	64%	1%
To what degree is the organization familiar with waste management?	9	47	13
	13%	68%	2%
What is your level of knowledge about the consequences of pouring liquid (oils, refrigerants, fuels) into a sewage system?	25	38	6
	36%	55%	9%

	10%	25%	50%	75%	100%	N/A
What percentage of your repairs needs additional parts or requires replacement of old parts, throwing away the used ones?	6	27	13	16	7	0
	9%	39%	19%	23%	10%	0%
What percentage of your maintenance services requires new materials, throwing away old ones?	2	8	21	29	3	6
	3%	12%	30%	42%	4%	9%

Source: Javier Bonilla Herrera. 2011. *Organizational culture in the field of environmental management, final report of the research project Waste management in automotive service shops in Costa Rica*. INA 2011.

The pictures reproduced here were taken to illustrate the prevailing situation regarding the unsafe management of waste and recyclable material as part of research on “Organizational culture in the topic of environmental management”.



Waste from straightening process and paint residues



Waste of an auto shop treated as ordinary waste



Mismanagement of oils and used filters



Contamination of ordinary waste with used oil

What are the objectives of this initiative?

Based on the results of the investigation, a project was initiated in 2011 to disseminate the information collected and set up a series of actions aimed for people working in the automotive sector. The aim of these actions is to expose the damage to the environment as a result of a wrong waste management.

In 2012 a pilot project started in automotive shops of educational centres where mechanic services are taught. The process started with raising awareness of teachers and students about the problem. To do that, a module was designed with the purpose to make teachers and students come up with a comprehensive plan of waste management, taking into consideration all its phases. In the same year a first phase of implementation of the plan designed by the participants of courses took place.

A second phase of the implementation of the developed plan was continued in 2013. Actions to continue promoting exchange in the subject of environmental protection took place. At the same time, a plan to train the owners of automotive centres of different areas in the subject of integrated management of waste was initiated and obtained up till now very positive results.



Pictures taken as part of the project "Integrated management of auto-mechanic shops", Edagardo Alvarez Asch 2011

Objectives

Therefore, the following objectives were set by INA:

- 2010: To determine the current situation in the subject of automotive waste management on a national level based on current legislation, acts, laws and regulations, with the aim to propose an alternative solution.
- 2011: Promote actions to increase awareness of the population working in technical and civil fields about the damage caused by the waste generated from car diagnostic and repair processes, with the aim to contribute to the solution of this serious national problem.
- 2012: To establish a methodology for a plan of integrated waste management in car mechanic shops of INA that comprises teacher training through the design of educational programmes with the aim to come up with management plans and implementation of some actions.
- 2013: To establish patterns to continue with the implementation of the waste management plan, elaborating a manual that guides teachers and students during each phase of elaboration and implementation of actions of an integrated plan of waste management.

Achievements so far

In the field of education

- As of 2013, 63 teachers in various mechanical specializations were trained.
- At least 85% of the modules aimed at assisting companies to incorporate environmental protection in their work took place.
- A plan of waste management is being implemented in 5 out of 6 educational centres where training services in car mechanics are provided in 23 shops of all the educational centres.

- 3 training courses were provided to 45 company owners in different areas of the country, with the aim to reach at least 60 owners more in the second half of 2013.

At the economy level

- Companies that implement waste management plans will be free from fines established by current legislation.
- Implementation of integrated waste management plans will allow automotive shops to improve their image that will eventually influence profitability of the business, provide added value and help in execution of clean production norms.

In the social field

The impact of the project, will unquestionably lead to a better quality of life for the technicians that work in companies where integrated plans of waste management are developed. It is fundamental that a better management directly leads to a decrease in a number of accidents and occupational diseases caused by the use of products that generate dangerous wastes.

By including an environmental aspect in various programmes and actually implementing it in our training shops INA guarantees the creation of new mechanics who promote this kind of culture in their companies.

