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## Independent Evaluation

# Republic of Liberia

## Rehabilitation of training centres in vulnerable communities in Liberia

UNIDO Project Number: TF/LIR/11/001



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION



**UNIDO EVALUATION GROUP**

**Independent Evaluation**

**LIBERIA**

**Rehabilitation of training centres in vulnerable  
communities in Liberia**

UNIDO Project Number: TF/LIR/11/001



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## Abbreviations and acronyms

AMC	Programme Approval and Monitoring Committee
BDS	Business Development Sector
CSLI	Centre Songhai Liberia Initiative
CTA	Chief Technical Advisor
DAC	Development Assistance Committee
ECF	Extended Credit Facility
ERP	Economic Revitalization
GOJ	Government of Japan
GDP	Gross Domestic Product
GRL	Governance and Rule of Law
HDI	Human Development Index
HQ	Head Quarters
IDP	Internally Displaced persons
ILO	International Labour Organisation
IBS	Infrastructure and Basic Services
IPRS	Interim Poverty Reduction Strategy
kW	Kilo Watt
LEC	Liberian Electricity Corporation
LEAP	Liberia Energy Assistance Programme
MCI	Ministry of Commerce and Industry
MDG	Millennium Development Goals
MSME	Micro Small and Medium Enterprises
MOD	Miscellaneous obligation document
MOFA	Ministry of Foreign Affairs of the Government of Japan
MRU	Mano River Union
MYS	Ministry of Youth and Sport
NDS	National Development Strategy
NGO	Non-Governmental Organization
NPC	National Project Coordinator
O&M	Operation and Maintenance

PA	Project Assistant
PCA	Peace and Conflict Assessment
PD	Project Document
PM	Project Manager
PMT	Project Management Team
PSD	Private Sector Development
RRE	Renewable and Rural Energy
PRS	Poverty Reduction Strategy
PSC	Project Steering Committee
PV	Photovoltaic
RSTI	Rubber Science Technology Institute
PCF	Programme Coordination and Field Operations division in UNIDO
TERI	The Energy and Resources Institute
ToR	Terms of Reference
ToT	Training of Trainers
TPO	Technical Project Officer
TU	Tubman University
UN	United Nations
UNMIL	UN Mission in Liberia
UNIDO	United Nations Industrial Development Organization
UNOPS	United Nations Office for Project Services
UR	UNIDO Representative
USD	United States Dollars
VTC	Vocational Training Centre
YEN	Youth Employment Network

# Glossary of evaluation related terms<sup>1</sup>

Term	Definition
Baseline	The situation, prior to an intervention, against which progress can be assessed.
Effect	Intended or unintended change due directly or indirectly to an intervention.
Effectiveness	The extent to which the development intervention's objectives were achieved, or are expected to be achieved.
Efficiency	A measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to results.
Impact	Positive and negative, intended and non-intended, directly and indirectly, long term effects produced by a development intervention.
Indicator	Quantitative or qualitative factors that provide a means to measure the changes caused by an intervention.
Lessons learned	Generalizations based on evaluation experiences that abstract from the specific circumstances to broader situations.
LogFrame (logical framework approach)	Management tool used to facilitate the planning, implementation and evaluation of an intervention. It involves identifying strategic elements (activities, outputs, outcome, impact) and their causal relationships, indicators, and assumptions that may affect success or failure. Based on RBM (results based management) principles.
Outcome	The likely or achieved (short-term and/or medium-term) effects of an intervention's outputs.
Outputs	The products, capital goods and services which result from an intervention; may also include changes resulting from the intervention which are relevant to the achievement of outcomes.
Relevance	The extent to which the objectives of an intervention are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donor's policies.
Risks	Factors, normally outside the scope of an intervention, which may affect the achievement of an intervention's objectives.
Sustainability	The continuation of benefits from an intervention, after the development assistance has been completed.
Target groups	The specific individuals or organizations for whose benefit an intervention is undertaken.

<sup>1</sup> Based on a glossary prepared by OECD's DAC working party aid evaluation, May 2002

# **Executive Summary**

## **Introduction and background**

An independent final evaluation has been conducted on the project “Rehabilitation of training centres in vulnerable communities in Liberia” located in Ganta in the north-east and Harper in the far South of the country. The overall objective of the project launched in March 2011 was to contribute to the efforts of the Government of Liberia to improve the resilience of the communities in the east of the country along the borders with Guinea and Ivory Coast, through improved entrepreneurial and technically-based skills for youth to increase their income generation.

The project was funded through a US\$ 2 million grant by the Government of Japan (GOJ) through a supplementary budget from the Japanese Ministry of Foreign Affairs. This was part of an overall contribution of US\$ 9.8 million from the GOJ for the execution of seven (7) projects “Response to humanitarian crisis in Africa”, which was part of UNIDO’s interventions in post-crisis settings. A Note Verbale was issued from the Permanent Mission of Japan in Vienna on 8 December 2010. The project started on March 1<sup>st</sup>, 2011 with UNIDO as the executing agency while the counterpart was the Ministry of Trade and Industry.

The UNIDO Programme Approval and Monitoring Committee's (AMC) decision of 10 December mandated an independent final evaluation of the projects in 7 countries receiving Japanese contributions for post-crisis interventions. A team of two independent international consultants (Ms. Leila Salehiravesh, junior consultant, and Mr. Simon Taylor, team leader) conducted the evaluation mission in August 2012.

## **Evaluation mission and methodology**

The evaluation field mission took place in August 2012. The exercise was designed as a forward-looking one to identify best practices and lessons, and to assess the relevance, efficiency, effectiveness, impact and sustainability of the project.

The evaluation was conducted in compliance with the UNEG norms and standards. Data collection methods ranged from desk reviews (country reports and national development plans, project and programme documents etc.) to individual interviews, focus group discussions and surveys of beneficiaries, project visits and site observation. The evaluation also reviewed a number of earlier evaluation reports of relevance. An objective approach was applied seeking the views of all stakeholders, and validating the data through triangulation of sources, methods, data, and findings.

## **Country context**

Liberia experienced not only one of the most brutal armed conflicts in recent times, similar (and of course related) to the civil war in Sierra Leone, but it suffered conflict over a longer period. The internal strife started in Monrovia in 1980 with a violent overthrow of the regime, then escalating to a country-wide conflict from 1989 to 2003 when the UN mission began monitoring the peace accord.

The conflict in Liberia has been associated with the horrific phenomena of Charles Taylor's rebel factions that recruited and drugged child soldiers, amputated limbs of dissidents, used sexual violence against women and terrorised the whole population, financing its actions by trading in blood diamonds from Sierra Leone.

The conflict largely involved marginalized and disadvantaged young people, who lacked the skills, education or opportunities to participate in the country's political and economic activities. The war took a heavy toll with lives of more than 250,000 Liberians lost and forced another 1.85 million (roughly over 50% of the population at the time) to flee their homes and the country. It caused almost complete capital and physical destruction and the GDP per capita shrank from US\$ 800 to below US\$ 100 between 1980 and 1995.<sup>2</sup>

## **Project background**

Although only at two project locations (less than in the sister project in Sierra Leone), the project was a relatively complex intervention with ambitious development goals within a limited implementation period of 12 months.

The intervention addressed several segments of the value chain, including building infrastructure and providing high quality technologies, improving human resources through provision of training of trainers (ToT) and curriculum development as well as training provision to youth in disciplines that are likely to increase their chances for employment and income.

The two components of the project, technology transfer, in terms of solar photovoltaic (PV) systems, as well as building up local productive capacities in appropriate technical interventions (i.e. local enterprise activities and rubber processing) are the traditional areas of UNIDO's expertise. The project also focussed on skills training for the youth in various fields such as masonry, auto mechanics and hairdressing in two border regions in Ganta and Harper.

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<sup>2</sup> World Bank - World Development Indicators - see graph on page 14 of the Final Liberian PRS, April 2008

## Assessment

A vaguely formulated project LogFrame and the fact that a number of outputs were still in mid-implementation when the evaluation took place limited the evaluability of the project.

With regard to project **identification and formulation**, UNIDO considered its previous interventions in the region. The components of this intervention emerged from the recommendations and the lessons learned from the Mano River Union project (2008 - 2010) as well as previous work in Liberia. By hosting the projects in well-established and respected institutions such as the Youth Centre in Ganta and the Tubman University in Harper, UNIDO chose an approach that suited the requirements of a short-term, post-crisis intervention.

By targeting youth unemployment in conflict-affected areas, the project addressed a major security challenge in Liberia. This indicates that **conflict sensitivity analysis**, including stakeholders and target group analysis, was considered by UNIDO in the course of design and formulation of the project.

The project attempted to develop **processing value chains** by enhancing the technological infrastructure and human resource capacity of the project sites, and to provide unemployed youth with income generating skills. These activities attempted to bring about added value for most vulnerable members of the respective communities.

The project is considered to be of high **relevance**, especially as it is rare to find agencies such as UNIDO concentrating on skills training of young people and despite the fact that such training is in strong demand and supports peace building in post-conflict situations.

The development goal of the intervention (to bring about local resilience by improving youth employment opportunities) is clearly in line with the policies of the Government of Liberia as mapped out in various Poverty Reduction Strategies (PRS) over 2008 - 2012. Improving the infrastructure of institutions in Ganta and Harper, including equipping them with solar PV systems, and basing trainings and processing centres to provide vocational training to the unskilled youth is in line with the priorities of the Four Pillars of the government's PRS, namely, Security, Economic Revitalization, Governance and Development of Infrastructure. In particular, training in various entrepreneurship and rubber processing skills assists in boosting local economies. It also starts to address the major security concerns of the government and international community, namely former combatants prolonging instability in rural areas.

The locations of the two projects were well selected. Ganta is a border region (with Guinea and Ivory Coast), which before the civil war was the 2<sup>nd</sup> most

important economic area after Monrovia and with the proper support will be able to re-establish itself as a key trading zone once again with good potential for growth. Harper hosts the country's second University, a well respected academic institution with a strong outreach programme.

From a national relevance perspective, rubber and rubber wood are key resources in Liberia, whose rubber tree plantations rank 3<sup>rd</sup> in the world. The Rubber Science Technology Institute (RSTI) at the Tubman University offers the country, for the first time, an ability to demonstrate the processing of rubber wood in a state-of-the-art facility.

The evaluation team established that the solar PV systems set up are the most significant recent small-scale renewable energy developments in Liberia as recognised in an interview with the Vice-Minister of Youth and Sports. However, because the evaluation team did not see the systems finally installed and commissioned, there was no evidence whether technical operation and maintenance (O&M) issues were properly explained to the management, for example giving clarity about the capacity of batteries to power any future services planned.

The evaluation team noticed efficiency issues with regard to **project management and coordination**. Effectively, due to the resignation of the original Project Manager, a dedicated Project Manager was not in place until September 2011. In addition, due to the work to re-build trust with the counterpart agencies, and the elections in November 2011, the project did not gather momentum until late 2011.

Moreover, the centralised management system of UNIDO, which requires most financial, procurement as well as human resource issues to be dealt with through HQ, slowed down the implementation process and affected the quality of deliverables in some cases. The logistical conditions in the field in Liberia were seen as more challenging than in the sister project in Sierra Leone due to the very difficult road conditions, communication challenges (witnessed by the team) and the long distances involved, particularly to Harper. Efficiency was further affected by initial selection of an unsuitable architect for the Rubber Science Technology Institute, and over-estimating local abilities to manage the construction. These impeded overall efficiency and effectiveness in some areas of the intervention.

The evaluation team noted a need for improvements to conditions for UNIDO staff in the field, for example in providing longer-term contracts and adequate salaries, as well as a need for greater clarity on project deadlines. Inadequate wages and food for construction workers/trainees affected the progress of the construction project in Harper.

Therefore, the evaluation team considers the intervention as **not wholly efficient**, as demonstrated by the need to extend the project twice, by 6 months in total. It should be noted, however, that all Japanese-funded UNIDO quick impact projects implemented under the “Response to humanitarian crisis in Africa” umbrella had to be extended beyond original plans due to the complexities of interventions in remote and post-conflict areas.

A lack of a feasibility study or risk analysis in Harper (and to some extent for the solar PV in Ganta) resulted in delays in procurement and shortage of funds, which had a bearing on how the project was delivered for the direct beneficiaries. It is now questionable whether UNIDO has in fact the requirements in place to perform construction work at this scale. Communication gaps between UNIDO teams at HQ and the field resulted in some avoidable implementation problems, e.g. in the actual specification and use of the construction of the PV systems and in relation to the roll-out of the trainings.

Despite the provision of skills training in conflict-affected areas being a challenging task for the project team, the project was successful in conducting ToT for Ganta, as well as setting up a functioning Steering Committee in Harper. The project has also brought about some unplanned outcomes by involving the private sector through enhancing the capacity of local enterprises in Ganta and setting up linkages with rubber-related industries in Harper.

Considering the challenging environment in which project activities took place, the project was assessed overall as **effective**, although the journey the Project Manager and local team had to take was challenging until the very end. One of the immediate short-term **objectives** of the project, ‘improving the employment opportunities for the youth’ could be partially verified through interviews, surveys and reports as presented quantitatively later in this report. But in terms of the other objective of ‘creating resilient communities in Ganta and Harper’, it is too early for the evaluation team to judge whether this was fulfilled, although signs in Harper were that the rubber-processing centre now has potential to strive for this aim.

The evaluation team found evidence for potential **sustainability** of **outcomes**. This included provision of high quality solar PV systems to both sites, which along with much of Liberia’s rural communities are off the national electricity grid. Building human resource capacity through the ToTs and technical skills workshops are also considered as crucial to project sustainability and (as noted particularly in Harper) a high degree of project ownership. Furthermore, valuable relationships were formed with the Ministry of Youth and Sport (MYS) and the Ministry of Commerce and Industry (MCI) as a result of the project, and encouraged them to make plans for future technical interventions. At the University, there are 4 clear indicators of how the RSTI will remain sustainably operated, not least because of the linkages to local and international companies wanting to participate in rubber technologies.



At the University level, the ToT in entrepreneurship will enable all departments to implement the entrepreneurship programme in 2013 with 1000 students receiving trainings, and the outreach programme on entrepreneurship will have been conducted along the Maryland-Nimba corridor. At the national scale, Liberia should start to produce rubber-based materials into finished products (to be consumed locally as well as for export) through trained manpower that is globally competitive in terms of knowledge and skills.

On the other hand, It was found that short-term funding (in this case 1 year) does not support sustainability in a project that targets the youth, especially in fragile communities that have witnessed long-term conflicts and crises, which require medium-term livelihood creation activities (where UNIDO has its comparative advantage).

There was evidence of some short-term **impacts** beginning to emerge, mainly as a result of solar lighting and establishment of a state-of-the-art rubber laboratory and processing centre, but also in the fact that 55% of graduated trainees in Ganta were able to find some kind of employment or self-employment. However, the long-term impact of the project, including the two training hubs 'offering on-the-job training programmes to continue to equip the youth with the required skills' would require an ex-post evaluation.

