



GREEN INDUSTRY



Green Industrial Skills for Sustainable Development

Risks and Challenges for Least Developed Countries

CONFERENCE REPORT

Leipzig, Germany
July 2013

**CONFERENCE ON GREEN INDUSTRIAL SKILLS FOR
SUSTAINABLE DEVELOPMENT**

Risks and Challenges for Least Developed Countries

***Leipzig, Germany
1 July 2013***

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1. Conference: Green Industrial Skills for Sustainable Development

1.1. Introduction

Today's world is faced with many challenges, including increasing competition, resource scarcity, growing energy demand, greater urbanization and mobility, increased production needs and economic uncertainty. These challenges present threats to our way of life, but they are also opportunities for development, in particular within the industry sector. The industry sector is on the cusp of radical change as a result of new technologies, globalization and environmental concerns. In order to seize these opportunities, it is necessary to respond to the industry's needs in terms of a highly qualified labor force and the development of green industrial skills for a sustainable world.

As a response to a call for promoting green industrial skills worldwide, the United Nations Industrial Development Organization (UNIDO), the German Federal Ministry of Economic Cooperation and Development (BMZ), WorldSkills Germany and the WorldSkills Foundation jointly organized the international conference "Green industrial skills for sustainable development". Taking advantage of Germany's role as host country of the 42nd WorldSkills Competition, the conference took place in the run-up to the event on 1 July 2013 in Leipzig, Germany. The main purpose of the conference was to address the challenge to develop greener economies in LDCs and to increase awareness on the importance of green skills development amongst in LDCs and countries worldwide and to promote greening skills for a better future of deprived young people and enhance their chance of employment and income. The conference provided a platform to share with counterparts and stakeholders from selected focus countries and from all over the world possible activities for the enhancement of green industrial skills for sustainable development and to sensitize public opinion and the decision making process, with a particular focus on least developed countries (LDCs).

The **WorldSkills Competition** is the biggest vocational education competition in the world where young people from presently 53 member countries/regions around the globe compete in dozens of different trade disciplines for the prestigious title of being the best in the world in their skills category. Participating professions include traditional and industry orientated trades. From 2 to 7 July 2013 Germany hosted approximately 1000 competitors as well as around 200,000 visitors at the Leipziger Messe.

This conference report is a descriptive account of inspiring exchanges and inputs at keynote addresses and panel discussions during the conference with selected panelists coming from different fields of expertise and by more than 200 conference participants from worldwide. The discussions reiterated that the greening of industries and corresponding skills to develop these have become core determinants of economic competitiveness and sustainable growth.

1.2. Partners

The conference brought together high level policy makers, professionals and trainers from the Ministries of Industries, Ministries of Vocational Training and Education and related national institutes from amongst others Ethiopia, Mozambique, Myanmar, Namibia, North Iraq/Kurdistan, South Sudan, Togo, Cote d'Ivoire and Indonesia, as well as representatives of the United Nations (UN) and other development agencies to jointly analyze how to enhance green industrial skills contributing to job sustainability and developing green economies. The panelists invited came from various technical fields, including academia, governments and private businesses as well as from UN affiliated agencies. Financial support to realize the event came from the German BMZ, the WorldSkills Foundation, and UNIDO. Further most crucial support with regard to technical input came from the International Labor Organization (ILO), the United Nations Educational, the Scientific and Cultural Organization International Centre for Technical and Vocational Education and Training (UNESCO-UNEVOC), FESTO Didactic AG, the Department of Higher Education and Training in South Africa, the Institute for Sustainable TVET & Management Services GmbH, Port Elisabeth College in South Africa, the Ministry for Education in Mozambique, WorldSkills International and Health Habitat.

2. Official opening and conference proceedings

2.1. Specific objectives of the conference

- ✓ Increase awareness on the importance of green industrial skills development amongst countries worldwide and finding ways to promote enhanced industrial skills for a better future of young people.
- ✓ Provide inputs to potential policy changes and national programmes in the area of education and skills development in the invited countries with ongoing pilot projects and examining the potential to develop similar approaches in other economies.
- ✓ Increase visibility of the WorldSkills Competitions amongst non-member countries/regions from LDCs, and use the opportunity to directly exchange knowledge and expertise of decision-makers from various fields.

2.2. Inauguration

The inauguration and welcoming session of the conference was honored with addresses by the following distinguished officials: Her Excellency (H.E.) Ms. Fatima Haram Acyl, African Union, Commissioner for Trade and Industry; Mr. Günter Nooke, Personal Representative of the German Chancellor for Africa; and Mr. Theodor Niehaus, President of WorldSkills Leipzig 2013.

H.E. Fatima Acyl noted in her presentation that the conference came at a very timely moment, welcoming to see a large group of African participants in this meeting with the anticipation of an even higher participation in future conferences in order to learn from debates on green skills and from demonstrations in hands-on training that the African continent needs urgently. This conference, she reiterated, was timely, because Africa and the world need to create more and new jobs: "We need to industrialize, and we need to do it right." She noted further that Germany is setting an example, referring to the much needed competitiveness Africa requires to develop to grow and to set the stage for greening their economy in every aspect.

Mr. Theodor Niehaus stated that, as a partner, WorldSkills Germany was very proud to start at WorldSkills Leipzig 2013 with a strong statement and process for sustainable skills development for employability, productivity and sustainability. He emphasized that he was highly welcoming the partnership with UNIDO and the German BMZ. He further emphasized that "The WorldSkills movement sends a strong message for political commitment and to the economy for higher recognition of skills development". He was particularly glad to see that vocational and technical skills development in the conference has been connected with the importance of sustainability and of the need to green our economies.

Mr. Günter Nooke welcomed the participants on behalf of the Federal Government of Germany and conveyed the best wishes by the German Chancellor H.E. Ms. Angela Merkel. He stressed that Germany strongly believes in its dual technical vocational training system: "It is proven that its hands-on approach and work-place relevance are a source of Germany's current economic strength," he noted, adding that higher education is not only the essential part of a country's education stream to be appreciated. A society and economy do not only need people that know how things could be done, but as well people with the technical skills to implement it. Mr. Nooke pointed out: that the German dual system stands for high quality in skills development. In adapted forms it can be a solution to the problem of a low educated workforce. Nevertheless, change won't happen overnight. Its structure developed very slowly. Looking at the current youth unemployment rate in Germany (which is relatively low at 8%) it does pay off at this stage.