Innovation

Since the 1980s the country has been making efforts to incorporate the topic of waste management, especially dangerous waste. Up till now, implementation has not been effective. The novelty of this initiative is that INA, through its centre of Car Mechanics, is trying to make a change in the culture of technicians, for the most part teachers, students, owners and managers of mechanic shops. By using training courses and educational methodologies that are easy and effective INA is trying to design management plans that are later implemented in its own working centres.

Another innovation is that automotive shops of INA's education centres are being designed and constructed with own resources, with some equipment that allows collection and classification of dangerous wastes and will be built by INA's own students in metal construction specialization. When all phases and stages of the project are finished there will be model shops at national level that are environmentally friendly.

Challenges/Scaling up

Challenges for the years 2014-16:

- Curriculum redesign to achieve greener processes of teaching and learning
- Reorient methodological learning activities to achieve a green culture
- Acquisition and building teams to promote cleaner production and reduce pollution of some processes

Busan Energy Science High School

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Background

The green industry policy of the Government of the Republic of Korea induced local authorities to invest strategically into green energy industries. Especially Busan, the second largest city and the biggest port in the Republic of Korea, has the advantage of wind power and solar energy industries, and an industrial compound. Green skills are necessary to develop green industries. In step with the government policies, the Busan Office of Education planned and implemented skills development programmes for green skills. Accordingly, the Busan Metropolitan City Office of Education has decided to operate a specialized vocational high school to cultivate a workforce in new renewable energy.

The Green Energy High School

Conversion into Specialized Vocational High School

The Busan Metropolitan Office of Education has set the goal to convert an engineering high school into one that lives up to industrial demands and to develop human resources in solar energy, wind power energy, and fuel cell industries. With the goal to nurture skilled workers in new renewable electric energy sector, the former 'West Busan Engineering High School' was renamed 'Busan Energy Science High School' as a specialized vocational high school. The school was designated as a research school of the Ministry of Education and Science & Technology for two years from 2007 onward, and started to establish educational contents, develop curriculum, cooperate with industries, and fulfil proper conditions of skills development on new renewable energy area.



Field trip



Student performance

The Busan Energy Science High School was the first and only high school specializing in new renewable energy in Korea when it was established. With the support and cooperation of the Government, Ministry of Education, Science and Technology, the Busan Metropolitan City Office of Education, and the Ministry of Commerce, Industry and Energy, the Busan Energy Science High School reorganized its educational curriculum, supplemented specialized sector equipment, put in place faculty training programmes, and strengthened school promotion activities.

SWOT analysis

Strengths

Busan has many companies that produce mechanical, shipbuilding equipment, and electronic components. These require large volumes of skilled labour and high-tech skills. There is also an industrial complex nearby, increasing the possibility for support and cooperation. In addition, wind power plants and photovoltaic generation are key industries in this region, for which commercialization is easy and attracting concentrated investment. As for the school, the principal and faculty possess the strong determination to carry forward as a specialized vocational school for new renewable skills. In addition, an ample school space and excellent practicing equipment have given it an advantageous physical environment conducive for studying.

Weaknesses

Most vocational high school students show rather low academic achievement compared to general high school students. While most middle-school graduates prefer to enter general high school that prepares students to enter universities, the academic achievement level of the vocational high school students is usually lower compared to that of general branch. The academic achievement level of freshmen at Busan Energy Science High School is low as well. The ratio of students who want to be employed instead of entering university after graduation is also low, resulting in a low employment rate. Furthermore, the school's location is not easily accessible and not so attractive to students. The facilities of the school were not favourable, with no dormitories or gymnastic facilities. Also, the faculty was in lack of expertise in the specialization field of new renewable energy, thus faculty training programmes were needed.

Opportunities

The need for skills in new growth engine industries is rapidly increasing. The Busan Metropolitan Office of Education has concentrated its support for the school as it was the only specialized renewable energy vocational high school in Busan and in Korea. Since the number of energy-related majors is on the rise in universities, it is expected that there will be more support and connections with the school.

Threats

The number and size of renewable energy related companies are still small. Large enterprises have a tendency to avoid employing graduates from vocational high schools. Furthermore, the weak physical accessibility to the school is becoming an obstacle in attracting good students.