The technologies demonstrated by UNIDO can enable Liberia to make effective and efficient use of its large natural rubber resources and human capabilities, thereby engendering high value addition; decent, productive and sustainable employment opportunities; maximisation of income generation; and thus, poverty reduction.

In Ganta, there were reports that with 12 small enterprises having been rehabilitated as skills training workshops, most of them have increased sales, with orders from NGOs, UN agencies (such as UNICEF) and companies in Ganta, Nimba county. For the solar PV, the MYS can be established as a model Youth Centre hosting i) facilities for skills training; ii) computer and internet training; iii) study rooms for youth; iv) a DSTV centre; and v) income generating activities to help defray the operating costs (e.g. mobile phone charging, film showing etc).

In Harper, the UNIDO project office identified outcomes firstly for the local area, particularly for young men and women who would become entrepreneurs capable in the future of establishing rubber-related industries, having acquired the requisite skills and knowledge to create economic activity and generate their own income to sustain them and their families. By the second quarter of 2013, over 300 people should have attended the required entrepreneurship trainings.

## **Recommendations**

The following recommendations pertain to similar future projects in Liberia:

- Construction initiatives should include initial feasibility studies in order to properly assess local capabilities and plan for the construction work.
- For construction projects, UNIDO should award subcontracts to local service providers or other UN agencies, such as UNOPS, if possible.

Recommendations to UNIDO with regard to post-crisis interventions:

- When working on infrastructure rehabilitation with unskilled workers/trainees, the subsistence of the trainees/workers should be attended to.
- Feasibility studies, needs and risk assessments as well as the design of a LogFrame should be carried out in the inception phase of quick-impact, post-crisis interventions.
- In order to deliver results in post-crisis situations more efficiently, UNIDO should improve the conditions of its national project staff in the field, and if possible provide longer-term contracts, adequate fees, and clarity about project deadlines.
- UNIDO should adjust its procurement and financial processes to match field requirements in post-crisis situations in order to be responsive to specific logistical needs and infrastructural challenges.

## **Lessons Learned**

- Basing a short-term, post-crisis project on pre-existing national institutions enhances overall effectiveness and delivery of outputs.
- The provision of allowances and food should be made part of construction work, as it is very important to keep the staff and trainees mobilised in a situation where many people live hand-to-mouth and day-to-day for their basic necessities.



# 1. Introduction and background

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## 1.1 Introduction

An independent evaluation has been undertaken on the project “Rehabilitation of training-cum-production centres in vulnerable communities in Liberia”. The overall objective of the project launched in March 2011 was to contribute to the efforts of the Government of Liberia to improve the resilience of the communities in the East and South of the country along the borders with Guinea and Ivory Coast, through improved entrepreneurial and technically-based skills for youth to increase their income generation.

The project was funded through the Supplementary Budget of the Japanese Ministry of Foreign Affairs. This was part of an overall contribution of US\$ 9.8 million from the GOJ for the execution of seven projects under the title of “Response to humanitarian crisis in Africa”. A Note Verbale was issued from the Permanent Mission of Japan in Vienna on 8 December 2010.

The evaluation was mandated by the AMC decision of 10 December 2010, and contributed to a wider thematic evaluation of UNIDO’s post-crisis interventions.

## 1.2 Country context

Liberia was the first republic declared in Africa, and is steadily recovering from 14 years of civil war (the first war took place from 1989 - 1996 and the second from 1999 - 2003) that resulted in the loss of 250,000 lives, the displacement of another 850,000 and the destruction of basic institutions of governance, social and physical capital, including the loss of 95% of the country’s electricity generation capacity. Millions left the country during these years and the economy shrank by a staggering 90%. Following the recent prosecution of former President Charles Taylor for abetting war crimes in neighbouring Sierra Leone, Liberia has been experiencing greater stability.

Poverty and unequal distribution of political and economic power have historically been the major factors of conflict between the settler population, residing mainly in Monrovia, and the systematically excluded indigenous population, living in rural areas. Current data show that 65% of Liberia’s total population of 3.5 million live below the poverty line of US\$ 1 a day, with 48 % living in extreme poverty on less than US\$ 0.50 a day. The poverty level in rural areas is as high as 68%, which is much higher than in the urban areas (55%) with literacy rates of only 58%.<sup>3</sup>

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<sup>3</sup> See: [http://www.lr.undp.org/Documents/RecentPublic/MDG%20Report%20\\_Final.pdf](http://www.lr.undp.org/Documents/RecentPublic/MDG%20Report%20_Final.pdf) ; [http://web.undp.org/africa/documents/mdg/liberia\\_september2010.pdf](http://web.undp.org/africa/documents/mdg/liberia_september2010.pdf) ; &

In terms of the Human Development Index (HDI) Liberia ranks 182 among 187 countries with a per capita GDP of US\$ 500.<sup>4</sup> A high inflation rates of 7.3%, particularly in food and fuel prices together with an 85% unemployment rate, in particular among the youth, have been long-standing challenges for the Liberian government and for regional stability.<sup>5</sup>

The conflict has left a host of residual problems, including 900,000 ex-combatants (12,000 of them children), high unemployment, poor basic infrastructure (roads, electricity), and high vulnerability to disasters such as crop failures and flooding.

In the aftermath of the war, the UN Security council established the UN Mission in Liberia (UNMIL) as one of its largest peace keeping missions. With security re-established, the Liberian government has started to develop a series of recovery strategies. Guided by the country's extended credit facility (ECF) and in consultation with the International Monetary Fund (IMF), the government undertook sectoral reforms and created necessary institutions to improve transparency and accountability in government processes. President Ellen Johnson Sirleaf, Liberia's head of state, successfully mobilised international support and funding to secure her country with a US\$ 4.5 billion debt relief. The cancelation of 90% of the country's foreign debts has enabled it to channel its resources into the most needed areas to enhance security and rule of law, rebuild the infrastructure and reduce poverty.<sup>6</sup>

Since 2005, Liberia has introduced two sets of poverty reduction strategies to address these challenges: the Interim Poverty Reduction Strategy (IPRS) 2005 - 2008 and full Poverty Reduction Strategy 2008 - 2011. The PRSs, which have been prepared in consultation with the World Bank and the IMF, are based on four Pillars: Enhancing Peace and Security (SEC), Economic Revitalization (ERP), Governance and Rule of Law (GRL) and Infrastructure and Basic Services (IBS).<sup>7</sup>

Re-building the infrastructure remains one of major priorities of Liberia over the coming years. In addition to investing in water supply, repairing roads and

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Liberia: Poverty Reduction Strategy Paper, International Monetary Fund, IMF Country Report No. 08/219, Washington, July 2008

<sup>4</sup> <http://hdrstats.undp.org/en/countries/profiles/LBR.html>

<sup>5</sup> More than 100,000 former combatants have been disarmed, however, the lack of an alternative livelihood will be a pending threat, as many of them are tempted to join regional militias.

[http://www.usip.org/files/resources/SR238McFate\\_DDR\\_SSR\\_Conflict.pdf](http://www.usip.org/files/resources/SR238McFate_DDR_SSR_Conflict.pdf)

<sup>6</sup> The government has operated a cash based balanced budget since the end of the civil war, in line with a policy of strict fiscal discipline, thereby preventing any increase in the public debt. Nevertheless, the government will begin to borrow again, although no more than 2% of GDP per year, according to an agreement with the IMF.

<sup>7</sup> <http://www->

[wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/06/16/000333038\\_20100616231330/Rendered/PDF/545440PRSP0p10101Official0Use0Only1.pdf](http://wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/06/16/000333038_20100616231330/Rendered/PDF/545440PRSP0p10101Official0Use0Only1.pdf)

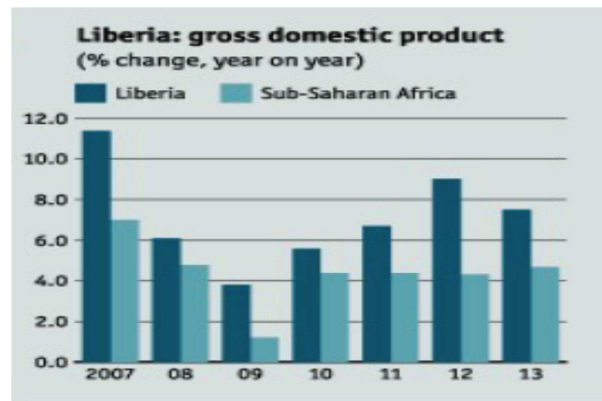
bridges and upgrading the main ports, restoring and re-establishing the energy supply has been announced as a national priority. With energy being a key to development, the provision of affordable electricity for business and domestic use is a necessity in a country where the majority of the population has to rely on expensive private generators to supply their electricity needs. According to the latest data, more than one-third of the public budget allocated to capital expenditure for 2012 -13 will be spent on energy projects. Through rehabilitation of the Mount Coffee hydroelectric plant, as well as the construction of ten heavy fuel power plants by the Liberian Electricity Corporation (LEC), the electricity production capacity of Liberia is expected to exceed the pre-war provision of 412 MW against a total estimated hydropower potential of 2,350 MW.<sup>8</sup>

The new PRS 2012 - 2018 focuses on developing the agriculture sector and creating jobs. Considering the ongoing conflicts in neighbouring countries, unemployment among 1.5 million Liberians (mostly young men in urban areas) poses not only a challenge for the social and economic stability of the country, it is also perceived as a potential source of insecurity for Liberia and the region.

In February 2012, the Liberian government launched a long term development strategy, “Liberia Rising: Vision 2030”. The proposed 18-year development plan envisages Liberia to become a middle-income country by 2030.<sup>9</sup>

**Figure 5 - Liberia's annual GDP trend 2007- 2013<sup>10</sup>**

Liberia's vast natural resources are expected to be the growth engine for the country in the long run. Liberia is endowed with iron ore, rubber, timber and palm oil. However, the country has still a long way ahead to catch up on technology and skilled work force to process its own natural resources. The share of manufacturing is still limited



and sits at only 4.3% of the GDP. The bulk of GDP comes from agriculture and forestry, which contribute 54.6%, followed by service sector and mining with 24% and 16.4% respectively.<sup>11</sup> However, Liberia's real GDP is expected to increase by 9% in 2012 and by 7.5% in 2013 and has been outperforming countries in sub-Saharan Africa in terms of growth.<sup>12</sup>

<sup>8</sup> This should amount to US\$120m over the next three years, with a total of US\$350m budgeted overall for the entire energy strategy, including generation and transmission. See: [http://www.eiu.com/FileHandler.ashx?issue\\_id=559516440&mode=pdf](http://www.eiu.com/FileHandler.ashx?issue_id=559516440&mode=pdf)

<sup>9</sup> <http://www.uncsd2012.org/content/documents/598liberiantreport.pdf>

<sup>10</sup> [http://www.eiu.com/FileHandler.ashx?issue\\_id=559516440&mode=pdf](http://www.eiu.com/FileHandler.ashx?issue_id=559516440&mode=pdf)

<sup>11</sup> <http://www.imf.org/external/pubs/ft/scr/2012/cr12121.pdf>

<sup>12</sup> Economist Intelligence Unit, Liberia country report, June 2012

The generation, transmission, and distribution of electricity in Liberia is the responsibility of the Liberia Electricity Corporation. Before the civil war LEC used to supply major cities and towns that were connected to the grid or had stand-alone diesel plants. The total installed electricity capacity of LEC at that time was approximately 191 MW, and that of private concessionaires was 212 MW, while 11 small isolated power systems (13 MW) supplied electricity to cities, towns and in rural areas<sup>13</sup>, but this infrastructure was decimated by the war, leaving a total production capacity of around 20 MW that would provide power to about 10% of urban and 2% of rural residents.

### **1.3 Project background**

UNIDO has been assisting Liberia with various projects since the 1970s, primarily concentrating in more recent years on reducing youth unemployment in Ganta through vocational training in commercially usable technical skills. UNIDO has aimed to contribute to Liberia's goal of stability and economic growth, particularly through developing the rural private sector.

The plan was that UNIDO's projects in Ganta and Harper would further support government initiatives to establish the Centre Songhai Liberia Initiative (CSLI), modelled after the Songhai Centre in Benin. Once the CSLI is operational in Bensonville, it will serve as a hub to disseminate information to rural farming communities through satellite sites. The Ministry of Commerce and Industry (MCI) started discussions with the Tubman University to establish one satellite in Harper, with solar PV technology being key to that agro-processing support.

In Harper, this meant the renovation of premises within the Tubman University campus to train youths in the skills related to processing rubber and rubber woods, combined with entrepreneurship skills, taking advantage of the small-holder rubber tree growers of the surrounding communities and technical faculties/engineering students of the university.

Key to these aims was the provision of reliable energy resources for the premises by installing solar PV energy systems. Given the time and costs involved in re-establishing a national grid in Liberia, isolated or off-grid electrification based on renewable energy technology is viewed as the most viable alternative for improving access and according to one study<sup>14</sup>, the potential of renewable energy resources such as hydro power, solar, wind and biomass should be assessed and construction of small renewable energy systems should begin as appropriate.

UNIDO has no previous solar energy initiatives in Liberia, and the only renewable energy projects were small, donor-led initiatives using small solar PV units, for

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<sup>13</sup> National Energy Policy: An Agenda for Action and Economic and Social Development, Ministry of Land Mines and Energy, Republic of Liberia, Monrovia Liberia, January 2009, page 14

<sup>14</sup> The Poverty Reduction Strategy Paper for Liberia, 2008

example under the USAID-funded Liberia Energy Assistance Programme (LEAP) ending in 2009<sup>15</sup>.

The project focussed on an existing training facility in Ganta (second largest population in Liberia with over 40,000 people) where youth have been offered vocational training in commercially useable skills in the past by UNIDO. The project site of Harper (population 18,000) was new for UNIDO but resulted from concrete consultations with the Tubman University there. Given the sensitivity of border areas to external factors, they have a particular need for building resilience; so the target areas being close to the borders with Guinea and Ivory Coast was a key factor in project design (see figure 1).

## Outputs

The PD lists 2 main outputs for the project (Training Programmes and Installation of Solar PV systems), which have now been separated into 4 (see Box) with the advantage of a relatively uncomplicated implementation with a manageable number of activities.

**Output 1:** On-the-job training programme with local enterprises in Ganta to develop skills in masonry, metal work, plumbing, soap making, carpentry, gara tie-dyeing, hair dressing, and tailoring and auto mechanics - 20 enterprises.

*[Note: The local enterprises in Ganta should train 600 youth, 400 of whom will be women.]*

**Output 2:** Solar PV to be operational in Ganta

**Output 3:** Training programmes on rubber processing, rubber wood processing and entrepreneurship at the Tubman University in Harper - a few buildings will have been renovated, and rubber processing and rubber wood processing equipment installed and the staff of TU will have acquired the respective training skills.