In a personal video message sent as a highlight to the conference, H.E. Aung San Suu Kyi, Nobel Peace Prize Laureate and Chairperson of the National League for Democracy in Myanmar, shared her inspiring thoughts and words of hope with the conference participants. In her message, she put

a great premium on happiness in a safe and happy future for young people and provisions of skills that will enable them to do the kind of work that gives them satisfaction and that builds self-confidence. H.E. Aung San Suu Kyi stressed that there is nothing to compare with a young person who is content with the choice he or she has made in life and who is full of hope for the future to face whatever challenges that might emerge. H.E. Aung San Suu Kyi mentioned that a bigger, better, more wide-open world - where people will be able to acquire new skills for green growth and to meet new challenges is most relevant. She was particularly interested in the vocational training sector as according to her this will be an integral and crucial part of their future. It was noted that vocational training is in no way inferior to academic education. She mentioned her great respect for and desire to promote vocational training in Myanmar. The value of vocational training should be understood. H.E. Aung San Suu Kyi hoped that the WorldSkills competition would provide young people with the ability to show what they are capable of creating, and inventing in the way of green skills and will make people understand why vocational training should be highly regarded.

To see Aung San Suu Kyi video message download: <http://www.unido.org/news/press/leipzig-people.html>

2.3. Keynote speakers

In her keynote speech, Ms. Ursula Müller, Director General, Policy Issues and Political Governance of Bilateral Development Cooperation, Sectoral Affairs at the German BMZ, underlined the need to address the unsatisfactory youth employment situation in developing and emerging countries, which cannot sustain development worldwide. Technical and Vocational Education and Training (TVET) in Germany has a tradition of over 50 years and is a key area of German development cooperation. Ms. Müller states “TVET has played and will continue to play an important role – especially in the transformation to a green economy. Education and further training have developed into decisive factors of global competitiveness”. TVET for a green economy will play an important role, with emerging and developing countries as major growth centers of the future. Greening TVET is an innovative path that Germany follows jointly with their partners. In German development policy greening TVET is based on the following key features: cooperation between the public and private sectors, green occupational and competence standards, work-process-oriented training and professional and well qualified TVET teachers and trainers. To help ensure that green skills are integrated into vocational education, Germany supports its partners in incorporating relevant new subject matter into existing training and professional development courses, as well as in developing new training modules and courses for specific professions if demanded. Ms. Müller noted that while in the 21st century education provides solutions to skills for a sustainable environment and boosting productivity and therefore may create new jobs, a solid and top quality technical vocational education and training needs well-qualified teachers and instructors and companies that are committed to provide practical training and jobs. It is for that reason that the

German development cooperation seeks to collaborate closely with the private sector and businesses which provide focused training.

According to Mr. Chakib Jenane, Deputy Director of UNIDO's Agri-Business Development Branch, climate change is expected to clearly impact on the labor market in several ways. It is therefore important that we anticipate and develop green technologies and skills to help mitigate these effects, especially in LDCs. Mr. Jenane opens his deliberations with the key message that current production systems are unsustainable. He explains this further by saying that 1) Most industries use more materials and energy than their production requires, 2) Producers and consumers have adopted patterns of production/consumption with limited consideration and 3) Today's needs are jeopardizing the ability of future generations to meet theirs. Those challenges arising from current production systems, however, bring opportunities for green skills and green economic growth: global competition and best practices are leading enterprises to establish i) good industrial relations, ii) improve working conditions and iii) develop human resources. Furthermore, there is increasing pressure coming from major lending institutions and investors to adapt standards on environmental concerns and social issues. It is crucial that the labor force is getting prepared for the new skills requirement inherent in green jobs. Mr. Jenane stresses moreover, that any skills response strategies have to be incorporated into large policy programmes. As a UNIDO representative he strongly believed that climate change is already leading to changes in the labor force. There are important developments in new technologies, which need to be imparted as soon as possible and integrated in the industrial sectors. Mr. Jenane emphasized that this conference is an important step to start with concrete actions.

Adding to Mr. Jenane's keynote address, Mr. Marcos Pontes, UNIDO Goodwill Ambassador, delivered an inspiring and lively account of his personal journey from basic education and professional skills education to become Brazil's first and so far only astronaut that went into space.

To view Mr. Jenane's keynote address and Mr. Pontes' slides:

<http://www.unido.org/news/press/leipzig-people.html>

Ms. Olga Strietska-Illina, representing the ILO, described in her keynote presentation that the development of technical skills contributes to job creation, enhances productivity in existing jobs and shifts jobs towards more sustainable ways of production and consumption. Technical training helps people adjust to changes and to better prepare for environmental shocks and labor market transitions. Her presentation supports the notion that skills training and education can act as a driver of change and innovation in its own right by spurring investment in new green economic opportunities. She explained that in the light of greening economies not all occupations will be affected by changes in skill requirements. Certain jobs will completely disappear and other occupations will require new ways of working. She provided the following key policy messages for greening skills in LDCs: **1)** Coordinate skills and environmental economic and social concerns in

national development policies, **2)** provide investments in labor intensive projects and infrastructure development, **3)** Boost productivity and sustainability of farming through better skills, **4)** Prioritize training and entrepreneurship opportunities for disadvantaged groups, **5)** Expand sustainable practices and use of new green technologies through peer learning, **6)** Mobilize high-skilled nationals in the Diaspora to contribute to green transitions, **7)** Enable trainers and teachers to keep skills for green jobs up to date, **8)** Improve relevance of skills supply to the labor market, **9)** Use skills and awareness raising to promote green change.