Based on this SWOT analysis, these strategies were established by the Office of Education and the school:

- Concentrate on curriculum development for renewable energies and invest in equipment needed for practical training in the specialization area.
- Strengthen the image of the school as a specialized school in renewable energy skills that lives up to the Government's energy policy.
- Secure numerous companies and research institutes in the new renewable energy sector for developing curricula, donating equipment, appointing honorary faculty and holding special lectures, and contracting sisterhood relationships.
- Operate training programmes and events to create a sense of unity to maximize the capabilities of the faculty.
- Establish national qualifications in consultation with the Korea Human Resources Development Service.
- Establish a scholarship system for students and increase the number of recipients: The Government is implementing a policy to pay tuition fees for all vocational high school students. Busan Energy Science High School awards larger amounts of scholarships compared to other schools.
- Develop a career path manual oriented towards new renewable energy jobs in order to increase the employment rate.

The curriculum

The education aims to cultivate excellent talents who have on-site adaptability, basic knowledge and skills of the types and principles of renewable energy sources, and who are capable of designing, producing, operating, repairing, and maintaining various new renewable energy sources. In order to achieve this goal, Subject Councils and Industry-Government-Academia Councils participated in the development of the curriculum and promoted the specialization of majors. The skills needed the most in new renewable energy industries are directly related to electrics, electronics, and machinery technologies. Textbooks were developed and are revised two or three times a year in response to customized education. Furthermore, high-tech educational equipment has been made available.

The last of six semesters is for field training to strengthen employability. The curriculum is advantageous for acquiring various licenses in electrics, information equipment operations, elevators, electronic calculators, and electronic CAD. The quality of learning has improved through level-oriented teaching method, open classes, and class contests. Professional education has been provided by strengthening industry-academia partnerships.

To encourage students with low academic achievement, the school has adopted several teaching methods. One of them is to instruct at variable curriculum by achievement level, especially for English lessons. Second, after-school classes to develop basic vocational competencies are offered to students. Third, development of personality and self-esteem programmes are held.

Expertise of faculty and students

Teachers newly appointed to the school receive special training related to new renewable energy to accumulate expertise. Experienced industrial staff is appointed as industry-academia adjunct teachers to manage industry-oriented education and to operate joint classes.

Industry-academia cooperation

The school pursues customized education and employment by analyzing the demands of related companies, and by making efforts to improve the quality of employment. Special lectures and company tours are held by the Small and Medium Sized Business Administrations of Busan and Ulsan, and the North Job Center, to teach students ways to succeed at job interviews and to promote employment of students in new renewable industry sectors. Thus, employment rates in public corporations and large enterprises are gradually increasing. Special lecture programmes by company CEOs, related experts and university professors are also held.

On-site training programmes are being developed jointly with companies participating in industry-academia expansion projects. One faculty member being exclusively in charge of exchange with one company, on-site training is monitored on a regular basis. Strict monitoring is in place to identify unqualified companies through satisfaction survey and follow-up. This industry-academia partnership programme helps develop practical skills needed in the workplace and the adaptability to the industry sites, developing on-site experience and learning, practice-oriented major education, and education using external lecturers such as industry-academia adjunct teachers and expert engineers.

The Busan Office of Education provides employment coordinators for the employment of graduates, and the Ministry of Employment and Labour provides employment support officers and excellent lecturers. By 2012, about 63 industries have expressed interest in cooperating in student education and training. Moreover, in 2013, nine more industries were contracted for customized education and employment. Twenty-nine students in the customized education class are completing military service.



Partner industry



Special lecture by industrial personnel

Performance

A curriculum living up to the government's green industry policies has been developed, with great implications in leading similar sectors. Textbooks are being developed frequently in response to rapid changes of industrial demand and technological development (two-three times a year). The green skills learned are applicable to various jobs related to engineering, as the basic green skills are related with electronics, electrics, and mechanical engineering. Students' interests in academics and school life, and employment and career in green industries are improving. Employment rates and license acquisition rates have increased. Cooperations with industries have been reinforced, improving the quality of students' employment. The employment rates of the graduates are increasing gradually, as seen in Table 1.