**Output 4:** Photovoltaic solar energy system installed, with rubber processing, rubber wood processing and entrepreneurship curriculum programme started.

## Inception phase

When the project started in March 2011, the initially assigned Project Manager had difficulty in establishing the required relationships with the counterparts, the MYS (for Ganta) and MCI (for Harper). The plans for the Rubber Science Technology Institute (RSTI) started out with the wrong approach with no feasibility study for the layout, led by an architect that saw a requirement for a two-storey building on land that could probably not support this. By August 2011, a new Project Manager was in place, but it took several months for a new architect to be assigned and for relationships to be re-established with the Deputy

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<sup>15</sup> Liberia Energy Assistance Program Final Report, USAID/IRG, Feb 2009



Ministers of the counterpart institutions. By then the country was preparing for the election, finally held in November 2011, which meant that much of UNIDO's (construction) work could not be carried out (the trainings were able to go ahead). So effectively, the main implementation of the project, being the construction of the RSTI and mobilisation of solar PV for both sites, only started in earnest late in 2011. This meant that the initial end date of February 2012 had to be extended, twice in the end, firstly to end of June 2012 then again to end of October 2012.

The solar PV plan was a key part of the project wherein the project sites would have reliable access to low cost renewable energy for the RSTI at Harper and operations of the Youth Centre in Ganta. Within UNIDO the solar projects were managed by the Renewable and Rural Energy (RRE) Unit and not under the main project. A feasibility study (July 2011) and Technical Project Annexures (Oct 2011) made by The Energy and Resources Institute (TERI) of India coupled with specifications drawn up by the contractor, Sunlabob of Laos (Feb 2012) helped to implement the energy component.

### **Local coordination**

A Coordination Committee was planned for the programme in Ganta chaired by MYS with the participation of the Ganta local authorities and the project coordinator. MYS was responsible for monitoring the substantive progress status of this component with reviews held every 4 months. The idea was that private business associations would be invited to the Coordination Committee meetings as technical advisors in order to ensure the integration of the training programme with the local economy and to encourage the recruitment of graduates from the training programme.

Similarly, a Coordinating Committee for the programme in Harper chaired by MCI was planned with the participation of the representatives of the Tubman University and the Maryland County authorities, and the project coordinator. The Coordination Committee would hold meetings every 4 months to review the implementation status and update the work plan. A representative of rubber plantations and the association of the small-holder rubber wood producers in Harper was planned to have been invited to the Coordination Committee meetings as technical advisor in order to integrate the training programme in Harper with the related local businesses in order to ensure the relevance of the training programme and encourage the business community to invest in the local processing of rubber and rubber woods and recruit the graduates of the training programmes in their business operations.

## **1.3 Review of previous evaluations**

There have been two projects of relevance to the Liberian Rehabilitation of Training Centres project currently under evaluation, as outlined below.

### **a) Thematic Evaluation of Post-crisis Projects (2010)**

In 2003 the UNIDO General Conference asked that UNIDO undertake industrial rehabilitation and reconstruction initiatives in post-crisis situations and by 2008 UNIDO was implementing 40 post-crisis programmes and projects in 17 countries, worth some US\$ 40 million. In 2010 UNIDO carried out a Thematic Evaluation of 10 post-crisis projects in Ivory Coast, Guinea, Indonesia, Iraq, Lebanon, Sri Lanka, Sudan, Uganda, Sierra Leone and Liberia.

### **b) Independent Evaluation of Mano River Union Project (2010)**

UNIDO co-implemented the 'Multi-stakeholder Programme for Productive and Decent Work for Youth in the Mano River Union (MRU)' in 2008 to 2010. The MRU countries are Sierra Leone, Liberia, Guinea and Ivory Coast and the participating agencies were the International Labour Organisation (ILO) and Youth Employment Network (YEN). The objectives of the programme was to engage marginalised poor youths in employment and self-employment by allowing them to take the lead in creating their opportunities thereby contributing to social, political and economic stability in the MRU region.

Taking these projects together, analysis of the evaluations reveals the following main findings, recommendations and lessons learnt for Liberia, gathered under the main assessment headings.

#### **Project Design**

Market surveys and training needs assessments were not included in the project formulation phase. It was questioned whether short-term funding suits medium-term income creation activities (where UNIDO has its comparative advantage). There should be recognition that skills training in cases of high illiteracy levels needs to be combined with non-formal basic education.

Construction work absorbs substantial project management efforts and always results in delays and project extensions.

Donor priorities, rules and conditionality (e.g. short project durations) are shaping poor project design, e.g. planning missions, originally not sufficiently funded to identify the best interventions, then pushed into the inception phase that further reduces project implementation.

The centralised management style of UNIDO adds unnecessary delays, for example minor expenses have to be sanctioned at HQ through the 'miscellaneous obligation document' (MOD) payment transfer system, which does not favour fast reactions or adjustments, as required from fast-changing post-crisis contexts.

## **Relevance**

A combination of facility rehabilitation and training was found to be relevant to post-crisis settings. UNIDO has a comparative advantage in post-conflict situations due to its focus on industrial development and adding value to agricultural products.

## **Efficiency**

Efficiency was impacted by the centralised UNIDO project management and tendering systems, resulting in delays, especially in the procurement of equipment. Project monitoring focuses on project outputs, with less attention paid to outcome and impact monitoring. Administrative practices of the UN agencies negatively impacted on efficient delivery and led to delays and hiring of project staff was not co-ordinated and with short contracts.

## **Effectiveness**

Generally, it was found out that the contents of trainings were not designed with reference to market surveys and future trends. It was suggested that the interventions should be demand-oriented and the private sector development (PSD).

Furthermore, it is good practice to integrate entrepreneurship training with technical skills training but expertise and adequate training materials need to be provided.

## **Sustainability**

Several UNIDO interventions in post-crisis settings were limited to infrastructure rehabilitation, and there was not enough room for capacity development. Short period of implementation meant also that not all activities had the potential to be technically or financially sustainable.

Baselines need to be developed by UNIDO and the local counterpart to assess sustainability issues (as well as efficiency, effectiveness and relevance points).

Giving away start-up kits is common practice in post-crisis projects but can counter the drive towards developing a self-help and entrepreneurial culture.

## **Recommendations**

Within the findings above were some important points that should have informed the design of the intervention in Liberia, especially with the warning that UNIDO's approach to projects in post-conflict areas needs to be reviewed after the latest

(2010) evaluation and whether the construction of large facilities is the correct one to promote rural employment in a post-conflict situation. It was questioned whether short-term funding suits medium-term income creation activities (where UNIDO has its comparative advantage). All the interventions had extensions in order to complete the original aims due to complexities of the interventions in the remote and post-conflict areas.

For the early stages of projects, it was noted that more resources should be given to sound project planning and fact-finding and proper LogFrame and monitoring techniques. Feasibility studies and risk analysis should be done, and Steering Committees should be set up. It should be recognised that the setting up of training centres pose particular sustainability challenges and UNIDO should conduct ex-post evaluations so that the outcomes and impacts can be fed back to the Ministries concerned for scaling up any future plans.

Finally, for inefficiencies reported in delivery in the field, although Project Managers take much of the blame, there are serious failings in the UNIDO Management System. UNIDO should decentralise decision-making processes and budget authority to the field and simplify the MOD payment structure. Fast-track procedures are required for post-crisis projects including special funds reserved for fast approval.

### **Lessons learned**

Gathering the findings from the two previous evaluations the following are key lessons learnt:

- Feasibility studies, needs and risk assessments as well as proper LogFrames should be done during project formulation, which even with the short timeframe, could be achieved if well planned, and by using external assistance.
- The new training and rubber processing centres should focus on operating as self-sustaining units with sound business plans, not dependent on further funding.
- Ownership and financial sustainability of projects need to be improved in future UNIDO programmes, following ex-post evaluations.
- In line with its decentralization priorities mentioned in the “UNIDO Strategic Long-Term Vision”, UNIDO should strongly pursue decentralisation in decision-making process, budget authority, procurement procedures to the field to improve efficiency and timely delivery as fast-track procedures are required in post-crisis situations.

## **2. Evaluation purpose, scope and methodology**

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### **2.1 Evaluation background**

The Programme Approval and Monitoring Committee (AMC) decision of 10 December mandated an independent final evaluation of the projects in 7 countries receiving Japanese contributions for post-crisis interventions. The main objectives of the final evaluation was to contribute both to future UNIDO cooperation with the Government of Liberia and UNIDO's institutional learning in short-term, post-crisis interventions.

The evaluation mission was carried out in the closing phase of project implementation, between 3<sup>rd</sup> and 12<sup>th</sup> August 2012 by independent evaluation consultants Simon Taylor, team leader and renewable energy specialist and Leila Salehiravesh, livelihood specialist.

Due to strong time constraints for the exercise, the evaluators concentrated on the core issues of interest, and were assisted by proactive support from the project management team, UNIDO HQ and Field Office, and the Evaluation Group in HQ. This helped to identify key substantive issues in a participative manner with the evaluators using a mix of document reviews, interviews, field visits and local surveys. The approach included a high degree of engagement at the field level with a close eye on the post-crisis factors and took into account recommendations of previous evaluations.

### **2.2 Evaluation purpose and scope**

The objectives, purpose and scope of the evaluation were to a great extent determined by the UNIDO Evaluation Group. The main objectives were to identify the lessons learnt in Liberia and contribute to a) future UNIDO cooperation with the Government of Liberia, b) future UNIDO cooperation with the Government of Japan and c) UNIDO's institutional learning in short-term, post-crisis interventions with a forward looking approach. The latter would be part of a wider thematic evaluation of a series of UNIDO post-crisis interventions mainly in African countries.

The thematic evaluation will help UNIDO to shape its overall strategy in post-crisis settings, and to further identify UNIDO's specific role and added value in supporting crisis-affected countries make the transition from humanitarian assistance to early recovery, reconstruction and sustainable development.

This report will therefore be of interest to concerned UNIDO staff at HQ and the field, as well as its Liberian and Japanese counterparts. The stakeholders have been consulted in Monrovia, Vienna and in the field as part of the evaluation exercise, and their comments and feedback have been sought as part of the report finalization process.

## **2.3 Evaluation methodology**

The terminal evaluation was carried out in keeping with agreed evaluation standards and requirements, fully respecting the principles laid down in the “UN Norms and Standards for Evaluation” and Evaluation Policies of UNIDO.<sup>16</sup> The main tool in the evaluation was to assess the achievements of the intervention against its key objectives, as set out in the project document and project reports, including re-examination of the relevance of the objectives and of the design. It identified factors that have facilitated or impeded the achievement of the objectives.

In the course of the evaluation, which was done in the context of a post-conflict setting following Liberia’s civil upheaval between 1989 and 2003, the team assessed the following:

- the process of project identification and formulation,
- the relevance of the implemented project for Liberia on its path from recovery to development,
- the efficiency and effectiveness of the implementation of the project,
- project coordination and management and ownership by stakeholders,
- achievement of its intended results and their sustainability,
- the cross-cutting issues such as gender, environment and South-South cooperation.

Finally, the evaluation considered recommendations for future interventions. See Annex 1 for the TOR.

While maintaining independence, the final evaluation was carried out based on a participatory approach, which seeks the views and assessments of all stakeholders addressing the main issues of project formulation, design and management; project relevance; efficiency of implementation; effectiveness and project results; sustainability; impact and any cross-cutting issues, all within the context of a quick impact 12 months project cycle.

The evaluation assessed the result chain, focussing specifically on outputs and planned outcomes, and also the likelihood of achieving planned impacts despite the limited timeframe of the project. Full account has been taken of previous evaluations including UNIDO’s post-crisis interventions. By analyzing the

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<sup>16</sup> All documents available from the websites of the UN Evaluation Group: <http://www.uneval.org/>

implementation of these recommendations, suggestions have been made on factual findings and emerging lessons from the Liberian experience. See Annex 1 for the TOR.

#### **i. Document Review**

An extensive desktop review of the project documents provided by the project team at the HQ and the field office was undertaken. These included the project document, "Rehabilitation of training centres in vulnerable communities in Liberia", extensive desktop review of documents provided by the project team at the HQ as well as the "*Feasibility Study for Solar Power Plants in Sierra Leone and Liberia*". In addition, the evaluation team collected and reviewed a number of monthly, annual and progress reports from the UNIDO project offices in Monrovia and Harper.

As mentioned earlier, the lessons learned and the recommendations of the previous UNIDO Evaluation Group publications, particularly the *Thematic Evaluation of Post-crisis Projects (2010)* as well as the *Independent Evaluation of Mano River Union (2010)* have been taken into consideration by the evaluation team.

#### **ii. Interviews with different stakeholders**

The evaluation team conducted interviews with the different stakeholders of the project, including representatives of the Government of Japan (interviewed in Monrovia), UNIDO staff in the HQ and in the field, the representatives of the government of Liberia in Monrovia and the local authorities in the project areas. Further, interviews have been conducted with a broad range of beneficiaries, including the management of the Tubman University, faculty staff and in particular the trainees. A complete list of people met and interviewees can be found in Annex 3.

#### **iii. Selection of beneficiaries for data collection**

To collect the feedback of the direct and indirect beneficiaries of the intervention, the evaluation team gathered data from the project beneficiaries who were met at the Tubman University in Harper, as well as at the local enterprises in Ganta. Focusing on all beneficiaries who were available and who had been involved in different activities of the project, the team used questionnaires and qualitative group discussions to reach as many beneficiaries as possible within the limited time frame given.

A survey was conducted by the livelihood evaluation consultant during a visit to the project site in Ganta. A sampling method was developed and trainees from different discipline were selected and were given questionnaires. A total of 16

respondents consisting were interviewed, with 12 women and 4 men with ages ranging from 14 to 45.

#### **iv. Questionnaires**

A set of qualitative and quantitative questions were included in the questionnaires to find out about the following:

- The history of education and employment
- Whether training had been received
- The quality of inputs, including training
- Whether the training has enabled them to create their own business.
- The likelihood of achievement of the expected outcomes and outputs.

#### **v. Qualitative Group Discussions**

To gather information from the trainers and the management of the Tubman University, the evaluation team arranged qualitative group discussions to discuss effectiveness, efficiency, sustainability and ownership of projects.

##### **At the Tubman University**

- A qualitative group discussion was conducted amongst management and some instructors of the University.
- Qualitative interviews were conducted with selected trainees at the construction site at the TU campus.

##### **In Ganta**

- Trainees are trained at existing production outlets, which are owned by individuals. The livelihood evaluator visited several of these workshops and held discussion with both trainers and trainees.
- A group discussion was held by the livelihood expert amongst the trainers.
- Questionnaires were distributed amongst the trainees from different disciplines.