Ms. Strietska-Ilina keynote address download: <http://www.unido.org/news/press/leipzig-people.html>

3. Summary of the conference proceedings and panel presentations

In its afternoon session, the conference provided three different panels, organized by the three partnering organizations, UNIDO, BMZ and WorldSkills. Those panels aimed at discussing specifically: 1) Policies and strategies to enhance industrial skills, 2) Greening skills for sustainable development, 3) Technical assistance and the role of the United Nations affiliated organizations, 4) The role of the private sector and practical solutions and 5) experiences from selected LDCs and developing countries. Those panels were delivered by technical presentations, followed by panel discussions, with panelists coming from various fields of work in academia, the public and the private sector as well as non-profit and UN affiliated organizations. A descriptive summary of the various panel discussions is provided below. Please refer to the conference agenda and speaker's biographies in the annex of this document.

3.1. Panel 1: UNIDO - Green Industry Initiative

Skills Development in the Context of Greening Industries

Ms. Claudia Linke-Heep, Industrial Development Officer, UNIDO

The operational solution of the green industry concept is sustainable consumption and production through sustained action in the manufacturing and related sectors. The focus on the manufacturing industry stems from the industrial sectors with one-third consumption of all global energy, its large contributions to CO₂ emissions and equally large consumption of water and raw materials. Overall, the challenge is to decouple growth from the use and consumption of resources and energy, i.e. do more with less in production and services. UNIDO's way to address the above is the "greening" of existing industries, while also helping to create new green industries, reduce the use of materials, energy and water, reduce waste, recycle, introduce renewable energy solutions, and furthermore bring out new product designs through "upcycling".

Through the “Green Industry Platform”¹ UNIDO has taken two major steps in helping to promote green industries. Firstly, UNIDO has created the UNIDO Institute, which at one level actively promotes research and delivers hands-on courses aimed at changing policies. Secondly, for countries interested in pursuing resource-efficient, low-carbon economies, the so called Partnership for Action on Green Economy (PAGE)² has been created. This initiative delivers training tools and research on green economy solutions especially for developing economies. In addition, UNIDO also promotes green industry through its national cleaner production centres³, presently established in 47 countries; it delivers online toolkits for small and medium sized enterprises (SMEs) for resource conscious production and the energy efficiency; training for cleaner production. The organization introduces new courses at the technical vocational training and grassroots levels on greening value chain production to support green job promotion.

Ms. Linke-Heep presentation download: <http://www.unido.org/news/press/leipzig-people.html>

Global Greening Skills Mechanisms and Policy – The Industry Perspective

Nader Imani, Head of Global Education, FESTO Didactic

Demonstrating how job opportunities within renewable energy have grown exponentially since the late 1990s and which growing trends are envisaged in the foreseeable future, Mr. Nader Imani stressed the pressing need to educate operators at both the macro level of society, such as public administrators, professionals at ministries and policy makers at municipalities, including utility suppliers. This will have to start at the schools with providing basic knowledge and later green technical skills. In response to the challenges ahead, FESTO has introduced training sets under the scope of so called Environment Discovery Systems (EDS)⁴. Considering “Green skilling education: today guarantees to shape our green economic growth tomorrow”- the EDS is particularly relevant for the vocational education and for academic technical education levels. The EDS uses a holistic approach that includes energy efficiency, renewable energy, e-mobility as well as water management and waste water management. Mr. Imani presented his organization’s smart solutions within the water circuit cycle for energy optimization modern water and wastewater treatment plants.

Mr. Nader Imani presentation download: <http://www.unido.org/news/press/leipzig-people.html>

¹ <http://www.greenindustryplatform.org/>

² <http://www.unep.org/greeneconomy/PAGE/tabid/105854/language/en-US/Default.aspx>

³ <http://www.unido.org/cp.html>

⁴ <http://www.festo-didactic.com/int-en/learning-systems/environmental-discovery-system-eds/?fbid=aW50LmVuLjU1Ny4xNy4yMC4xMzly>

The Role of UNEVOC in Advancing Greening TVET

Mr. Shyamal Majumdar, Head of UNESCO-UNEVOC

With a three-pronged approach to 1) develop the institutional framework, 2) promote national policy level, and through 3) international cooperation, Mr. Majumdar presented the UNESCO-UNEVOC strategic initiative of Greening TVET. This initiative is a network, which comprises more than 200 vocational training centers, spread over 168 countries worldwide. A network, set up to support the United Nations Decade of Education for Sustainable Development (2005-2014), that promotes the UNESCO-UNEVOC initiatives with awareness raising and advocacy; capacity development; research and project development; knowledge sharing, and providing access to information on education for sustainable development information. Specifically at TVET center level the activities promote green campuses, green curricula, development of green communities, green research, and promotion of a "green culture". This is achieved through incorporation and development of demand driven curricula, training of trainers, project based learning, development of appropriate learning environments, promoting environmental awareness, and advocating for life-long learning systems approaches. Mr. Majumdar noted that the development of an international greening TVET framework, the development of resource materials and capacity building would support the conference's objectives in particular aiming at LDCs. He makes a very strong case that TVET is "The Master Key" that can alleviate poverty, improve the quality of life for all, and help achieve sustainable development", and so it must be at "centre stage".

Mr. Majumdar presentation download: <http://www.unido.org/news/press/leipzig-people.html>

3.2. Panel 2: BMZ/GIZ - Skills development for renewable energy

Skills Development for Renewable Energy. Green TVET - A motor for Sustainable Development

Klaus-Dieter Mertineit, Managing Director, Institute for Sustainable TVET and Management Services, Germany

Mr. Mertineit explained the growth in employment opportunities worldwide within renewable energy technologies. He outlined the German approach to transforming TVET to meet this new employment opportunity. In Germany the focus is more on greening the whole economy than promoting a separated sector. Greening the economy as well as green skills development is seen in the context of an ordinary adaptation to technological and economic change. In Germany, it is consensus of industry, organized labour and the state, which are the main parties involved in Germany's "dual training system", that every occupation has an environmental relevance. Thus, the process of greening the economy is viewed as a close collaboration between social partners. So every skilled worker should have at least basic green skills. Because of the prominent position of the economy in relation to TVET, the technological and economic changes in Germany have always

been reflected relatively quickly in TVET systems. Instead of always developing new occupations, the integration of new requirements into already existing occupations has been preferred (setting new emphases, adding qualifications).. This way to address the integration of green skills in vocational training can easily be adopted in other countries – emerging countries as well as developing countries. Assisting developing countries to ensure that green skills are imparted in technical and vocational education and training has become more and more important in the last years. Key to the transformation to a green economy is through green skills development. It is for that reason that the BMZ and its implementing agency Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH integrate green issues in their worldwide TVET programs. Examples of these initiatives stem from countries in the far East (Vietnam and Indonesia), Africa (Egypt, South Africa and Mozambique), South America (Brazil and Peru) and Eastern Europe (Ukraine) where cooperation has been established with Germany.