Table 1 Increase of employment rates and license acquisition rates

Year	Employment rate	License acquisition rate
2007	19.5%	-
2008	24.2%	-
2011	35%	95.8%
2012	40%	97.9%
2013	53.74%	112.1%

Source: Busan Energy Science High School. Educational Plan. 2012.

However, there are more students who want to continue their education rather than becoming immediately employed. About 65 to 70 per cent of graduates enter vocational colleges and four-year universities at about a two-third to one-third ratio respectively. The college entrance rate seems to be decreasing from 65% in 2012, 46% in 2012, and 38% in 2014 (anticipated prospect).

Challenges

With regard to the textbook revisions, budget and manpower are still insufficient. It is difficult to accumulate and build on the expertise of faculty as teachers in public schools must rotate every five years. Teachers who have developed expertise in the field of new renewable energy industries have to be transferred every five years. There is a need to develop a system to improve and maintain the expertise of the faculty.

Since students' academic ability is still rather low, it is not easy to expect support and big employment opportunities from companies in the region which are mostly SMEs, and cooperative companies of large industries in poor financial conditions.

CIRADD'S Community Assistance Module – a way to integrate sustainable development and scientific research to achieve school success?

Contact



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Introduction

How does education contribute to sustainable development? Providing a definitive answer to this question can be quite a challenge, even more so when one considers the complex relationship between the different facets of sustainable development and the impact of education on a region's socioeconomic development. As a research centre and knowledge transfer body specialized in sustainable development, the *Centre d'initiation à la recherche et d'aide au développement durable* (Research Initiation and Sustainable Development Support Centre) (CIRADD) is continuously confronted with such questions.

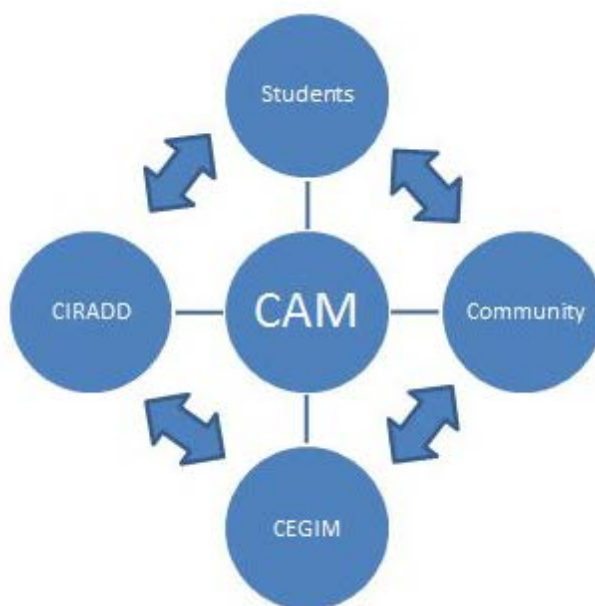
The CIRADD was created in 2006 from the initiative of two professors working at the Cégep de la Gaspésie et des Îles de la Madeleine (CEGIM), a General and Vocational College located in Quebec, Canada. The initial goal behind the CIRADD's creation was to familiarize CEGIM's students with scientific research, increase student's motivation levels through involvement in tangible projects, and contribute to regional

sustainable development. Over the years, the CIRADD's research activities have diversified and are now divided into two broad categories. The first category consists of independent research mandates linked to CIRADD's status as a College Center for the Transfer of Technology (CCTT) specialized in innovative social practices (ISP). The second category consists of the research mandates involving students through the Community Assistance Module (CAM), which is CIRADD's first innovative social practice.

The Community Assistance Module

The CAM can be best pictured as an initiative institutionalized by CEGIM through its competency-based (CBET) social and natural science programmes. As a result, the CAM is not a programme but a core component of knowledge integration courses. The CAM's main objectives are to sensitize students to the importance of research, to familiarize them with the scientific research process while simultaneously meeting students' respective programme requirements. Students participating in the CAM take part in research projects that are related to sustainable development. These research projects are submitted to the CIRADD by institutions, organizations, enterprises and individuals who are facing a problem that they cannot solve, either because of a lack of expertise or a lack of resources. The relationships between stakeholders not only allow for a fluid circulation of experiences but also allow students to be in contact with potential employers, acquire research experience and initiate their transition from school to work.