## 3. Assessment

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### 3.1 Project design and intervention logic

The Project Document (PD) was prepared rapidly after the confirmation by the GOJ that funds would be made available under the framework of “Response to humanitarian crisis in Africa”. The LogFrame’s overall objective and outcomes were generally not supported by SMART indicators. Additionally the monitoring and evaluation requirements are not specified in the project document, and the project was still in implementation during the evaluation, especially in Harper (see Figure 6), which further impeded evaluability.

UNIDO’s previous interventions in post-crisis settings in general and, for example in neighbouring Sierra Leone, and lessons from the Manu River Union project gave a reasonable grounded approach in project identification, though not as participatory as in Sierra Leone where UNIDO has a country office and has been operating for a longer time. Building on the previous work in Liberia and the Songhai Initiative in Sierra Leone (now being trialled in Liberia), UNIDO did not start from scratch and utilised the existing institutional relationships established under previous interventions in the Mano River Union region.

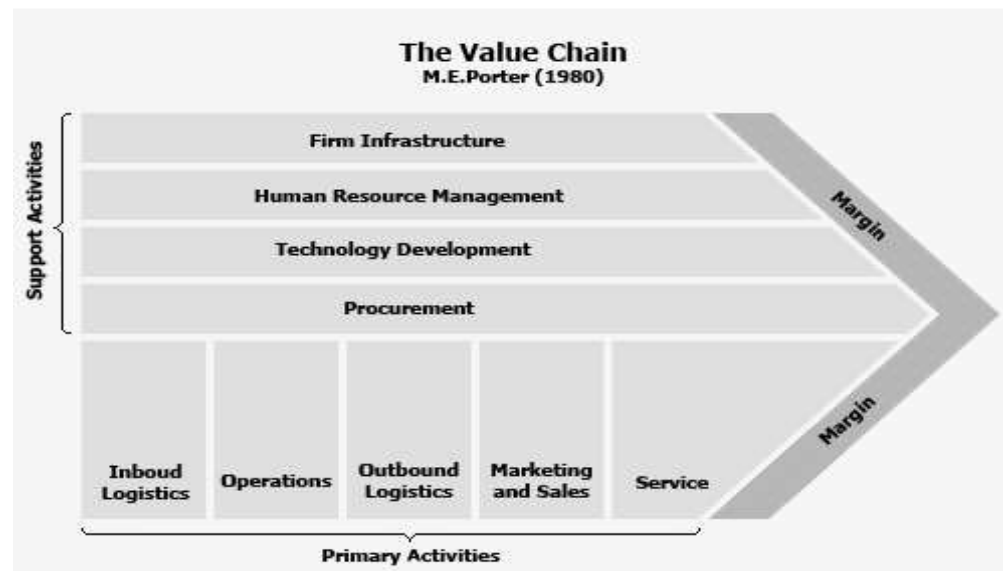
While establishing training and vocational centres is one of UNIDO’s areas of comparative advantage, selecting the correct target group (unemployed young men and women in border areas, particularly in Ganta) was one of the lessons learned from the Mano River Union project, where UNIDO targeted unemployed youth from border areas to be trained.

**Figure 6 - Construction of RSTI in Harper ongoing in August 2012**



Although not mentioned in the PD, by offering training in rubber and rubber wood processing in Harper as well as enterprise-based skills in Ganta, the project has adopted an integrated agro-processing value chain approach. The project can be seen as contributing to the first three levels of the value chain (see Figure 7) with a clear rural development focus by building infrastructure and providing high quality inputs such as processing equipment and training tools, solar PV systems as well as giving human resources the required technical, entrepreneurial and curriculum training.

**Figure 7 - The Value Chain (M.E. Porter)**



This includes both the rubber-processing equipment and laboratory to enhance the curricula at Tubman University and livelihoods in Ganta with the provision of basic tools and equipment for auto-mechanics, carpentry, hairdressing, masonry, metal working, plumbing, soap making and tailoring. The latter were assessed by the project as supportive economic non-farm activities (especially in busy border trading areas) that help increase coping mechanisms for climatic and economic shocks that usually make livestock and agriculture production volatile.

The selection of solar PV technology was well considered as being renewable, reliable, readily available and virtually cost-free, with skills for operation and maintenance being within the capacity of the communities. However, the actual use of power was not clearly aligned to each project site, which is why the final PV implementation varied to that planned (e.g. no mini-grid to enterprises in Ganta and requirement for a diesel generator back-up in Harper).

### 3.2 Relevance

Overall, the project is found to have high relevance to the economic situations in Ganta and Harper, and on a countrywide scale as well. As noted, Liberia's

natural resources (iron ore, rubber, timber and palm oil) could be an engine for growth, but the manufacturing and processing technologies and skilled work force are not yet in place.

The project is well aligned with national poverty reduction plans, and in all cases the project's relationship with the local counterparts were a good fit, being directed at youth in Ganta (Ministry of Youth and Sports) and industrial development in Harper (Ministry of Commerce and Industry).

The range of trainings within Ganta are well aligned to the demand of this ever increasingly busy commercial and trading hub, and targets those in most need, i.e. the disadvantaged and vulnerable unemployed youth. The resources chosen within the Harper RSTI project (rubber and rubber wood) are highly relevant to their location surrounded by rubber plantations, some dating back to the 1960s.

The demonstration of technologies within the RSTI is a first for Liberia and has created a lot of excitement and attention (note for example that President Ellen Johnson Sirleaf attended the ground-breaking ceremony).

The trainers in Ganta see an absolute relevance for the vocational trainings to be held there because the border city attracts a great number of job-seekers and unemployed youth. It was perhaps because of the strong relevance that they did not demand salaries from UNIDO and took part in the programme out of belief for its potential for positive change. Indeed, many were of the opinion that the intervention needs to continue and expand.

### **Project Ownership**

Project activities were monitored closely by the Ministry of Commerce and Industry and the project team worked closely with the Ministry personnel - the Minister herself has travelled 2-3 times to the Harper site and takes a particular interest in the project's progress.

The Ministry of Youth and Sports (MYS) was likewise closely involved in the implementation of the solar PV project in Ganta. A new relationship had to be built with the MYS for Ganta, with the Minister and Deputy Minister, due to the delays in the start of the project and the limited success of the Mano River Union, the previous UNIDO-led initiative. However, once this was done, the counterpart was involved from the project design to implementation, with good communications between key personnel.

At the local level, the project coordinator played an excellent role in communicating with the local committee. The local committee as well as the trainers had been consulted in design of the training and purchasing the training materials.

The wider community has been involved in the construction work, which developed a high degree of local ownership. For example, on the (final) arrival of 3,000 bags of cement at the Harper port on Christmas Day 2011, a large number of people from the local community was mobilised to manually un-load the bags into trucks throughout the night.

In Harper the Tubman University has been involved at all levels of the project relating to the RSTI, from preliminary consultation to design of the centre and final implementation. UNIDO consulted the University also in selection of the construction materials.

### 3.3 Efficiency

Overall, it was observed that the project approach did not represent efficient use of given resources for achieving the planned objectives, as the project was compromised mainly by external factors.

#### 3.3.1 Financial implementation

The project had 3 main components, **firstly** the building of the RSTI in Harper for rubber and rubber wood research and processing, **secondly** to conduct trainings in Ganta and **thirdly** the provision of reliable energy supply by establishing solar PV systems at each site. One fifth of the budget (US\$ 400,000) was each assigned to the solar PV systems and the RSTI building and its technological contents, one tenth of the budget (US\$ 200,000) was planned to be channelled to the trainings in Ganta, while one third was allocated for staffing and support costs (US\$ 668,000), with further details as shown in Table 1.

**Table 1 - Main items in project budget**

Description	Budget (US\$)	% share
Photovoltaic solar energy system (2 sets of 20 kW each including consultancy)	400,000	20.0%
Renovation of premises at Tubman University to become the RSTI	200,000	10.0%
Equipment (rubber and rubber wood processing)	200,000	10.0%
Training materials and training and monitoring related expenses in Ganta	200,000	10.0%
Construction technicians and administrative staff	52,000	2.6%
International consultants (rubber, solar PV, entrepreneurship)	181,000	9.1%
Other consultants (national, rubber, mechanical & civil engineer, construction site manager)	102,000	5.1%
All UNIDO staffing plus travel	333,000	16.7%

Description	Budget (US\$)	% share
Miscellaneous	66,912	3.3%
Evaluation	35,000	1.8%
UNIDO support costs	230,088	11.5%
<b>TOTAL</b>	<b>2,000,000</b>	<b>100%</b>

Although an effort has been made by the evaluation team, it has been impossible to gauge the exact expenditure against these budgeted items as not all of the relevant documents have been made available through the UNIDO intranet or from the national office.

Although the total costs as gathered by the evaluation team amount to over US\$ 700,000 less, many of the actual costs were not retrievable because of the poor documentation, particularly on the internal Monthly Financial Reporting system, and it is known that the project overran its budget by some margin.

It is also noted that of the known costs (gathered from miscellaneous costs for the construction work and solar PV installations) the overspend was considerable, being possibly a quarter more for the construction (mainly due to the need to have a completely new RSTI building at Harper although the plan in the original PD was to renovate) and 23% more for the solar PV component as a whole, possibly due to underestimating the complexity of mobilising sophisticated energy systems in remote areas with very difficult field conditions.

The detailed solar component costs are summarised in the following table compared to the estimated capital costs from TERI's and with Sunlabob's contracted cost information with other suppliers and works (such as the civil constructions) added in. In addition the following were spent on support costs, making a total of US\$ 493,809 for the whole solar PV project mobilisation in Liberia:

- Personnel - US\$ 44,754
- Training - US\$ 45,155
- Misc. - US\$ 3,119

**Table 2 - Planned and actual costs of PV systems**

Project Site	Solar PV Capacity planned	Estimated (TERI) cost (without civil & internal electrical works)	UNIDO contracted cost (fully installed)
Harper	20 kWp	US\$ 180,124	Sunlabob - US\$ 304,982
Ganta	15 kWp	US\$ 150,232	
			Extras - US\$ 95,799

<b>Total</b>	<b>35 kWp</b>	<b>US\$ 330,356</b>	<b>US\$ 400,781</b>
		UNIDO's PAD	US\$ 309,600
		<b>Underestimated by</b>	<b>US\$ 91,181</b>

Although the original budget was not sufficient by a large factor, for a final installed cost of US\$ 11,451 per kWp, this is regarded as reasonable for high quality off-grid PV systems installed in remote areas under a development programme.

### 3.3.2 Management

The project was supervised from HQ and implemented by a UNIDO project team from its various offices in the capital, Monrovia, (the team moved three times in 1½ years) as well as its sub-offices in Harper and Ganta. The official counterparts were The Ministry of Commerce and Industry (MCI), the Ministry of Sport and Youth (MYS) as well as the Tubman University.

In terms of project management, the selection of capable personnel was a crucial factor in successful implementation. Working in a remote region within a post-crisis context is a challenging task, which was mastered by the Project Manager in the field and her team, albeit in the latter phases of implementation. The Project Manager also pushed very hard to establish a good working relationship with the MYS and MCI counterparts beyond what was expected in the PD.

Although a change of Project Manager at the start of the project and delays while the first architect for Harper was replaced caused some confusion on the side of the counterpart, these changes ultimately safeguarded final project results albeit at the expense of time efficiency.

A good relationship was built with the Ministry of Youth and Sports, which was seen at first hand by the evaluation team in a meeting with the Deputy Minister.

The local UNIDO project coordinators in Ganta and Harper were highly respected as community organisers and they and their small team were clearly instrumental as catalysts in delivering the trainings to a high level of quality or bringing the building work to the finishing line.

However, the inadequacy or lack of wages and food for trainees who were learning on the job through the construction project in Harper caused dropouts, as it made life very difficult for those trainees who lived hand-to-mouth and day-to-day for their basic necessities.

From the initial 250 trainees enrolled in Ganta, according to the local PM as well as the trainers, the dropout of around 30% that did not complete the trainings was due to the fact that the project didn't provide the enrollees with food or a daily

allowance. The lack of food for trainees was mentioned in interview as a pressing concern by some of trainers, stating that food should be included in the training programme in future interventions.

Some trainers stated that they sold some inappropriate training materials/tools to buy food for their trainees (approximately US\$ 5 - 10 was required to provide rice and soup for 25 trainees per day).

**Figure 10 - Trainer and trainee interviewed in Ganta's Ministry of Youth and Sport centre**



It was also noted that improvements could be made for conditions for UNIDO staff in the field, for example in providing longer-term contracts and adequate salaries and clarity about project deadlines.

For the project's renewable energy inputs, the roll out of equipment against the project plan was well co-ordinated and although there were logistical challenges for delivery (at customs and because of the state of the roads), the systems were installed as expected by the beneficiaries and with their participation.

With regard to monitoring and coordination of activities, it was assessed that the local coordinator played a critical role in the implementation of trainings, monitored the quality of trainings and performed a mentoring role to the trainees, motivating them to proceed with their education. Overall, the trainees felt a sense of empowerment from UNIDO's coordinator in Ganta and trainers were also encouraged by his professionalism.

### 3.3.3 Delay factors

At the start of the programme from March – November 2011, there were long delays due to an initial change of Project Manager, moving local offices three times and then national elections in November 2011. Further major delays were experienced (especially for the construction of the RSTI in Harper) due to a number of reasons, although it was noted that UNMIL has faced similar delays due to the severe logistical challenges of operating in outer reaches of the country and factors such as heavy rainfall (which affected the initial period of construction over April - June 2012).

Harper is located in a very remote part of the country. Considering the poor quality of roads and basic port facility, it was challenging/time consuming to transport materials to the project site. Construction works also had to be put on hold in the middle of implementation as there was a (temporary) ban on trading the local sand due to the environmental impacts on the beach where it was being sourced, causing a delay of one month. As there were only two commercial trucks in Harper and these had mechanical defects that affected the timely delivery of local materials to the site (see Figure below).

**Figure 9 - Typical road conditions in the east of Liberia**



Moreover, the original architect had difficulty in preparing the Bill of Quantities and was reluctant to place procurement orders in a timely fashion before the Elections resulting in a three-month delay. The plan of the building was changed from a two-storey to a one-storey building upon the appointment of the second architect, as the original plan didn't consider the logistical feasibility of accommodating heavy processing machines on the top floor.



The deep well for (essential) water supply was not planned until the building was nearly completed and it was not known how deep or what the cost of its construction would be. This was due to the lack of a feasibility study that considered conditions in the field.

UNIDO's strict recruitment policy (asking for the highest degree/certificate even for hiring a normal carpenter or a technician) slowed down the process of hiring personnel. In addition, UNIDO's procurement rules on sourcing materials were very difficult to follow in the Liberian situation. Delays and difficulties in mobilising finance and procurement for construction works resulted in trainees waiting 3 months for their allowances.

In Harper wages and food were eventually provided as part of the construction work, which has been seen as very important to keeping the staff and trainees mobilised in a situation where many people live hand-to-mouth and day-to-day for their basic necessities.