Mr. Mertineit presentation download: <http://www.unido.org/news/press/leipzig-people.html>

Green Skills Development – Port Elizabeth TVET College

Brian Mackenzie, Institutional Development, Engineering Department, Port Elizabeth College, South Africa

Highlighting developments in South Africa, Mr. Mackenzie noted that there are a number of renewable energy installations as well as new projects under development in the poor rural neighborhoods. Key to South Africa’s future renewable energy development is the technical training and education of maintenance and installation engineers and technicians. The Port Elizabeth College for Technical and Vocational Education and Training has taken initiatives and embarked on collaboration with German Development Aid for the development of training courses in renewable technologies. Initial technician courses comprise solar water heating and heat pumps, photovoltaic systems, and wind turbine technology. The courses is oriented along the German dual TVET training system and lodged within the South African TVET qualifications framework. Future advanced level courses are being developed, which focus on elements such as customer advisory services, return on investment calculations, as well as sizing and planning of mixed systems, e.g. wind and grid power systems. Development of these new training courses is showing a spillover effect and has attracted collaboration with a number of other like-minded TVET institutions in South Africa. The first initiatives have involved exposure of top management of TVET institutions to renewable energy solutions and technologies, initiation of a greening of colleges initiative, further development of staff and intensive lecturers on specific renewable energy technologies. Mr. Mackenzie illustrated how experiences from the development of renewable energy training courses in South Africa are transferable through partnerships and “buy-ins” from stakeholders.

Mr. Mackenzie presentation download: <http://www.unido.org/news/press/leipzig-people.html>

Green Skills Development in Africa - Experiences from Mozambique

H.E. Mrs. Leda Hugo, Vice-Minister for Education, Mozambique

H.E. Hugo presented an overview of Mozambique's current and future energy needs, challenges and opportunities. Particularly for biomass, hydroelectric power generation and solar power the country has a high potential. These resources are used in addition to the traditional carbon based energy forms, such as coal and natural gas fields. The energy needs are also enormous as only 23% of the population has access to power from the grid. In order to push forward for the development of renewable energy solutions the government has taken significant policy steps. Among these are the renewable energy resources as the second most important area for development in the national energy strategy; the development of a "feed-in-tariff" system for renewable energies; creation of a national energy fund for production and supply of energy at lower cost; and mobilization of national and foreign investments in biomass, hydro, solar, wind, ocean and geothermal energies. H.E. Hugo stressed that all new green sectors will need technical skills and a revision of occupational profiles and probably the development of new ones. Within the TVET system, initiatives are underway for greening of the curricula and schools. The identification of green skills in existing occupations; development of new green skills specializations; increased training of teachers, technicians and communities; development of short-term occupational training for entrepreneurs. As to the development of the institutional capacities for specification, maintenance and repair of energy equipment and systems measures are being put in place. Similarly research on renewable energy demand, including development of new courses at university level, has been conducted. H.E. Hugo further explained that Mozambique collaborates closely with Germany in these developments and initiatives. There is a political will to change at several levels of government with motivating policies, to inter alia support the private sector.

Ms. Hugo presentation download: <http://www.unido.org/news/press/leipzig-people.html>

3.3. Panel 3: WorldSkills Organizations - The WorldSkills competitions and how to sustain the industry through green skills competition development

WorldSkills mission promoting green skills and TVET

Ms. Elfi Klumpp, WorldSkills Germany – Tommy Hellstroem, WorldSkills Foundation

As a leading organization for VET and providing an international platform for showcasing and inspiring skill excellence and promoting skills development, WorldSkills International is globally engaging the vocational education and training sector. The skills competitions are the core of WorldSkills activities.

Ms. Klumpp and Mr. Hellstroem explained that WorldSkills International, through the cooperative action of its Member organizations and stakeholders, is in a unique position to foster green skills development for green job creation. Hundreds of thousands of young professionals participate in national, regional and international competitions that generate motivation and enormous interest from governments, private sector stakeholders, teachers, instructors and managers to address the demands of the economy. Benchmarking skills, exchanging knowledge and joining forces are real opportunities for countries and regions. And as to the skills needed for greening the economy, the synergy between WorldSkills International and its Member organizations, e.g. WorldSkills Germany is crucial.

The global network of WorldSkills is a hub to develop industrial skills through quality vocational education and technical training. The WorldSkills Foundation's current strategy is to improve communication in order to fully support a "green attitude". A full-fledged awareness creation programme is crucial. As to the need to benchmark a country's capacities in terms of its national training system, to enable them to participate in competitions, Mr. Hellstroem stressed that this is still a challenge to get all relevant data. WorldSkills International is the parent brand of the WorldSkills Movement worldwide; the WorldSkills Foundation develops and advocates skills projects of the WorldSkills organizations between the WorldSkills Competitions. There exist several regional organizations, which are WorldSkills Europe, Americas, Gulf Cooperation Council (GCC) and Association of South East Asian Nations (ASEAN), which regularly conduct regional skill competitions with a regional focus but strongly linked strategically and technically to WorldSkills International. As one of the strategies of the WorldSkills Foundation is to assist countries on the African continent, it was noted that there is currently a proactive approach to assist LDCs and to enlarge the African Member countries. WorldSkills openly encourages and promotes women to be integrated into training programmes and skills training with new technologies. Creating interest among women in particularly green skill development is a universal challenge and therein underlies a continuous process. Ms. Klumpp explained WorldSkills Germany's approach to green skills competitions in the environmental sector (new energies and water technology), involving latest technical equipment while presenting the German Dual Training Model as a possible solution for the enhancement of workplace skills