In addition, the CAM was developed around a structure that allows for reciprocity between stakeholders. First, students work with partners and share with them the skills and knowledge they acquired during their studies. Second, the community contributes to students' development and education by providing them with concrete problems to try and solve during their involvement in the module. Third, such a close contact between the teaching institution and the community is also beneficial to the school as it turns it into an active and integrated component of the community.



Transfer of Knowledge and Skills Between the Institutions, Students and the Community

Indeed, while the teaching institution contributes to the development of students, it can also be said that students increase the institution's outreach by allowing professors to update their expertise and to acquire new competencies. This kind of professional development can be induced by the fact that research projects vary in subjects and cope with emerging problems, which may require staff to ask for outside expertise and thereby acquire new knowledge and skills. For instance, when needed, the CIRADD will ask for input from other CCTTs, university professors or other sources of professional expertise and knowledge.



CIRADD's Annual Scientific Symposium

Despite the involvement of a high number of stakeholders, students remain in charge of their respective projects. As a result, they apply their skills and knowledge to real-world problems and needs and, by doing so, act in accordance with the competency-based approach.

Examples of CAM projects

Algae as biological filters

The development of social, economic and environmental indicators to measure regional development

CancerGIM3 – A third step towards a registry of cancer cases in the Gaspé and Magdalen Islands

A study on the uses, knowledge and practices of the Cap-Chat river's watershed users

The resilience of the coastal environment in coping with climate change

A local community survey on Point au Maquereau's sustainable development

The social outcomes of community gardens

Pumping with a hydraulic ram

Knowledge transfer

The CAM also emphasises the importance of transferring research results. Besides introducing students to research through research projects, the CIRADD also organizes conferences where regional or provincial experts present their scientific experiments and results to students. At the end of the semester, students will themselves have the opportunity to showcase their research during an annual public symposium organized by the CIRADD. Partners will also receive a copy of their respective projects' final reports written by students. In some cases, when projects require work over a period of time extending beyond the school semester, the CIRADD will offer summer jobs to students.

In addition to allowing for the transfer of knowledge, the CAM is itself transferable. For instance, the module is currently being transferred into two Caribbean countries, Grenada and Haiti. The transfer to Grenada is carried out through a CARICOM *Education-for-Employment* partnership, involving four teaching institutions brought together by Colleges and Institutes Canada. The CAM will be integrated into a CBET/TVET programme titled *Environmental Sustainability Practices* developed especially for this partnership.

The Haiti partnership was developed after one of CEGIM's professors and one of CIRADD's research project managers went to the island to present the module. The initiative led to a memorandum of understanding allowing for the implementation of the Community Assistance Module in Haiti. It is worth highlighting that one of the CAM's main advantages is the low pressure that the module puts on financial and human resources while yielding valuable results.



T. A. Marryshow Community College Campus, Grenada

To conclude, CIRADD's Community Assistance Module brings people together as they work to promote sustainable development solutions and apply them to both community and regional problems. Such an initiative is no doubt a good way to get students to work on sustainability problems as well as practice and apply their newly acquired skills and knowledge. By doing so, not only are they contributing to their community's development, but they are getting ready to transition from school to work.

Maurice île durable

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Maurice île durable: www.gov.mu/portal/sites/mid/aboutMID.htm

Pradeep Kumar Joosery is from Mauritius and holds an MA in Economics. He started his career as Economist in the Manpower Planning and Training Division at the Ministry of Economic Planning and Development in 1985. He joined the Industrial and Vocational Training Board (now the Mauritius Institute of Training and Development) as Assistant Manager in 1990, was Deputy Director from 2004 to 2012 and is the Officer in Charge since 2012. In 2009/10 he worked as Skills Development Expert at the ILO. He is an expert in TVET for the Organisation Internationale de la Francophonie (OIF) and the Association for the Development of Education in Africa (ADEA). He has worked as consultant in Sub-Saharan Africa with the World Bank, ILO, UNESCO, AfDB, OIF and Sida and is Board member of the Human Resource Development Council and the Mauritius Qualifications Authority.