Overall, the delays in payments - up to 3 or 4 months – to trainees (US\$ 3 per day), labourers (US\$ 5 per day) and technicians (between US\$ 150 - 500 per month) has been a major worry, particularly as the reasons for the delayed payment wasn't communicated to the trainees.

There was a lack of co-ordination with other UN agencies that could have assisted in the mobilisation of the RSTI construction. The Project Manager worked hard and as a priority with UNDP in Monrovia to resolve payment issues (money had to be coursed through UNDP), reducing the time for processing payments for the project from months to weeks, although the system remained inefficient for the first year of the programme (March 2011 - March 2012).

### **Late delivery of energy component**

The solar PV (energy) component was targeted to be implemented in early 2012 to avoid the onset of the rainy season in July - August, but in the end the system was only delivered in August and was being installed during the time of the evaluation mission, although it is understood the system is now operating with a large diesel generator as back-up.

**Figure 11 - Battery house at Harper with solar panel plinths behind**



**Figure 12 - Inside battery house at Ganta**



Time was lost in the technical design of the Ganta project because the originally planned systems, one at 10 kWp and another at 5 kWp, both with mini-grids, were changed to being one system of 15 kWp supplying only the Youth Centre. Although Sunlabob made this technical change in time, it has left the MYS facility with probably too much power, based on the TERI assessment (4 - 5 days storage in the batteries).

On technical efficiency, the civil works plinths for the ground-mounted PV array were installed at the last minute in Ganta and had to be contracted at a higher cost to a builders firm instead of mobilising some of the trainees in masonry and carpentry (as at Harper) that graduated in February 2012. It is likely that Sunlabob had to specify lightning protection in the field as none was specified in UNIDO's documentation. The battery house at Harper appeared to not have enough ventilation grills, and at Ganta, a false ceiling was installed instead of a more open space required for ventilating the batteries (see Figure 10 and Figure 11).

### **Selection of beneficiaries for training**

The evaluation team collected data from the beneficiaries in the field and assessed the information gathered through interviews and focussed group discussions with beneficiaries as well as the quantitative survey from trainees. The questionnaires (see Annex 4) covered the process of beneficiary selection, quality of inputs, including training and training materials, the results of the training and most importantly, whether the training programme had achieved its intended objective and resulted in employment and income opportunities.

The young men and women from communities in Harper and Ganta, who were not able to attend formal education or dropped out of school, were primarily targeted by the project. The majority of trainees interviewed in Ganta were aged 18 - 40 but the youngest interviewee was 14 while the oldest was 45.

According to the quantitative survey, trainees received the information about the UNIDO training programme through various sources. While the trainees in Harper were informed through their relatives and friends, in Ganta, the local coordinator played a crucial role in informing the majority of trainees (25% of interviewees' state that they received the information in this way) and raising awareness about the benefits that training can bring for the youth.

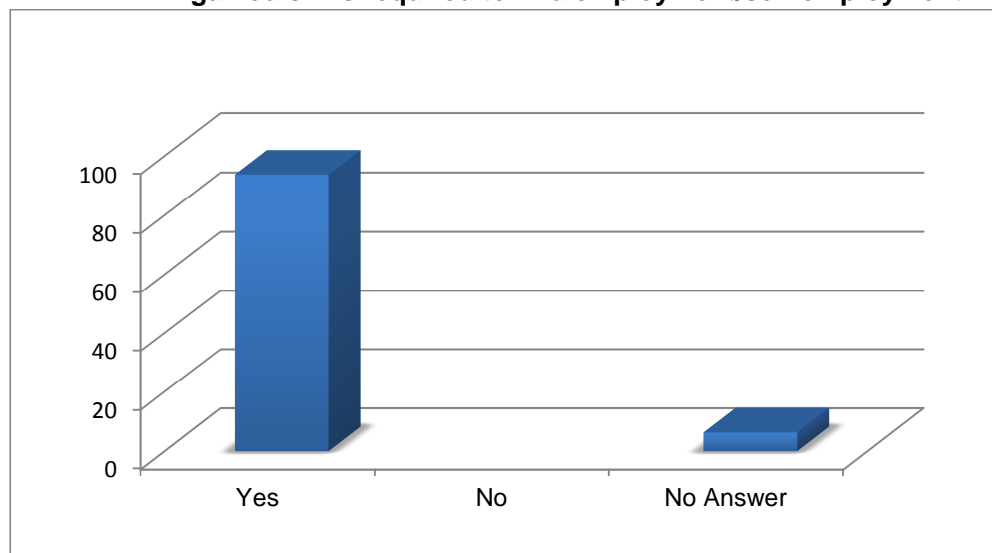
### Quality of training and materials

With regard to the quality of training, more than 80% of the interviewees stated that they were satisfied with the qualifications of their trainers.

In addition, more than 80% of the respondents stated that there were jobs available for the skills they had learned, which underlines the relevance of the selected skills training areas for the beneficiaries. More than 90% also believed that they were equipped with the required skills to find jobs.

Regarding the quality of the training materials, in some disciplines such as hairdressing, the quality of delivered materials was not identical with the ones ordered and therefore not appropriate for training. It was stated by trainers that the centralised procurement system of UNIDO doesn't match common procurement processes in Liberia, allowing some sellers to deliver materials with poor quality. The training spaces used for on-the-job training were generally very limited and mostly not in a good condition. The basic requirements to build up businesses were absent in many cases and the initially planned rehabilitation of local enterprises was not conducted.

**Graph 1: Whether the interviewees believe that they have gained skills required to find employment/self-employment**



### **3.4 Effectiveness**

Overall, the project was found to be effective despite implementation challenges. However, as the evaluation took place before the end of the programme and activities were still being concluded for two more months afterwards, the effectiveness of the project could not be fully evaluated.

An update on the LogFrame outcomes and outputs is given in Table 3 below. In addition, an assessment of the activities is provided under Annex 7 of this report, ranking the importance of each one (1-5) and giving a traffic light score as captured from the brief evaluation period.

**Table 3 - Analysis of the reconstructed LogFrame**

Description	Indicators as per LogFrame	Status
<p><b>Objective:</b></p> <p>To improve the employment and self-employment opportunities for the youth and to create resilient communities in Ganta and Harper</p>	<p>Number of trainees and local people engaged in productive activities by using the</p> <p>Skills obtained through training programmes.</p>	<p>Early signs of positive impact can be seen with immediate income increases among around 60% of beneficiaries (see Graph 3), but too early to judge.</p>
<p><b>Outcome:</b></p> <p>The training centre in Harper and a network of local companies offering on-the-job training programme in Ganta equip the youth with planned skills.</p>	<p>Number of trainees acquiring skills through training programmes tends to grow.</p>	<p><u>Ganta</u> - a commitment has been made by MYS to replicate the UNIDO model and continue the skills training programme.</p> <p><u>Harper</u> - the target of TU is to have a cross-cutting entrepreneurship programme with over 100 students receiving training in 2013.</p>
<p><b>Outputs:</b></p> <p>1. On-the-job training programme at local companies operational in Ganta.</p> <p>3. Training programmes on rubber (and rubber wood) processing and entrepreneurship in Harper</p>	<p>1) Status of premises, the functioning of equipment, the capability of trainers.</p> <p>2) Implementation of the training programme in accordance with the work plan by the participating companies in terms of the number of trainees per type of training, and the timing of execution of the training programme.</p>	<p><u>Ganta</u></p> <p>181 trainees trained in auto-mechanics, metal-work, carpentry, plumbing, masonry, tailoring, hair dressing/ cosmetology and soap making. 91 of the trainees are now gainfully employed.</p> <p>12 small enterprises were rehabilitated and revived as skills training workshops; 12 Ganta-based entrepreneurs/trainers, benefited from the ToT in Benin and Ghana</p> <p><u>Harper</u></p> <p>RSTI building constructed with 2 laboratories (equipped with US\$ 93,000 worth of tools), 2 classrooms, 4 instructors' offices, Technicians and Directors offices. The runner wood processing annex is same size as main block and houses machinery worth US\$ 125,000.</p> <p>77 youths and adults enrolled in on-the-job trainings, 53 technology students gained experience in construction and 38 trainers benefitted.</p>

Description	Indicators as per LogFrame	Status
<p>2. Solar PV for Ganta</p> <p>4. Solar PV for Harper</p>		<p><u>Ganta</u> - Solar PV system installed in August 2012 but only providing electrical services to the Youth Centre building and not benefitting local enterprises. However, the local enterprises have plans to continue operate the trainings.</p> <p><u>Harper</u> - Solar PV installed in powerhouse near the RSTI with back-up generator. Plan to conduct income-generating activities to defray operating costs.</p>

In terms of the project's expected outcomes (the training centre in Harper and a network of local companies offering on-the-job training programme in Ganta equip the youth with planned skills), renovated sections of the Tubman University in Harper were to be used as a training centre with photovoltaic electrical power system, training equipment in rubber processing, rubber wood processing, entrepreneurship and computer literacy, with training programmes and trained instructors. Moreover, several on-the-job training programmes at local companies were operational in Ganta, as 12 small enterprises were capacitated as skills training workshops through ToT in Benin and Ghana.

## **Output 1. On the job training in Ganta**

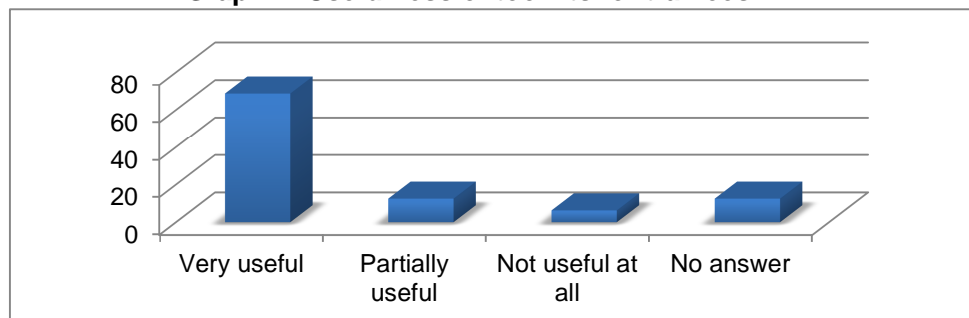
In Ganta the project replicated a similar training model to the one that was implemented in Kailahun, Sierra Leone, where 181<sup>17</sup> trainees were trained by the project, and local enterprises provided local youth with on-the-job training in disciplines such as auto-mechanics, metal-work, carpentry, plumbing, masonry, tailoring, hair dressing/cosmetology and soap making.

The trainers were selected based on their competence and the capacity of their enterprise to be used as a work-shop. The selected trainers were sent to Ghana or Benin to enrol in the ToT and they were sought to contribute to the curriculum and the list of the basic materials that they needed.

By its design, the project did not plan to provide any tool kits, which concerned some of trainees who intend to establish their own business. More than 60% of interviewees stated that toolkits/start up kits would be very useful for their employment.

A certificate of completion of trainings was another motivation factor for some of trainees to attend training, who stated that this certificate would increase the employment chances for the graduates and is normally requested by most potential employers.

**Graph 2: Usefulness of toolkits for trainees**



Improving productive capacities of the youth through skill training was one of the immediate objectives of the intervention. More than 80% of the respondents including those still in training confirmed that the training had improved their skills.

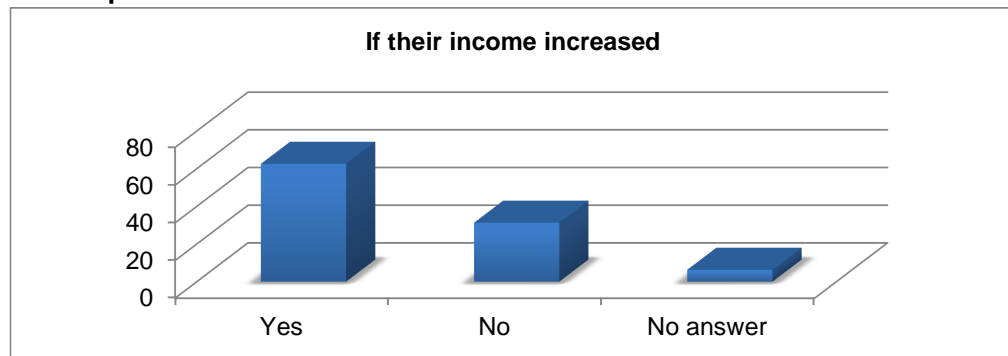
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<sup>17</sup> All the numbers were obtained from the PM's report on „Deliverables: Completed & those for completion“dated 01. August 2013, which was provided to the evaluation team during the evaluation mission.

Although more than 90% of respondents believed that the training has equipped them with skills they need to find work, only around 40% of them created their own businesses or found employment.

However, this was partially due to the fact that most of those who were not employed/self-employed were still enrolled in training or going to school. Overall, more than 60% of the respondents stated that their level of income had increased.

**Graph 3: Whether beneficiaries' level of income had increased**



**Output 3. Training programmes on rubber (and rubber wood) processing and entrepreneurship in Harper**

In Harper, the project established Liberia's first rubber processing technical facility at the premises of the Tubman University, equipped with state of the art laboratory equipment as well as a photovoltaic system for reliable and environmental friendly energy supply (also at the Youth Centre in Ganta).

Tubman University not only profited from the technical equipment it received, the project also contributed to the University's entrepreneurship curricula for certificate, diploma and post graduate courses.

Finally, the project conducted entrepreneurship training for 25 trainers, consisting of instructors from TU and leaders of social organizations such as women's and youth organizations.

The approach of UNIDO in offering on-the-job training to the trainees is very appreciated by the stakeholders, and is perceived as highly innovative by the University. Masonry trainees were involved in construction works of the RSTI and the solar PV system and therefore brought about a feeling of local ownership.



**Figure 13 - On-the-job training at the RSTI construction site**



As the project in Harper merely focused on the rehabilitation and eventually building the RSTI, the training curriculum was restricted to the construction skills such as masonry, carpentry, plumbing, electrical, tile laying, painting, welding and steel bending provided for 60 trainees from Harper/Maryland county.

As the majority of the trainees lacked basic literacy and numeracy skills, the project included training in these areas in its curriculum. Therefore, this part of the project activities concerning the institutional rehabilitation of the Tubman University in Harper was assessed as effective.

With regard to entrepreneurship trainings in Harper, the evaluation team couldn't make an assessment as the training was only to be conducted at a later stage.

Despite 2 project extensions, the RSTI was completed and is expected to become highly effective as a rubber technology and rubber wood processing facility. TU's faculty staff complimented UNIDO's initiative and were expecting the training to begin in September, but they were less aware of the equipment to be provided for the wood-processing centre (from Devotra in the Netherlands).

On the training side, a total of 77 youth and adults were enrolled in the UNIDO on-the-job skills trainings (masonry, carpentry, painting, plumbing and tiling) and 53 Tubman University technology students were oriented and gained experience in construction through exposure to the project.

In addition, a further 38 trainers benefitted from the project, comprised of the Tubman University faculty members, civil society people from the local area and young people trained in entrepreneurship development.