Ms. Klumpp and Mr. Hellstroem presentation download:

<http://www.unido.org/news/press/leipzig-people.html>

Water sanitation project in Nepal: a practical project

Mr. Paul Pholerus, Health Habitat

Mr. Pholerus opened his audio presentation with a description of the nine practices for healthy living, which are 1) washing, 2) clothes, 3) wastewater, 4) nutrition, 5) crowding, 6) animals, 7) dust, 8) temperature and 9) injury, as indicators for the health standards in housing arrangements. With the example of The Nepal Sanitation Programme which cooperates with local and international partners since 2007, Mr. Pholerus explained how skills can make a difference in people's daily life. At the beginning of the programme in 2007, aiming at reducing the high occurrence of gut infections in a village with 600 inhabitants but no single toilet or waste water system, immediate action was required. With the help of local partners and their expertise the organization developed two prototype toilets and waste and water systems (modern human and animal biogas digester) which progressed into several hundred similar actions in other remote villages of Nepal.

Mr. Pholerus emphasized the important interconnection between the input coming from Health Habitat side (programme development, technical expertise and quality assurance) and the local management, material and resources and local skills coming from Nepal. He further stressed that complementary skills and resources to improve the existing can be contributed by further organizations involved, such as the WorldSkills Foundation. Skills that that can be replicated and remain in the country when the trainers from abroad leave.

Mr. Paul Pholerus full audio message can be downloaded on:

<http://www.unido.org/news/press/leipzig-people.html>

4. Closing of the conference

4.1. Policy and programme recommendations for the way forward

Overall, the conference provided new knowledge on policies and technologies to enhance green skills for jobs relevant to spur the development of a green economy. There are major challenges related to the need for improving training methodologies, training systems and new technologies, in order to increase the level of skills development and vocational training (as was observed during the 42nd WorldSkills Competition and exhibitions). Competitiveness and excellence in industrial human resources development programmes across sectors and "greening skills" was considered a priority for participating countries as their agenda for change.

As to strategies discussed, with relevance to the development of a "green economy" in LDCs, for sustainable resource management, productivity and resource efficiency in industry and business development, the following recommendations are provided below, which requires focused attention from government agencies, the private sector and development partners:

1. Programmes and initiatives to assist partners in LDCs to develop awareness and changes in perception to be combined with concrete action for greening their economies. Environmental literacy programmes with schools, educational institutions, the media and community programmes can provide a start.
2. LDCs and other participating countries were called upon to develop technical and financial support mechanisms to set up a system to sustain and develop their industrial and technical training system. Lessons learned from the “Dual Training System “, as applied in Germany, could be used as a basis, but cannot be transferred 1:1. Moreover, the parameters of the “Dual Training System, which is market driven as being applied and regularly monitored in Germany, can be reviewed on its applicability. Adjustments need to be made for a demand oriented skills training approach for LDCs and other interested countries. A green skills development approach and management of green job creation would need to be combined and integrated in a dual training approach. The interventions that are on-going in a number of countries (i.e. South Africa, Mozambique) may provide a basis to develop “promising practices” for LDCs and to assist in monitoring impact.
3. New occupations and related job profiles need to be (further) developed for prioritized industrial sectors in the existing labor market, when the demand is indicated. Integration of resource consumption approaches in the economy as a whole, as well as in manufacture and businesses would need improved knowledge and resource management.
4. Sustained contributions and support from social partners such as the trade unions, workers associations, private sector agencies, business associations, employer’s organizations, are important pre-conditions to develop high quality skills to support green industries and related job profiles. The enabling environment to be developed within this context would require strong political will from respective governments with good inter-governmental coordination and the support from social and development partners.
5. Considering that in many LDCs the existing vocational and technical skills basis is rather weak and training mostly supply driven and without a lot of practical training and with challenging conditions for technical training, skills development approaches and content would need to be brought in line with the demands and competencies required by environmentally sustainable industries. The alignment of skills training, development and integration of a certain set of standards and strengthening the system of education and vocational training can also be considered an on-going task for social partners.
6. The TVET focus should be to sustain socio-economic developments, productivity and efficiency and related skills development for greening the sectors in both social and

environmental terms. Entrepreneurship development programmes would need to be analyzed to integrate the above in training packages.

7. South-South cooperation programmes, supporting the rural development agenda in LDCs is to be considered an important approach to exchange of knowledge and technical know-how. The areas related to rural electrification, communication, local renewable energy resources, bio-mass processing and resources for hydro power for rural electrification should be highlighted as to their new job creation potential.
8. The gender aspect should be given due attention. Linkages are to be built with ongoing programmes such as the “Women Entrepreneurship Development Programmes”(WED)⁵ to support the integration of women in green jobs and synergies with new programmes. There are ongoing WED programmes already working in technical sectors which are focusing on entrepreneurship based on recycling of waste material and value added production. This could be considered a practical cost effective way to integrate environmental aspects in training and small business development.

The ILO draft policy paper “Green economies of least developed countries: the role of skills and training” presented at the conference will be published later this year. All conference presentations and video messages can be downloaded through:

<http://www.unido.org/news/press/leipzig-people.html>

4.2. Commitments by UNIDO, BMZ, WorldSkills Germany and WorldSkills Foundation

1. Working with other governments and various national institutions involved in the area of technical and vocational education and training, the UNIDO, BMZ, WorldSkills Germany and WorldSkills Foundation will continue to support the formulation, realization and implementation of related projects in LDCs.
2. UNIDO will continue to support ministries of industries, trade and commerce in LDCs in their implementation of greening of existing industries, while helping the creation of new green industries and the promotion of the skills required.
3. BMZ will continue to support ministries of education and vocational training in LDCs to strengthen their organizational capacities and to enhance green skills development in the national legislations.

⁵ <http://www.ilo.org/empent/areas/womens-entrepreneurship-development-wed/lang--en/index.htm>

4. As part of the WorldSkills organization and network, WorldSkills Germany and WorldSkills Foundation will continue to promote skills development through the organization of skills competitions and the support to related technical projects in developing countries with view to sustainability.
5. Following up on the event in Leipzig, the partners will continue to seek synergies and ways to cooperate in the area of green industrial skills development and related activities in LDCs, to continue raising awareness on the importance of a strong work force in green economies, for a better future for our young generation.