Background and context

The vision of Government is to make Mauritius a model of sustainable development particularly in the context of Small Island Development States (SIDS). “Maurice île durable” (MID) is a shared vision involving government and different stakeholders such as corporate bodies, private sectors, civil societies and NGOs and the population in general to promote a sustainable development culture in Mauritius, comprising the three main dimensions of sustainability: economic, environmental and social.



MID vision

One of the key priority areas for action is education and training. Skills, knowledge and understanding are the pillars of MID delivery. They link social well-being and inclusion through environmental protection and enhancement of economic development.

The Government of Mauritius became aware of the extent to which sustainable development was an essential issue in ensuring the country's prosperity and adopted several policies prior to and alongside the MID process. In addition to these, the MID Fund has promoted the use of renewable energies by providing subsidies to 50,000 households for their investments in solar water heaters, financing photovoltaic panels in public schools and training solar water heater installers. The MID Fund is also funding a domestic composting programme and

is developing programmes that focus on rationalizing the use of water, rainwater recovery, the construction of sustainable buildings and raising environmental awareness in schools.



Policies related to Maurice île durable

The private sector also plays an active role in greening their activities. The Mauritius Employees Federation (MEF), which is the largest organisation of the private sector in Mauritius, published a strategy paper on Green Jobs in 2012. The paper emphasises the need to create a “Mauritian Information Centre for Green Jobs” that would address the key challenges at the local level through the promotion of green enterprises and green jobs in line with the concept of Maurice île durable.

Private initiatives in energy efficiency, water conservation, renewable energies and pollution controls are being implemented by Mauritian enterprises with the view to promote sustainable development. The private sector has conducted a mapping of energy efficiency in the industry in 2012. The main areas of priority that have been identified are: steam systems, mainly in industry, cooling systems, pumps and fans, which exist in both industry and large buildings, compressed air systems exist in almost all industrial facilities, hot water production in hotels, restaurants, hospitals, but also in industry (requiring development of solar systems), lighting in tertiary but also in industry.

Objectives

The main aims of the initiative are to equip TVET trainees, in-service workers and technicians with green skills with a view to enhancing their employability. In addition, the MITD aims to contribute towards the National objectives of “Maurice Ile Durable”. Finally, to contribute towards enhancement of productivity and overall economic and technological efficiency.

Why is it significant in the area of TVET?

Most of the Technical & Vocational Occupations require Generic & Specific green competencies in order to enable the incumbents to perform up to standard. Moreover Eco Friendly technology represents growing opportunity for green jobs and skills.

Skills for green jobs

The move towards green economy can be a real potential for the development of green jobs. Green jobs can make an important contribution to the economic growth and poverty alleviation in a country like Mauritius. They create both high-tech, high skilled jobs and job opportunities for youth and women, in particular for poor communities. Expected environmental benefits and economic returns cannot be delivered without qualified