## **Outputs 2 and 4. Solar PV for Ganta and Harper**

The solar PV plan allowed the project sites to have reliable access to low cost renewable energy, resulting in the following developments based on TERI's feasibility study and Technical Project Annexures and Sunlabob's technical specifications.

**Table 4 - Solar PV development at the project sites**

<b>Project Site</b>	<b>Situation before</b>	<b>Original plan (Feb 2012)</b>	<b>Final installation (Aug 2012)</b>
Harper	No RSTI, some diesel generation on Tubman Univ. campus	20 kW with 48 x 2300 Ah battery bank	20 kW (84 panels) on one ground-mounted array mount with 6 inverters next to new diesel generator house
Ganta	No energy system in MYS building	<u>System 1</u> - 10 kW with 24 x 2300 Ah battery bank and 1.6 km distribution network <u>System 2</u> - 5 kW with 24 x 1250 Ah battery bank and 0.17 km distribution network	15 kW (63 panels) on one ground-mounted array supplying MYS building and no distribution network

A detailed analysis of the expected demands at each centre had already been made with TERI's information, as shown in Appendices 4 & 5 of Annex 6, and indicates that for the final current energy demands to be catered for by the solar systems, the Ganta battery bank as designed can give 4 days storage even with 20% increase in demand and the Harper system can provide 2 - 3 days storage capacity.

For the Tubman University site, the total load for the proposed RSTI was estimated at 88 kW, but the scope of the UNIDO project was to set up only 20 kW of solar PV to partially meet the demand (for the classrooms and laboratory) with the balance met from a new diesel generator.

For the Ganta site, the plan was to use excess power generation from two PV plants to be supplied to the nearby high school, community radio centre, business centres<sup>18</sup> and few households, which currently use diesel/petrol generators.

The 10 kWp PV plant would supply a mini-grid of 1.6 km length for a beauty parlour, carpentry and tailoring units, metalworking and small shops and

<sup>18</sup> 1 metal working shop, 1 carpentry shop, 1 automobile workshop and 1 tailoring unit

the 5 kWp PV plant at the MYS building would supply a single phase distribution line of 170 m to connect the community radio centre and nearby high school.

At the Tubman University site in Harper, the diesel generator would supply the rubber wood processing workshop and the 20 kWp solar PV would provide an alternative power source for the smaller power needs (lights and equipment) in the academic and laboratory building, as well as serving as a demonstration unit and visual awareness of alternative sources of energy.

The original schedule was to have the generator installed and ready for use on the last week of May 2012 and the PV installation completed by the first week of June. However, during the evaluation trip in early August, the equipment and installation team had yet to arrive, although the Project Manager sent a report and pictures of the system installed later in the month (see figure 14 below).

For the facility in Ganta it was known that a 15 kWp solar PV capacity would be established within the town, but originally it was to be shared 10 kWp and 5 kWp between two sites.

The MYS planned to use the larger unit at their Youth Centre as a model for youth activities and would invest US\$ 20,000 from UNICEF to establish a computer literacy training centre, DSTV unit, trainers training centre and study centre for students to use in the absence of lighting at home. MYS also wanted to launch income-generating activities using the electrification such as a charging point for mobile phones.

**Figure 14 - Harper 20 kW PV system fully installed  
(with battery house and security fence)**



The original schedule had the battery house and security fencing for the project planned for the second week of May 2012, then the civil works and panels completed by the end of May and the system operational by the first

week of June. Although the evaluation team was in country at the time it did not in fact witness the equipment that arrived in early August to be installed shortly afterwards.

The Ganta project at its early stage of installation is shown in Figures below.

**Figure 15 - Ganta 15 kW PV system in construction  
(MYS building on left and battery house on right)**



Overall the systems as installed are of a high quality and professionally installed, but due to their late installation (at the time of rainy season) the evaluation could not gather enough information about their operation and impact. Because the evaluation team did not see the systems finally installed and commissioned, there was no evidence whether technical operation and maintenance (O&M) issues were properly explained to the management, for example giving clarity about the capacity of batteries to power any future services planned. It was noted that some items associated to the energy plan had not been properly budgeted for, though they were essential for the RSTI's sustainability (e.g. water supply from deep-well).

### **3.5 Sustainability potential**

Despite some relatively minor issues noted by the evaluation team, the project's overall sustainability potential was assessed as positive, helped in large part by local ownership findings outlined earlier.

The energy component has encouraged government to make future plans for these types of technical interventions, and the Deputy Minister of MYS mentioned the plan to roll out solar systems to another 9 Youth Centres in the country.

Some trainees were able to set up their own businesses after graduation, particularly in hairdressing. In Ganta, the enterprise centres appear to have a self-help structure in place. Capabilities of the youth involved in the construction of the RSTI were established as the building emerged, based on the principle of self-reliance, which the beneficiaries and project partners now appreciate. The project used simple methods in construction work (due to lack of machines/equipment and remoteness of the site), which fostered an appreciation of self-help.

According to the Board of the University, the RSTI with its rubber processing capability will now:

1. Generate income for the University (recognising that rubber trees have a finite life for latex and are then replanted so the resource is sustainable);
2. Offer curricula in rubber science technology and wood processing at certificate, Diploma, and BS degree course level in 2013;
3. Enable the University to offer technical training and skills training and therefore create an alternative option for those applicants who are not yet able to study at the university level; and
4. Enable the University to engage at 3 levels in Harper: community development, research and education.

With regards to energy sustainability, as members from the community were involved in construction activities and solar PV at both sites, this firstly helped foster local ownership. Four (4) PV trainees from Harper and two (2) from Ganta benefited from a 10 day training conducted in Sierra Leone and were involved in the installation work with Sunlabob so that they can cater for the maintenance needs of the system. The witnessing of sustainable energy in the off-grid situation at the University has opened up ideas for development of biomass for electrification. And based on the establishment of the solar PV, the MYS have now been encouraged to spread this technology to more of the other Youth Centre sites in the country, for off-grid sustainable energy supply.

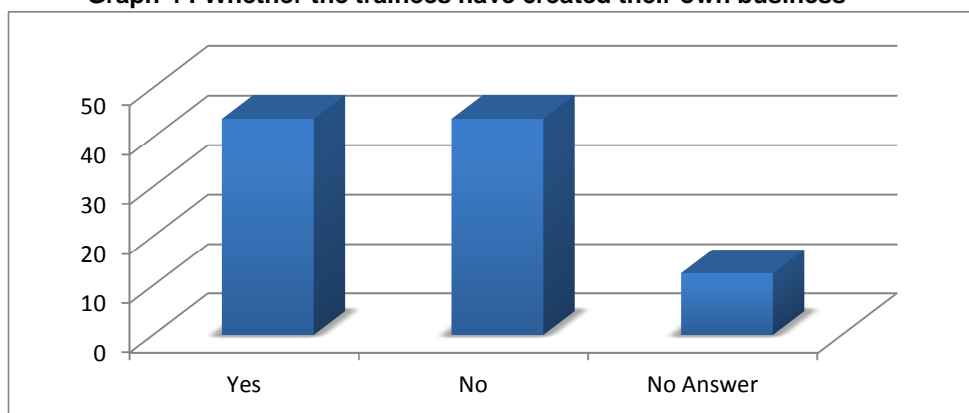
However, the solar PV system at Harper should have been designed to cater for more of the power requirements of the RSTI as an 80 kVA diesel generator is still required for the rubber wood processing and some laboratory machines. With continual technical assessment between UNIDO, Sunlabob and Tubman University, a better plan of perhaps 7 kWp at Ganta and 28 kWp at Harper would seem more appropriate to the end uses for each location.

## Employment generation

Although the evaluation was carried out while the project activities were still in the final stages of implementation (especially in Harper), some employment generating impact was evident.

According to project surveys, 55% of graduated trainees in Ganta found work after their training. This roughly mirrors the data collected through our evaluation survey showing that more than 40% of interviewees found employment following project training. Similarly, more than 40% of respondents stated that they have created their own businesses using the skills offered by UNIDO training. This is a notably higher percentage than for those that found work in a similar situation in Sierra Leone, at the Growth Centre in Bo. Some of those who had not gained employment were still enrolled in training.

**Graph 4 : Whether the trainees have created their own business**



In Harper because the design and implementation of the various components of the projects were closely monitored by staff, there was a natural cycle of learning for them on how UNIDO pursued a different model of development, that of learning by doing and fostering a culture of self-reliance. This small impact may have advantages for future initiatives that TU starts in its educational or community outreach programme.

At the completion of training, various enterprise centres in Ganta established signboards, as shown below.

**Figure 16 - One of many project signboards erected in Ganta**



Overall, it is the evaluation team's view that qualified and skilled technicians and potential entrepreneurs will have been enabled through UNIDO's projects with the capacity to work in various enterprises associated with the rubber industry. Having absorbed the new technologies or enhanced their skills in use of existing ones, these trainees should be able to respond to industries as the various sectors are better established in the country in the future.

### **Private sector participation**

As in the case of Sierra Leone, the PD doesn't mention any major role for private sector involvement in the project. However, in Ganta 12 local entrepreneurs were trained and provided the trainees with on-the-job training. In Harper the University has established a partnership with the University of the District of Colombia (UDC) in USA, and is jointly working with them on modalities to establish a modern latex factory at the University to produce (health-related) products such as condoms, latex gloves and rubber mattresses. Furthermore, TU has also signed a memorandum with the Cavalla Rubber Corporation (the operator of nearby rubber plantation) on placement of students within their rubber processing work.

It is notable that the involvement of the private sector (part of UNIDO's core mandate) is not mentioned in the LogFrame or the specific outputs and activities of the project, although the project established partnerships with local entrepreneurs in Ganta and enhanced their capacities to host on-the-job trainings. Although the project design did not include active involvement by the private sector, the evaluation team has observed partial private sector engagement in the project, and local private sector involvement in the sector is expected to grow.

**Figure 17 - Senior Tubman University staff and evaluation team**



### **Gender mainstreaming**

More than 50% of trainees in Ganta were women. According to trainers, female trainees have been enrolled in non-traditional disciplines such as metalworking and auto-mechanics and have been hired by companies in the area. One of female graduates of metalwork was earning a higher salary than her trainer.

Although a smaller number than could have been possible, two female students of the Tubman University from the civil engineering department were enrolled and have been working alongside the construction trainees at the RSTI, having learned how to lay tiles and other basic construction skills. Four trainees from the University also went to Sierra Leone for the solar PV training, including one woman.

### **South-South Cooperation**

South-South Co-operation (SSC) was evident in various trainings. ToT in neighbouring Guinea as well as training of the Liberian solar PV trainees in Sierra Leone under a sister programme were examples of SSC. Moreover, international consultants from Benin, Ghana, Mali and Uganda had been sharing experience and knowledge from the wider region on a broad range of disciplines (e.g. use of grating and milling machines, entrepreneurship etc).



## 4. Conclusions, recommendations and lessons learned

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### Conclusions

The project was highly relevant on many levels, and effectively built on previous cooperation and partnerships in the country to deliver clear results in:

- a. Institutional and infrastructure development;
- b. Technology transfer in a strategic sector (rubber); and
- c. Immediate income generation for intended beneficiaries in a very difficult and challenging post-crisis environment.

Gender mainstreaming, environmental impact and sustainability potential were also assessed positively.

The technologies demonstrated by UNIDO can enable Liberia to make effective use of its large natural rubber resources and human capabilities, and to create decent, productive and sustainable employment opportunities within a conducive (inclusive) policy framework.

The main issues that hampered delivery were related to efficiency in that project management arrangements were centralised in Vienna with inadequate delegation of authority to the project office in the field, including in procurement.

The lack of an initial feasibility study and a decision by UNIDO to directly manage construction of RSTI building in Harper also caused delays.

The evaluation team noted a need for improvements to conditions for UNIDO staff in the field, for example in providing longer-term contracts and adequate salaries, as well as a need for greater clarity on project deadlines.

Inadequate wages and food for construction workers/trainees affected the progress of the construction project in Harper.

Efficiency was further affected by initial selection of an unsuitable architect for the Rubber Science Technology Institute.

## **Recommendations**

The following recommendations pertain to similar future projects in Liberia:

- Construction initiatives should include initial feasibility studies in order to properly assess local capabilities and plan for the construction work.
- For construction projects, UNIDO should award subcontracts to local service providers or other UN agencies, such as UNOPS, if possible.

Recommendations to UNIDO with regard to post-crisis interventions:

- When working on infrastructure rehabilitation with unskilled workers/trainees, the subsistence of the trainees/workers should be attended to.
- Feasibility studies, needs and risk assessments as well as the design of a LogFrame should be carried out in the inception phase of quick-impact, post-crisis interventions.
- In order to deliver results in post-crisis situations more efficiently, UNIDO should improve the conditions of its national project staff in the field, and if possible provide longer-term contracts, adequate fees, and clarity about project deadlines.
- UNIDO should adjust its procurement and financial processes to match field requirements in post-crisis situations in order to be responsive to specific logistical needs and infrastructural challenges.

### **Lessons Learned**

- Basing a short-term, post-crisis project on pre-existing national institutions enhances overall effectiveness and delivery of outputs.
- The provision of allowances and food should be made part of construction work, as it is very important to keep the staff and trainees mobilised in a situation where many people live hand-to-mouth and day-to-day for their basic necessities.

# **Annex A - Evaluation Terms of Reference**

## **“Rehabilitation of training centres in vulnerable communities in Liberia”**

**TF/LIR/11/001**

**Budget: \$ 2,000,000**

**Period covered: March 2011 – August 2012**

### **1. Introduction**

This evaluation TOR is part of (and an annex to) a wider thematic evaluation of UNIDO’s Japanese funded post-crisis interventions in 7 countries, launched in 2011 with a total budget of \$9.8 million. The evaluation was mandated by the decision of the Programme Approval and Monitoring Committee (AMC) meeting on 15 December 2010. What follows is the specific TOR for the project in Liberia with a budget of \$ 2 million.

The evaluation is to be conducted during the final weeks of project implementation, in July/August 2012.

### **2. Project background and context**

Liberia suffered a 14-year long, devastating civil war that ended in 1996. Reconciliation efforts have been underway since the cessation of hostilities, though vulnerability and unemployment remain high among the youth.

The project focussed on “strengthening the socio-economic resilience of vulnerable communities by developing productive skills of the youth, crucial in gaining access to employment in local commerce sector.”

The project concentrated on the north east town of Ganta, providing on-the-job training programmes in rubber processing, rubber wood processing, entrepreneurship, and basic computer literacy together with the requisite tools and equipment. In addition, the project aimed to renovate selected premises within the Tubman University campus in Harper and installed photovoltaic solar energy systems.

Funded by the Supplementary Budget of the Japanese Ministry of Foreign Affairs, the project was initially designed for a one year period, and extended to June 2012. It was implemented in collaboration with the Ministry of Commerce and Industry of the Republic of Liberia.