Annex I. Conference agenda

SUNDAY, 30 JUNE 2013		
Arrival and Hotel Check-In		
MONDAY, 1 JULY 2013		
PLENARY SESSION	8.00 – 9:30	Registration / Welcome desk
	9.30 – 10.00	<p>Welcome Address</p> <ul style="list-style-type: none"> Günter NOOKE, German Chancellor's G8 Personal Representative for Africa, Federal Ministry for Economic Cooperation and Development H.E. Fatima Haram ACYL, Commissioner for Trade and Industry, African Union Theodor NIEHAUS, President WorldSkills Leipzig 2013, Board Chair WorldSkills Germany, Board Member WorldSkills Foundation <p>Video Message from Nobel Peace Prize Laureate, H.E. Daw Aung San Suu Kyi, Chairperson National League for Democracy in Myanmar</p>
	10:00 – 11:45	<p>Keynote Address</p> <p>“Skills for a Green Economy” Ursula MÜLLER, Federal Ministry for Economic Cooperation and Development (BMZ)</p> <p>“Green Industrial Skills for a Better World” Chakib JENANE, United Nations Industrial Development Organization (UNIDO) Marcos PONTES, 1st Astronaut Brazil & UNIDO Goodwill Ambassador</p> <p>“The Role of Skills and Training in Greening Economies of Least Developed Countries” Olga STRIETSKA-ILINA, International Labor Organization (ILO)</p> <p>Discussion</p>
	11:45-13:00	Lunch Break
PANELS	13:00 – 14:30	<p>Panel 1: Green Industry Initiative UNIDO Chair: H.E. Moussa DOSSO, Minister for Vocational Training, Cote d'Ivoire</p> <p>As we enter the 21st century, humanity faces enormous challenges in the sustainability of our current lifestyles and systems. There are a number of critical global environmental issues including energy, pollution, transportation, agriculture, land use, construction, water access and use, and ecological destruction. Every day, engineers, technicians and scientists make technical decisions which have a significant impact on the environment. These decisions can either move us in the direction of sustainability or contribute to the growing problems. This panel will discuss how green industrial skills can be defined and how green practices and technology can help to move the products, processes, and systems developed by society towards sustainability.</p> <p>Topics:</p> <p>Claudia LINKE-HEEP, UNIDO – “Skills development in the context of greening industries”</p> <p>Shyamal MAJUMDAR, United Nations Educational, Scientific and Cultural Organization (UNESCO) - International Centre for Technical and Vocational Education and Training (UNEVOC) - “The role of technical vocational education and training (TVET) in advancing greening industry”</p> <p>Nader IMANI, FESTO AG & Co. – “Global greening skills mechanisms & policy: the industry perspective”</p> <p>Discussion</p>
	14:30-14:45	Break

PANELS	14:45 – 16:15	<p>Panel 2: Skills development for renewable energy BMZ/GIZ Chair: Aruna SINGH, Director Curriculum Development and Support, Department of Higher Education and Training, South Africa</p> <p>This panel aims to set additional impulses for the discussion and to introduce and discuss experiences with the implementation of green skills in developing countries. The introductory input gives an overview about national and international trends and challenges concerning green jobs, green skills development and employment and focuses on renewable energy efficiency. Furthermore it outlines what role TVET can play for achieving sustainable development. To strengthen the South-South exchange and cooperation, representatives from Mozambique and South Africa are going to share their experiences with us regarding green skills development for renewable energy. They will also discuss the possibilities and limitations of the transferability of their approaches.</p> <p>Topics:</p> <p>Klaus-Dieter MERTINEIT, Institute for Sustainable TVET & Management Services GmbH, Germany - “Green TVET: a motor for sustainable development”</p> <p>Brian MACKENZIE, Institutional Development Port Elisabeth College, South Africa - H.E. Leda HUGO, Vice Minister for Education, Mozambique - “Political TVET frameworks in selected BMZ partner countries”</p> <p>Discussion</p>
	16:15-16:30	Break
	16:30 – 18:00	<p>Panel 3: The WorldSkills competitions and how to sustain the industry through green skills competition development WorldSkills Organizations Chair: Laurent THIBAUT, Vice Chair WorldSkills Foundation</p> <p>Education and training is the key entry point to the world of work, to prosperity and social cohesion in societies. WorldSkills, as the unique leading global organization, promotes vocational education and skills excellence by the transmission means of skills competitions through its members and industry partners. Today’s worldwide ambition of transition to green economies and sustainable societies and thus the rapidly changing development of modern technologies in the environmental industry require revision of skills needs and adaption of the labor market. The WorldSkills Movement takes those developments into consideration by greening skills competition disciplines in industry and craftsmanship and the introduction of green skills disciplines in the environmental sector, i.e. water/waste water technology, renewable energies or electro mobility.</p> <p>Topics:</p> <p>Elfi KLUMPP, WorldSkills Germany - Tommy HELLSTROEM, WorldSkills Foundation - “WorldSkills mission promoting green skills and TVET”</p> <p>Paul PHOLERUS, Health Habitat – “Water sanitation project in Nepal: a practical project” (audio presentation)</p> <p>Discussion</p>
	18:00 – 18:15	Closing of Conference
	19:00 – 20:30	Reception of the Mayor at Leipzig Townhall (registration required)

Conference language: English, with translation into French and Portuguese

Annex II. Speaker's biographies



Günter NOOKE

German Chancellor's G8 Representative for Africa, Federal Ministry for Economic Cooperation and Development (BMZ)

Besides his function as Chancellor Angela Merkel's G8 Representative on all Africa related topics, Mr. Nooke is the Federal Government Commissioner for Human Rights Policy and Humanitarian Aid. Between 1998 and 2005, Mr. Nooke was Member of the German Bundestag, Spokesperson of the CDU/CSU Parliamentary Group on culture and the media; Spokesperson and Chair of the working group on culture in Germany's Study Commission; Spokesperson of the CDU Bundestag members from Eastern Germany and Deputy Chair of the CDU/CSU Parliamentary Group. Mr. Nooke holds graduate and post-graduate degrees in Medical Physics and Medicine.