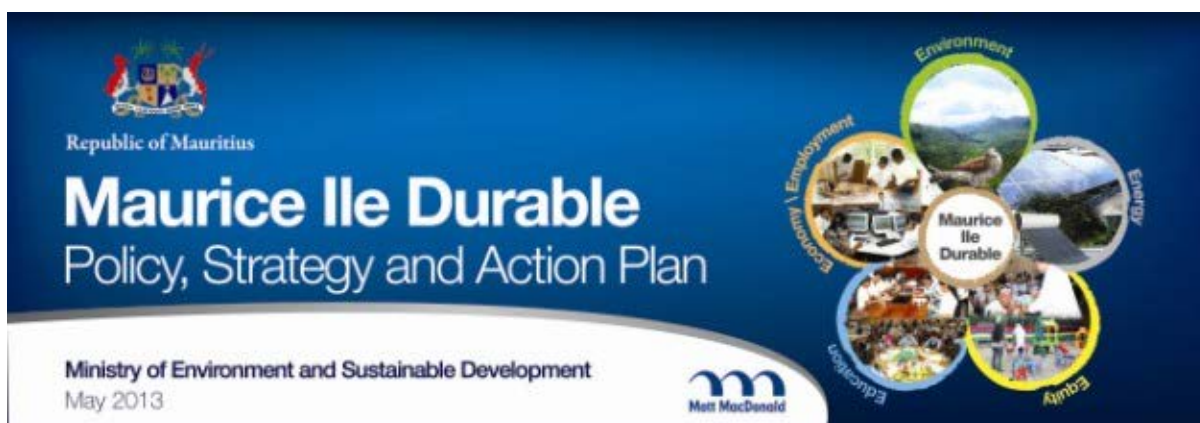
entrepreneurs and skilled workers. Bridging skills gaps and anticipating future needs are essential for a transition to a green economy.

One of the MID strategies is to ensure that all training programmes include the principles of MID alongside statutory obligations.

The Mauritius Institute of Training and Development (MITD) being an enhanced provider of training is required to play a vital role in reorienting TVET in Mauritius for supporting the transition towards SD by promoting green skills. There is a need for redesigning existing training programmes by integrating competencies relevant to sustainable development, leading to greening of existing jobs. There is also the need for developing new training programmes for capacity building to respond to the requirements of new emerging green jobs which will be created with the transition towards SD. The MITD will also be required to play a vital role in the re-skilling of labour lay-offs arising from the elimination of jobs that will not be in line with SD.

MID seeks to improve vocational and lifelong training availability and access to support people in the transition to a MID economic model. Measures will encourage social and cultural integration and employment through targeted training/education and expand general public awareness and training in the importance of sustainable development and the individual responsibility to contribute. It will seek to train public and private decision-makers in balancing the challenges of sustainable development and requirements of MID. It will also strengthen the links between the availability of academic and professional sustainable related training matched to the future demands of the market.

The strategy towards SD places special emphasis on the significance of education and training as highlighted in the consultative working group report of the MID. The need for redirecting TVET towards SD sets new challenges for MITD as a training provider, as the transition towards SD impact on occupations leading to creation of green jobs, elimination, refinement and substitution of existing jobs.



Activities implemented

1. A module on awareness of Environmental issues in all curricula
2. Training in the Installation, Maintenance & Servicing of Photovoltaic systems
3. Training in Installation & Maintenance of Solar Water Heaters
4. Training in use of Eco Friendly Refrigerants
5. Collection of used Engine Oils for recycling
6. Training Module on ESD in the Diploma Of Hotel Management Course
7. Implementation of a Green ICT Policy
8. Use of Energy Efficient Lightings in MITD Buildings
9. Drawing up of a Terms of Reference for the selection of a consultant to assist the MITD in identification of sectors for green skills, training needs analysis in green skills and implementation of identified training.

Target groups

The target groups of MITD's activities in support of Maurice île durable are:

- trainees following technical and vocational courses
- in-service workers, technicians and engineers
- trainers and instructors.

Impacts, outcomes

- Young learners are sensitized to the importance of sustainable development and are empowered as change agents
- Workers & Employees contribute towards an Eco Friendly working environment
- Creation of Green jobs
- Maintain employability of existing or retrenched workers through retraining
- Efficiency and productivity gains through improved processes & technology
- Cleaner environment leading to better quality of life.