The project outcome is described as: The training centre in Harper and a network of local companies offering on-the-job training programme in Ganta equip the youth with planned skills.

The document also lists two outputs:

1. Renovated sections of the Tubman University in Harper to be used as a training centre with photovoltaic electrical power system, training equipment in rubber processing, rubber wood processing, entrepreneurship and computer literacy, with training programmes and trained instructors.
2. On-the-job training programme at local companies operational in Ganta.

**Budget information**

Total Allotment: USD 1,769,912

Total Expenditure: USD 1,102,819 (as of May 2012)

Donor: The government of Japan

**3. Rationale and purpose**

The AMC decision of 15 December 2010 mandated the Evaluation Group of UNIDO to conduct an evaluation of projects in 7 countries receiving Japanese TF contributions for post-crisis interventions.

The main objective of the thematic evaluation is to contribute to UNIDO's institutional learning in short-term, post-crisis interventions, and is expected to contribute to:

- a. Learning lessons in Liberia with a forward looking approach that can feed into future UNIDO cooperation with the Government; and
- b. Feeding into the wider thematic evaluation that seeks lessons and recommendations on UNIDO's post-crisis interventions.

The evaluation exercise will therefore help UNIDO shape its overall strategy in post-crisis settings, and to further identify UNIDO's specific role and added value in supporting crisis-affected countries make the transition from humanitarian assistance to early recovery, reconstruction, and sustainable development.

The report will therefore be of interest to concerned UNIDO staff at HQ and the field, as well as UNIDO's Liberian and Japanese counterparts.

In order to meet tight deadlines before the project's formal closure, the evaluation must be launched at the earliest opportunity in May and completed by 30 June 2012.

The stakeholders will be consulted in Vienna and in the field as part of the evaluation exercise, and their comments and feedback will be sought as part of the report finalization process.

The evaluation will take full account of an earlier thematic evaluation of UNIDO's post-crisis interventions completed in 2010.

The evaluators will use a mix of document reviews, interviews, field visits and any local surveys needed for verifying relevant facts. The approach will be a forward looking one with a close eye on the thematic evaluation.



#### 4. Scope and focus

The evaluation will be carried out in keeping with agreed evaluation standards and requirements. More specifically it will fully respect the principles laid down in the “UN Norms and Standards for Evaluation” and Evaluation Policies of UNIDO.<sup>19</sup>

The evaluation will attempt to determine as systematically and objectively as possible the relevance, efficiency, achievements (outputs, prospects for achieving expected outcomes and impact) and sustainability of the project. To this end, the evaluation will assess the achievements of the project against its key objectives, as set out in the project document and the inception report, including re-examination of the relevance of the objectives and of the design. It will also identify factors that have facilitated or impeded the achievement of the objectives.

The evaluation will be carried out through analyses of various sources of information, including desk analysis, survey data, and interviews with counterparts, beneficiaries, partner agencies, donor representatives, programme managers and through the cross-validation of data.

The evaluation team will consist of a national consultant and two international evaluators (covering 'post-crisis livelihoods' and 'renewable energy') working under the guidance of the UNIDO evaluation manager in EVA/ODG.

<sup>19</sup> All documents available from the websites of the UN Evaluation Group: <http://www.uneval.org/>

The consultants will be expected to visit the project sites and to conduct interviews with various stakeholders including beneficiaries in the field.

The evaluation will cover all specific geographic areas covered by the project, and assess the entire results chain, but will focus more specifically on outputs and planned outcomes, and also the likelihood of achieving planned impacts despite the short duration of the project. The evaluation will take full account of a previous thematic evaluation on UNIDO's post-crisis interventions (2010), analyze the implementation of its recommendations, and suggest any adjustments based on factual findings and emerging lessons identified.

## **5. Evaluation issues and key evaluation questions**

While maintaining independence, the evaluation will be carried out based on a participatory approach, which seeks the views and assessments of all parties. It will address the following issues (within the context of a quick impact 12 month project cycle):

### Project identification and formulation

- The extent to which a participatory project identification process was applied in selecting problem areas and counterparts and other beneficiaries requiring technical cooperation support;
- The extent to which lessons from earlier UNIDO projects in Liberia were taken on board in the formulation process including lessons and recommendations given on existing evaluation reports at the time;
- Relevance of the project to Liberia's crisis-to-development transition priorities and needs;
- Clarity and realism of the project's broader and immediate objectives, including specification of targets and identification of beneficiaries and prospects for sustainability.
- Clarity and logical consistency between, inputs, activities, outputs and progress towards achievement of objectives (quality, quantity and time-frame);
- Realism and clarity in the specification of prior obligations and prerequisites (assumptions and risks);
- Appropriateness of the value chain segments (if any) selected, and their relevance to enhancing community resilience
- Did the project assess and/or address any negative environmental effects? Would this have been appropriate?
- Have there been any linkages developed to financing schemes or institutions for potential entrepreneurs from among the trainees?
- Realism and clarity of external institutional relationships, and in the managerial and institutional as well as security framework for implementation and the work plan;
- Clarity and appropriateness of management and implementation arrangements between various UNIDO technical branches involved (Agro & Renewable Energy)
- Likely cost-effectiveness of the project design
- The appropriateness of the project's criteria for the selection of beneficiaries and trainees for achieving stated aims.

### Additional questions related to the Renewable Energy component

- Has the selection of the RE source and the technology been based on thorough needs assessments, including social, economic, technical and environmental aspects?
- Is the RE source sufficient for the intended use in terms of quantity and quality?
- If energy is expected to promote or enhance productive use, has the demand for energy been analyzed in terms of quantity and quality?
- Have techno-economic feasibility studies been carried out and do they indicate the viability of the specific renewable energy solution?

#### Project ownership

- The manner in which beneficiaries were selected, and the extent to which the project was formulated in terms of participation of the national counterparts and/or target beneficiaries;
- Whether the counterparts have been appropriately involved and were participating in the identification of their critical problem areas and in the development of technical cooperation strategies and are actively supporting the implementation of the project approach
- Counterpart contributions and other inputs have been received from the Government (including at the local level) as compared to the project document work plan.
- The extent to which the steering committee/management meetings were held and decisions were issued involving the national counterparts.
- The extent to which national stakeholders and beneficiaries are committed to the longer-term running and maintenance of the project's renewable energy inputs.
- In the case of community based projects, is the community ownership of the project ensured?

#### Project coordination and management

- The extent to which stakeholders – including direct beneficiaries – have been involved in the implementation and management decisions of the project
- The extent to which the national management and overall field coordination mechanisms of the project have been efficient and effective;
- An assessment of crisis context-specific measures devised and put in place by UNIDO and the project managers, and related recommendations and lessons;
- The UNIDO-based management, coordination, quality control and input delivery mechanisms have been efficient and effective;
- Monitoring and self-evaluation has been carried out effectively, based on indicators for outputs, outcomes and objectives and using that information for project steering and adaptive management;
- Changes in planning documents during implementation have been approved and documented;
- Coordination envisaged with any other development cooperation programmes in the country has been realized and benefits achieved.

- Synergy benefits can be found in relation to other UNIDO and UN activities in the country.
- The effect of and lessons from the institutional set-up on project implementation.

#### Efficiency of Implementation

Assessment of whether the project approach represented the best use of given resources for achieving the planned objectives.

#### Effectiveness and Project Results

The evaluation will include a full and systematic assessment of outcomes and outputs produced to date (quantity and quality as compared with work plan and progress towards achieving the immediate objectives).

This includes the relevance of the outputs produced and how the target beneficiaries use the outputs, with particular attention to gender aspects as well as capacity development plans and outcomes; as part of the outcomes, which have occurred or which are likely to happen through utilization of outputs.

The evaluation will also assess the contribution of the project to enhancing local community resilience, recovery and peace building efforts in targeted regions.

#### Prospects for achieving the expected impact and sustainability:

Prospects for achieving the desired outcomes and impact and prospects for sustaining the project's results by the beneficiaries and the host institutions after the termination of the project, and identification of developmental changes (economic, environmental, social and institutional) that are likely to occur as a result of the intervention, and how far they are sustainable. This, inter alia, should include an assessment of local commitment at various levels to resource allocation for scaling up similar interventions, and an analysis of the impact of the project – and how these relate to and build on earlier UNIDO projects - in Liberia.

The likely impact that the project will have on the beneficiaries (the young men and women in the communities), The development of targeted infrastructure and training and local development as a whole in the context of decentralization.

The evaluators should also assess whether feasibility studies conducted through the project considered different possible business and ownership models of the established pilot centres and RE facilities (e.g. who will own and manage the RE system: public or private energy facility, private investor, community? Who pays and how much for the energy? Who maintains the infrastructure? If subsidies are required, who pays? Etc.)

Are energy-related and other policies in place that will ensure sustainability of the intervention or do existing strategies and plans pose a threat to sustainability (e.g. feed-in arrangements, expansion of national or regional grids, subsidies for renewable energy, RE financing schemes etc.)?



Recommendations

Based on the above analysis the evaluation team will formulate related recommendations and draw attention to any lessons of general interest to the context of Sierra Leon, and also in the wider post-crisis settings, and in relation to the design and orientation of the aforementioned thematic evaluation.

**6. Time schedule and deliverables/outputs**

The evaluation is scheduled to be launched in July and completed by end August. A team of 3 consultants – two international and one national - will be recruited for the purpose (see Annex 3 for job descriptions) working under the overall supervision and guidance of the UNIDO ODG/EVA evaluation manager.

**Draft Timetable (proposed start date: July 24th)**

<b>Activity</b>	<b>Work days (Two International evaluators)</b>	<b>Deliverable</b>
Desk study of project documents & relevant reports on the context	3	Inception report - Methodology, questionnaires and mission plan completed
Visit Vienna for preparatory meetings and to design a suitable initial evaluation methodology including a detailed field assessment plan – draft inception report	4	
Conduct field assessment	14	Presentation on preliminary findings
Detailed analysis of assessment results and follow-up surveys	2	
presentation of preliminary findings in Vienna & further consultations	1	
Preparation of first draft evaluation report & submission to EVA for feedback	10	First draft Report Survey reports
Finalization of report upon receipt of stakeholders' feedback	3	Final draft Report
<b>Total</b>	<b>37</b>	

**7. Consultations**

The mission will maintain close liaison with the representatives of other UN agencies, UNIDO and the concerned national agencies, as well as with national and international project staff. Although the mission should feel free to discuss with the authorities concerned anything relevant to its assignment, it is not authorized to make any commitments on behalf of the Government, the donor, or UNIDO.

**8. Deliverables**

All following deliverables are expected in electronic format:

1. Final evaluation report
2. Initial and final survey reports
3. Draft evaluation report
4. HQ and field presentations
5. Copies of all completed survey questionnaires
6. Inception report (including survey questionnaires)

The evaluation report must follow the standard template structure given in Annex 1, and follow the standard evaluation report format (to be supplied to the evaluators by the UNIDO Evaluation Group).

Draft reports submitted to UNIDO Evaluation Group are shared with the corresponding Programme or Project Officer(s) for initial review and consultation. They may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions. The consultation also seeks agreement on the findings and recommendations. The evaluators will take the comments into consideration in preparing the final version of the report.

One copy of all survey interview reports and a copy of all completed survey questionnaires must also be shared with UNIDO.

The evaluation will be subject to quality assessments by UNIDO Evaluation Group. These apply evaluation quality assessment criteria (see Annex 4) and are used as a tool for providing structured feedback. The quality of the evaluation report will be assessed and rated against the criteria set forth in the Checklist on evaluation report quality.

## Annex 1 of terms of reference

### Template of in-depth evaluation reports

#### 1. Executive summary

- Must be self-explanatory
- Not more than five pages focusing on the most important findings and recommendations
- Overview showing strengths, weaknesses, opportunities and constraints (internal and external) of the project

#### 2. Introduction

- Information on the evaluation: why, when, by whom, etc.
- Information sources and availability of information
- Methodological remarks and validity of the findings
- Project summary (“fact sheet”, including project structure, objectives, donors, counterparts, timing, cost, etc).

#### 3. Country and project context

This chapter provides evidence for the assessment under chapter VI ( in particular relevance and sustainability)

- Brief description including history and previous cooperation
- Project specific framework conditions; situation of the country; major changes over project duration
- Positioning of the UNIDO project (other initiatives of government, other donors, private sector, etc.)
- Counterpart organisation(s); (changes in the) situation of the beneficiaries and counterparts

#### 4. Project Planning

This chapter describes the planning process as far as relevant for the assessment under chapter VI

- Project identification (stakeholder involvement, needs of target groups analysed, depth of analysis, etc.)
- Project formulation (stakeholder involvement, quality of project document, coherence of intervention logic, etc.)
- Description of the underlying intervention theory (causal chain: inputs-activities-outputs-outcomes)
- Funds mobilization

#### 5. Project Implementation

*This chapter describes what has been done and provides evidence for the assessment under chapter VI.*

- Financial implementation (overview of expenditures, changes in approach reflected by budget revisions, etc.)

- Management (in particular monitoring, self assessment, adaptation to changed circumstances, etc.)
- Outputs (inputs used and activities carried out to produce project outputs)
- Outcome, impact (what changes at the level of target groups could be observed, refer to outcome indicators in prodoc if any)

#### 6. Assessment

***The assessment is based on the analysis carried out in chapter III, IV and V. It assesses the underlying intervention theory (causal chain: inputs-activities-outputs-outcomes). Did it prove to be plausible and realistic? Has it changed during implementation? This chapter includes the following aspects:***

- Relevance (evolution of relevance over time: relevance to UNIDO, Government, counterparts, target groups)
- Ownership (including meetings of the steering committee as a supervisory and decision making body involving the major national counterparts, management capacities of beneficiaries)
- Efficiency (quality of management, quality of inputs, were outputs produced as planned? were synergies with other initiatives sufficiently exploited? Did UNIDO draw on relevant in-house and external expertise? Was management results oriented? Were the inputs cost-effective?)
- Effectiveness and impact (assessment of outcomes and impact reaching target groups)
- Sustainability
- If applicable: overview table showing performance by outcomes/outputs

#### 7. Issues with regard to a possible next phase

- Assessment, in the light of the evaluation and potential opportunities, of proposals put forward for a possible next phase
- Recommendations on how to proceed under a possible next phase, overall focus, outputs, activities, budgets, etc.