H.E. Fatima Haram ACYL

Commissioner for Trade and Industry, African Union

Before becoming the African Union's Commissioner for Trade and Industry, H.E. Acyl served in various capacities of the public and private sector, including as Deputy Director General of the Agricultural Bank of Chad and Interim Project Manager and Director of Administration & Finance of the Lake Chad Basin Commission. Ms. Acyl worked in the financial sector, as Audit Manager of CROWECHIZEK, LLC, Financial and Advisory Services in the USA; Manager of PricewaterhouseCoopers, LLP and Global Management Solution in Chicago/USA. H.E. Acyl holds a Master and BS degrees in Business Administration from Xavier University of Cincinnati/USA and University of Moncton, New Brunswick/Canada.



Theodor NIEHAUS

President WorldSkills Leipzig 2013, Board Chair WorldSkills Germany, Board Member WorldSkills Foundation

Mr. Niehaus holds a PhD in Mechanical Engineering from the University of Aachen (RWTH). In his professional career, he held various management positions at RWTH University and at reputable companies such as IBM. Since 18 years he is General Manager of Festo Didactic. Already in the early 90s, he realized the importance and potential of partnerships between the WorldSkills Member Organisations around the globe and the industry. He substantially contributed in building up relations with skills & industry development project partners worldwide. In 2010, he substantially contributed to the set-up of the WorldSkills Foundation. For many years now, he has been strongly involved in numerous WorldSkills activities contributing to the achievement of the WorldSkills Movement around the globe.



H.E. Daw Aung San SUU KYI (video message)

Nobel Peace Prize Laureate, Chairperson National League for Democracy in Myanmar

Aung San Suu Kyi is opposition leader in Myanmar and the chairperson of the National League for Democracy (NLD). Since she began her political involvement in her country, H.E. Suu Kyi has been placed under house arrest and detention for more than 10 years on numerous occasions, preventing her to meet with political party supporters and international visitors. Prior to her political career, H.E. Suu Kyi obtained a degree in Politics in New Delhi in 1964 and continued her education obtaining degrees in Philosophy, Politics and Economics at St. Hughes College, Oxford (UK). H.E. Suu Kyi holds several prizes, and was awarded the Nobel Peace Prize in 1991. This year, H.E. Suu Kyi officially announced her intention to run for Myanmar's presidency in 2015.



Ursula MUELLER

Director General for Policy Issues and Political Governance of Bilateral Development Cooperation; Sectoral Affairs in the Federal Ministry for Economic Cooperation and Development (BMZ)

Starting her professional career in the Federal Foreign Office in 1980, Ms. Müller had been appointed subsequently to a wide range of responsible positions and tasks in the diplomatic field, including at the German Embassy in Daressalaam/Tanzania from 1981 to 1985, as Vice-Consul in the Consulate-General in Sydney (Australia) from 1986 to 1989, Desk Officer in the Political Department (1989-91) and in the UN Department (1992-95) in the Foreign Office, Minister Counsellor in the Political Department in the German Embassy Washington from 2001 to 2006. In 2006, she was appointed Head of Division of the Humanitarian Task Force in the UN Department and in 2010, she became Deputy Director General for External Economic Promotion and Development. Ms. Müller holds Master's Degrees in Economics and in Public Administration.



Chakib JENANE

Chief, Agro-industry Technology Unit and Deputy-Director Agri-business Development Branch, United Nations Industrial Development Organization (UNIDO)

Having joined UNIDO in 2001, Mr. Jenane is currently holding the position of Chief of the Agro-Industry Technology Unit and Deputy Branch Director in the Agri-Business Development Branch. He is responsible for projects formulation and implementation in several developing countries in Africa and the MENA region. Before joining UNIDO, he was a Professor at the Department of Agricultural Engineering, Institute of Agronomy and Veterinary Medicine in Rabat (Morocco). In previous positions, Mr. Jenane was a visiting professor at the University of Nebraska-Lincoln and the Institut fuer Landtechnik in Bonn (Germany).



Marcos PONTES

Astronaut & UNIDO Goodwill Ambassador

Mr. Pontes is the first professional Brazilian astronaut to go into space. Given his extraordinary life story, Mr. Pontes became Ambassador of the WorldSkills Organisation in 2008 and Goodwill Ambassador of UNIDO in 2011, a position given to people that have done extraordinary work for the promotion of development throughout the world. In this position, Mr. Pontes is invited to key events, meetings and activities within WorldSkills International and UNIDO and outside to share his experience, knowledge and passion for skills.



Olga STRIETSKA-ILINA

Specialist in Skills Policies and Systems in International Labour Office (ILO), Skills and Employability Department

Ms. Strietska-Ilina is a lead person for the global research project "Skills for Green Jobs" conducted by ILO in cooperation with the European Centre for the Development of Vocational Training (CEDEFOP). Furthermore she managed the European Commission-ILO joint project on occupational and skill needs in Green Building and Renewable Energy and on methods of skill needs identification for the low carbon economy. Before joining ILO, Ms. Strietska-Ilina worked for CEDEFOP as a specialist on forecasting skills needs. Between 1996 and 2003, she was a head of the Czech National Observatory of Employment and Training. Ms. Strietska-Ilina holds degrees in Sociology, History, Social Anthropology, Economics and Political Sciences.



CHAIR: H.E. Moussa DOSSO

Minister of Employment, Social Affairs and Vocational Training, Cote d'Ivoire

H.E. Minister Dosso holds a graduate Accounting and Finance degree of the prestigious Conservatoire National des Arts et Metiers in Paris. Previously, Mr. Dosso was Deputy Managing Director in charge of the Investment Promotion Centre in Côte d'Ivoire (CEPICI) as well as Director of Health Promotion and Investments. Joining the government in 2003 as Minister of Handicrafts, he held positions including Minister of Commerce, Minister of Technical Education and Vocational Training, Minister of Industry and Private Sector Promotion and Minister of Industry, which led to his current position as Minister of Employment, Social Affairs and Vocational Training.