The following trainings were conducted:

SN	TRAINING PROGRAMME	NO. TRAINED
1	Training in Installation of solar water heaters:	
	i) Assembly	41
	ii) Maintenance	42
2	Hydrocarbon refrigerants for domestic air conditioning apparatus	20
3	Maintenance of domestic refrigerators using R600a refrigerant	6
4	Train The Trainer Programme in Solar Photovoltaic Systems	21
5	Awareness on Environmental Issues	2500

Success indicators and innovation

- Revised curriculum in line with sustainable development
- Training has been aligned with green technology
- Diversity of target groups : TVET Learners, In-service workers, Technicians & Engineers
- Wide range of sectors covered: ICT, Tourism, Engineering, Agriculture

Stakeholder engagement, cooperation

- MITD
- Government: Ministries & Parastatal Organisations
- Enterprises: Public & Private
- International Organisation

Efficiency of the initiative

- Programme Development by Research & Curriculum Development Division at the MITD Head Office.
- Implementation in MITD Training Centres.
- Policy design by Ministries

What challenges or barriers relate to implementation of the practice?

- Lack of appropriate curriculum & learning materials
- Shortage of qualified instructors/trainers in green skills
- Inadequate funding
- Insufficient information on green skills needs.

**A promising TVET practice
is...**

GOOD TVET PRACTICE

Criteria	Description	Justification	Indicators
1. <i>Impact</i>	a) Clearly promotes TVET locally or regionally b) Enhances employability c) Increases sustainable development	A good practice... <ul style="list-style-type: none"> - has clear and recorded impacts on TVET at local, national or regional level. - helps to solve an existing problem in local, national or regional TVET. 	1) Educational outcomes: <ul style="list-style-type: none"> - Increase in the number/quality of trainees - More TVET training offered by employers - Increase of skills in ICT and lifelong learning 2) Economic outcomes: <ul style="list-style-type: none"> - Increase in employability - Increase of funding for TVET 3) Social outcomes: <ul style="list-style-type: none"> - Enhanced positive attitude towards TVET - Equity enhanced (women, young adults, disadvantage groups) - Positive impact on sustainable development
2. <i>Innovation and creativity</i>	a) Introduces a new or adapted approach to TVET b) Profound changes in a TVET practice or system	<ul style="list-style-type: none"> - Profound transformations are called for TVET. This needs innovative new practices. - Current TVET situations and practices are not efficient in responding effectively to future challenges. New and efficient practices are needed. - Establishing and sharing knowledge of good innovative practices promote the role and the status of TVET. 	1) A practice that is applied for the first time in this TVET context, country or region 2) A practice that is either novel or adapted and new to the particular context or region
3. <i>Knowledge base</i>	a) Valid information of the setting provided b) Documentation of the implementation	<ul style="list-style-type: none"> - A successful practice or system needs to be based on trustworthy information. - Evidence of the practice and its impacts needs to be gathered and documented. - Practice that is informative has potential to be adapted and/or transferred to other TVET context. 	1) Background information, contexts, and justifications for establishing a good practice are reported. 2) The aims, processes, and impacts are recorded.
4. <i>Stakeholder engagement</i>	a) Ownership by stakeholders b) Cooperation between various players	<ul style="list-style-type: none"> - Success of a TVET practice depends on committed involvement of key stakeholders - Cooperation between stakeholders and various partners enhances implementation and clarifies the roles played in an initiative. 	1) Participation of key stakeholders in, e.g., <ul style="list-style-type: none"> - Decision making - Consultation - Funding - Dissemination 2) Active cooperation between relevant stakeholders.
5. <i>Monitoring and evaluation</i>	a) Monitoring of process b) Formal or informal assessment of results	<ul style="list-style-type: none"> - Monitoring increases identification of barriers and success indicators and helps in transferring a practice to other contexts. - Systematic or informal assessment of the impacts is necessary for ensuring the relevance and success of a good practice. - Self-evaluation strengthens establishment of a practice. 	1) A practice is tested in real, local or national, TVET settings. 2) Observations of activities are gathered during implementation of a practice. 3) Qualitative or quantitative evaluation put into effect by surveys, interviews, etc.
6. <i>Efficiency</i>	a) Efficient use of resources b) Good management	<ul style="list-style-type: none"> - A good practice is 'good value for money.' - An efficient and cost-effective practice responds to future TVET needs. - Proficient management of activities promotes flexibility in and success of an initiative. 	1) Human and financial resources are mapped out and organized for efficiency. 2) The input-output rate of costs is very good. 3) Activities are clearly structured and well managed.



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