Claudia LINKE-HEEP

Industrial Development Officer, United Nations Industrial Development Organization (UNIDO)

An Economist and Sinologist by training, Ms. Linke-Heep has worked for UNIDO for over 15 years in different capacities, including Energy and Climate Change, trade capacity building and private sector development. Ms. Linke-Heep is now coordinating the Green Industry Initiative and Platform in the Environmental Management Branch. Prior to working at UNIDO Ms. Linke-Heep worked in the private sector for a few years.



Shyamal MAJUMDAR

Head, UNESCO-UNEVOC United Nations Educational, Scientific and Cultural Organization (UNESCO) - UNEVOC International Centre for Technical and Vocational Education and Training

From 2007 till his appointment as Head of UNESCO-UNEVOC, Mr. Majumdar was assigned as Director General of the Colombo Plan Staff College for Technician Education (CPSC), Manila, Philippines. Mr. Majumdar also used to be the Vice President of The International Vocational Education and Training Association and was Professor at the National Institute of Technical Teachers Training and Research (NITTTR) in Kolkata, India. He holds a Bachelor's degree in Electronics and Communication Engineering, a Master's degree in Telecommunications Engineering and a PhD in Educational Computing.



Nader IMANI

Head of Global Education, FESTO

Holds a PhD in Mechanical Engineering from the Ecole Centrale des Nantes, France, and is currently Head of Global Education at Festo Didactic, where he is responsible for design, development and production of education products and training solutions in the field of automation technology. Mr. Imani co-manages 60 company-subsiidiaries and over 30 representatives worldwide and cooperates with national authorities in charge of education and international bi-lateral and multilateral developing agencies to define labor market demand driven education programs.



CHAIR: Aruna SINGH

Director of VCET, National Department for Higher Education and Training in South Africa

Ms. Singh is the Director for Curriculum Development and Support in the Vocational and Continuing Education and Training (VCET) Unit at the National Department for Higher Education and Training in South Africa. Although she started out in schools education in 1999, she moved into the further education and training colleges sector, which serves as the primary institutional delivery mode for vocational education in the country. She is actively involved in curriculum development and review, educator development and quality improvement in teaching and learning in the 264 sites of vocational education and training across South Africa.



Klaus-Dieter MERTINEIT

Managing Director, Institute for Sustainable TVET and Management Services GmbH

Mr. Mertineit is heading the Institute for Sustainable TVET and Management Services GmbH and since 2007 he is a lecturer at the Institute for Vocational and Economic Education of Leuphana University Lüneburg (Germany). His work focuses on TVET for sustainable development and TVET research, as well as on quality management and organization development, particularly in TVET institutions. Mr. Mertineit has a long experience in international TVET cooperation and is currently involved in GIZ programmes in South Africa and Vietnam.



Brian MACKENZIE

Institutional Development, Engineering Department, Port Elizabeth College, South Africa

Brian MacKenzie was the Head of Department and Vice Principal for the Engineering Department and holds the current post of Registrar: Institutional Development which deals with occupational programmes linked to skills programmes and training related to industry needs. With assistance from GIZ, Mr. MacKenzie is currently implementing a Renewable Energy Training. He is a member of the Eastern Cape Provincial Green Skills Forum and the Renewable Energy Task Team in the Nelson Mandela Bay. Mr. MacKenzie completed an apprenticeship as a diesel electric fitter, obtained higher diplomas at the Port Elizabeth Technikon and the University South Africa.



H.E. Leda HUGO

Vice-Minister Education, Mozambique

Ms. Leda Hugo is the Vice Minister for Education in Mozambique in charge of TVET and Distance Learning Education, aiming at a fast expansion of TVET in Mozambique, the implementation of new professional qualifications and the integration of technical education and vocational training into a new national qualifications framework. As a former lecturer and the Pedagogical Director of the EUM, Mozambique, the Head of the Department of Agriculture Engineering and the Dean of the Agricultural Courses in that University, she looks back at a long-standing experience on curricula reforms, teachers training and implementation of a quality management system in that university.



CHAIR: Laurent THIBAULT
Vice Chair WorldSkills Foundation

Mr. Thibault held a number of positions at the Canadian Manufacturers' Association, including President for 6 years. Mr. Thibault then co-chaired a national training organization. In 1995, he started his own practice in wealth management for private clients with the firm of Assante Capital Management Ltd. Now retired, Mr. Thibault was one of the founders of Skills Canada in the early 1990's, where he still serves on the Board of Directors, and helped guide its growth to an important national institution. Mr. Thibault was Canada's official delegate to WorldSkills from 1994 – 2003. He held the position of Treasurer from 1999 to 2011. Mr. Thibault holds a Master degree in Economics.



Tommy HELLSTROEM
Director WorldSkills Foundation

Tommy Hellstroem has more than 30 years of experience from leading positions within the Confederation of Swedish Enterprises. For the last 8 years he was Marketing Director and has been a board member of WorldSkills Sweden for 10 years and is now the managing director of WorldSkills Sweden. Tommy has been the Official Delegate of Sweden within WorldSkills International for over 10 years. Mr. Hellstroem holds degrees in Social Sciences.



Efi KLUMPP
Managing Board Member WorldSkills Germany,
Board Member WorldSkills International & Leipzig 2013

Ms. Klumpp holds degrees in Business Administration & Economics (including studies at Sorbonne University Paris and Gannon University Erie, USA) with numerous years of work experience in international corporations in several countries. Responsible for the set-up of WorldSkills Germany since its foundation in 2006, she acted 2009 as Official Delegate for Germany as the Bid Leader for WorldSkills Leipzig 2013 where she is presently involved as Board and Steering Committee Member. Responsibilities also include WorldSkills Germany's cooperation with national and international VET stakeholders including organisations such as GIZ, UNIDO, UNEVOC or ILO.



PAUL PHOLERUS (audio presentation)
Director, Healthabitat

Mr. Pholerus has worked to improve the living environment of indigenous people through housing projects that particularly target the enhancement of health. These projects have improved the living conditions of over 50,000 Australian indigenous people. Similar work is being done in Nepal and the USA, Bangladesh, South Africa and Papua New Guinea. Mr. Pholerus is an architect by education.