#### 8. Recommendations

- Recommendations must be based on evaluation findings
- The implementation of the recommendations must be verifiable (indicate means of verification)
- Recommendations must be actionable; addressed to a specific officer, group or entity who can act on it; have a proposed timeline for implementation
- Recommendations should be structured by addressees:
  - UNIDO
  - Government and/or Counterpart Organisations
  - Donor

#### 9. Lessons learned

- Lessons learned must be of wider applicability beyond the evaluated project but must be based on findings and conclusions of the evaluation

## Annex 2 of terms of reference: Project Log Frame

Results	Indicators	Means of verification	Assumptions & risks
<p><b>Objective:</b> To improve the employment and self-employment opportunities for the youth and to create resilient communities in Ganta and Harper</p>	<p>Number of trainees and local people engaged in productive activities by using the skills obtained through training programmes</p>	<p>Surveys and database at Tubman University; Information provided by participating enterprises in the training programme</p>	
<p><b>Outcomes:</b> The training centre in Harper and a network of local companies offering on-the-job training programme in Ganta equip the youth with planned skills.</p>	<p>Number of trainees acquiring skills through training programmes tend to grow</p>	<p>1) Quarterly reports from Tubman University 2) Project progress reports</p>	<p>The construction work has to be completed before the month of May as the rainy season starts. The project plans to mitigate the start up period preparation by identifying a strong team leader. Agreement between MCI and TU on the allocation of the premises to be reached before or at the earliest stage of the project. The formal consultation can start when the project is approved. Agreement by the companies in Ganta on the conditions for training.</p>
<p><b>Outputs:</b> 1. Renovated sections of the Tubman University in Harper to be used as a training centre with photovoltaic electrical power system, training equipment in rubber processing, rubber wood processing, entrepreneurship and computer literacy, with training programmes and trained instructors. 2. On-the-job training programme at local companies operational in Ganta.</p>	<p>1) Status of premises, the functioning of equipment, the capability of trainers. 2) Implementation of the training programme in accordance with the work plan by the participating companies in terms of the number of trainees per type of training, and the timing of execution of the training programme.</p>	<p>1) Project reports Syllabus and training material Reports on conducted training courses. 2) Project progress reports (Data is gender specific)</p>	
<p><b>Activities:</b></p> <ol style="list-style-type: none"> <li>1. Recruit a Project Coordinator for Harper and one for Ganta</li> <li>2. Prepare blue print and bill of quantities for the renovation of selected premises at William V.S. Tubman University in Harper</li> <li>3. Form a construction team and carry out renovation</li> </ol>			

Annex A – Evaluation Terms of Reference

<b>Results</b>	<b>Indicators</b>	<b>Means of verification</b>	<b>Assumptions &amp; risks</b>
<ol style="list-style-type: none"> <li>4. Prepare technical specifications for training equipment and material</li> <li>5. Purchase of training equipment and material</li> <li>6. Install training equipment</li> <li>7. Select trainers for HTC</li> <li>8. Conduct TOT for trainers for HTC</li> <li>9. Develop training programmes</li> <li>10. Prepare technical specifications for photovoltaic device and purchase it</li> <li>11. Install photovoltaic device</li> <li>12. Train people on maintenance and operation of the photovoltaic device</li> <li>13. Compile a baseline data of people attending the training</li> <li>14. Launch a first series of training at Harper and Ganta</li> </ol>			

## **Annex 3 of terms of reference: Job descriptions for the SIL & LIR project evaluation team**

**Projects:** TF/SIL/11/002 & TF/LIR/11/002

### **International Renewable Energy Consultant (Team Leader) 11-01**

**Project title:** **SIL:** Rehabilitation of training-cum-production centres in vulnerable communities of Koindu, Kpandebu and Pujehun  
**LIR:** Rehabilitation of training centres in vulnerable communities in Liberia

**Project No.** TF/SIL/11/002 & TF/LIR/11/002

**Post Title:** International Project Evaluator (Team Leader)

**Duration:** 55 Days over 9 weeks

**Date required:** 21 July

**Duty station:** Vienna, Monrovia & Freetown plus local travel in Liberia & Sierra Leone

**Counterpart(s):** **Sierra Leone:** Ministry of Trade and Industry  
**Liberia:** Ministry of Commerce and Industry, the Tubman University, and Ministry of Youth and Sport of Republic of Liberia

#### **Duties:**

In accordance with the AMC decision of 15 December 2010, a final evaluation has to be undertaken by an independent team of consultants in accordance with the project evaluation TOR. The main objective of the final evaluation is to make an overall assessment of the effectiveness and efficiency with which the projects have been implemented and, in particular, to provide a detailed assessment of the achievements made and overall results obtained. The evaluation shall specifically focus on comparing the actual outputs and outcomes of the project with the ones originally planned in the project document. In addition, the evaluation will feed directly into a wider thematic evaluation of UNIDO's post-crisis interventions funded in the main through the Supplementary Budget of the Ministry of Foreign Affairs of Japan over the period 2011-13. The consultant will work closely with the project staff, supported by a national consultant, and will report to the Evaluation Manager at ODG/EVA.

The 'Renewable Energy' evaluation consultant will:

- act as a 'team leader' and focal point for evaluation report drafting, guiding and collating inputs from the other consultants
- perform a coordination and organizational function, supporting the role of the ODG/EVA Evaluation Manager, and helping to ensure smooth implementation of the field missions,
- Prepare presentations of findings,
- supervise the national consultants, and
- providing advice and guidance for the international livelihood consultant.

In particular the Consultant will:

Activity	Work days	Location & dates	Deliverable
Document review; Design a suitable initial evaluation methodology including a detailed field assessment plan – draft inception report & finalise mission plan	4	Home based; 21 - 22 July & 1 - 2 October	Inception report - and mission plan completed
Preparatory meetings; finalise inception report	3	Vienna; 23 - 25 July	
Field assessment	21	LIR/SIL/GHA; over the period 25 July – 8 October (25 July to 6 Aug & 1-7 Oct)	Presentation on preliminary findings Draft eval report SIL & LIR; Thematic evaluation consultations and preps
HQ consultations, report writing, debriefing & presentation on SIL & LIR; Consultations	8	Vienna; 6 August & 8 October	
Finalise SIL & LIR evaluation reports	24	Home based; 7 -18 Aug & 9 – 20 October	Evaluation report
<b>Total</b>	<b>60</b>		

**Qualifications:**

- Extensive knowledge and experience in renewable energy project formulation and management
- Proven track record in evaluation of UN-projects
- Good quality report writing skills
- Postgraduate degree in engineering or a related field.
- Native level English language skills

The evaluation approach and other details are given in the project evaluation TOR, to which this Job Description is an annex.

**A. Junior International Consultant (Livelihoods) 11-02**

<b>Project No.</b>	TF/SIL/11/002
<b>Post Title:</b>	Junior International Project Evaluator (Livelihoods)
<b>Duration:</b>	3 working months over 4 months
<b>Date required:</b>	9 July 2012
<b>Duty station:</b>	Vienna & Freetown plus local travel Sierra Leone
<b>Counterpart(s):</b>	Ministry of Trade and Industry

**Duties:**

In accordance with the AMC decision of 15 December 2010, a final evaluation has to be undertaken by an independent team of consultants in accordance with the project evaluation TOR. The main objective of the final evaluation is to make an overall assessment of the effectiveness and efficiency with which the projects have



been implemented and, in particular, to provide a detailed assessment of the achievements made and overall results obtained. The evaluation shall specifically focus on comparing the actual outputs and outcomes of the project with the ones originally planned in the project document. In addition, the evaluation will feed directly into a wider thematic evaluation of UNIDO's post-crisis interventions funded in the main through the Supplementary Budget of the Ministry of Foreign Affairs of Japan over the period 2011-13. The consultant will work closely with the project staff, supported by a national consultant, and will work under the guidance of the international Team Leader and the Evaluation Manager at ODG/EVA.

In particular the Consultant will:

Activity	Work months	Location	Deliverable
Support the Evaluation manager is finalising the TOR, mission plans and all preparations for document collation, logistical arrangements, contracts and coordination with the field and various HQ units	0.6	Vienna	TOR & evaluation documentation prepared
Document review; Design a suitable initial evaluation methodology including a detailed field assessment plan – draft inception report & finalise mission plan	0.4	Vienna	Inception report - and mission plan completed
Briefing meeting with the team leader; finalise inception report; field assessment	0.25	Vienna;	Presentation on preliminary findings
Field assessment (25 July – 15 August)	0.6	Sierra Leone and Liberia	
Report writing	0.7		Evaluation report
HQ debriefing, presentation and consultations	0.2	Vienna	Presentation of findings
Finalise evaluation reports	0.25	Vienna	Evaluation report
<b>Total</b>	<b>3</b>		

**Qualifications:**

- Knowledge and experience in livelihoods and agribusiness project formulation and management in post-crisis contexts
- Solid understanding of UN-project evaluation norms and standards
- Good quality report writing skills
- Postgraduate degree in social sciences, engineering or a related field.
- Good report writing skill

The evaluation approach and other details are given in the project evaluation TOR, to which this Job Description is an annex.

### Annex 4 of terms of reference: Checklist on evaluation report quality

Report quality criteria	UNIDO Evaluation Group Assessment notes	Rating
a. Did the report present an assessment of relevant outcomes and achievement of programme objectives?		
b. Were the report consistent and the evidence complete and convincing?		
c. Did the report present a sound assessment of sustainability of outcomes or did it explain why this is not (yet) possible?		
d. Did the evidence presented support the lessons and recommendations?		
e. Did the report include the actual programme costs (total and per activity)?		
f. Quality of the lessons: Were lessons readily applicable in other contexts? Did they suggest prescriptive action?		
g. Quality of the recommendations: Did recommendations specify the actions necessary to correct existing conditions or improve operations ('who?' 'what?' 'where?' 'when?'). Can they be implemented?		
h. Was the report well written? (Clear language and correct grammar)		
i. Were all evaluation aspects specified in the TOR adequately addressed?		
j. Was the report delivered in a timely manner?		

#### Rating system for quality of evaluation reports

A number rating 1-6 is used for each criterion: Highly Satisfactory = 6, Satisfactory = 5, Moderately Satisfactory = 4, Moderately Unsatisfactory = 3, Unsatisfactory = 2, Highly Unsatisfactory = 1, and unable to assess = 0.

## Annex B - Log Frame

Results	Indicators	Means of verification	Assumptions & Risks
<p><b>Objective:</b> To improve the employment and self-employment opportunities for the youth and to create resilient communities in Ganta and Harper</p>	<p>Number of trainees and local people engaged in productive activities by using the skills obtained through training programmes</p>	<p>Surveys and database at Tubman University; Information provided by participating enterprises in the training programme</p>	
<p><b>Outcomes:</b> The training centre in Harper and a network of local companies offering on-the-job training programme in Ganta equip the youth with planned skills.</p>	<p>Number of trainees acquiring skills through training programmes tend to grow</p>	<p>1) Quarterly reports from Tubman University 2) Project progress reports</p>	<p>The construction work has to be completed before the month of May as the rainy season starts. The project plans to mitigate the start up period preparation by identifying a strong team leader.</p>
<p><b>Outputs:</b> 1. Renovated sections of the Tubman University in Harper to be used as a training centre with photovoltaic electrical power system, training equipment in rubber processing, rubber wood processing, entrepreneurship and computer literacy, with training programmes and trained instructors. 2. On-the-job training programme at local companies operational in Ganta.</p>	<p>1) Status of premises, the functioning of equipment, the capability of trainers. 2) Implementation of the training programme in accordance with the work plan by the participating companies in terms of the number of trainees per type of training, and the timing of execution of the training programme.</p>	<p>1) Project reports Syllabus and training material Reports on conducted training courses. 2) Project progress reports (Data is gender specific)</p>	<p>Agreement between MCI and TU on the allocation of the premises to be reached before or at the earliest stage of the project. The formal consultation can start when the project is approved. Agreement by the companies in Ganta on the conditions for training.</p>
<p><b>Activities:</b> 15. Recruit a Project Coordinator for Harper and one for Ganta 16. Prepare blue print and bill of quantities for the renovation of selected premises at William V.S. Tubman University in Harper 17. Form a construction team and</p>			

<p>carry out renovation</p> <p>18. Prepare technical specifications for training equipment and material</p> <p>19. Purchase of training equipment and material</p> <p>20. Install training equipment</p> <p>21. Select trainers for HTC</p> <p>22. Conduct TOT for trainers for HTC</p> <p>23. Develop training programmes</p> <p>24. Prepare technical specifications for photovoltaic device and purchase it</p> <p>25. Install photovoltaic device</p> <p>26. Train people on maintenance and operation of the photovoltaic device</p> <p>27. Compile a baseline data of people attending the training</p> <p>28. Launch a first series of training at Harper and Ganta</p>			
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## Annex C - List of people met

Name	Position	Organisation/Location
Mrs. Syvel Tan	Project Manager	UNIDO, Liberia
Ms. Mary-Ann Sajery	Project Administrator	UNIDO, Liberia
Mr. Brahima Sackie	Project Technical Assistant	UNIDO, Liberia
Mr. Nathan Reeves	Solar Project Coordinator	UNIDO, Liberia
Mr. Joshua Kanmoe	Ganta Project Coordinator	UNIDO, Liberia
Mr. John Daniels	Harper Project Coordinator	UNIDO, Liberia
Mr. Siaka Soumare	Security Associate	UNDSS
Mr. Everett J. Clark	Operations Specialist	UNDP, Liberia
Mr. Moses Massah	Energy Specialist	UNDP
Mr. John Walker	Livelihood Specialist	UNDP
Ms. Nessi Gohlkai	Governance Specialist	UNDP
Ms. Faquen Gweh	Director	Ministry of Youth & Sports, Liberia
Mr. Zizi Cyrus	Director General	Ministry of Youth & Sports, Liberia
Mr. Sam E Hare Jr.	Deputy Minister	Ministry of Youth & Sports, Liberia
Mr. Henryton Brewer	Site Manager	UNIDO at RSTI Harper
Mr. Joseph James	Architect	UNIDO at RSTI Harper
Mr. Alvin Freeman	Warehouseman/Admin	UNIDO at RSTI Harper
Mr. Peter Harmon	Construction Trainee	UNIDO at RSTI Harper
Mr. Alfred C. Wlebo	Construction Trainee	UNIDO at RSTI Harper
Mr. Emmanuel Johnson	Construction Trainee	UNIDO at RSTI Harper
Mr. Gerald Coleman	Dean of Engineering	Tubman University, Liberia
Mr. Robert Jones	Dean of Agriculture	Tubman University, Liberia
Dr. Elizabeth Carbajosa	Vice President	Tubman University, Liberia
Mrs. Gloria Taylor-Williams	Director of Planning & Infra	Tubman University, Liberia
Mr. David K. Forkpah	Chemistry Faculty Staff	Tubman University, Liberia

## Annex C – List of people met

Ms. Olusela Dawodu	Lab. Technician	Tubman University, Liberia
Ms. Myth Carbajosa	Science Faculty Staff	Tubman University, Liberia
Mr. Mario Carbajosa	Engineering Faculty Staff	Tubman University, Liberia
Mr. Mark Wilson	Engineering Faculty Staff	Tubman University, Liberia
Mr. Momo Diwolo	Engineering Faculty Staff	Tubman University, Liberia
Mr. Omar Mall	Civil Affairs	UNMIL, Harper
Mr. Mulutu Darkena	Security Officer	UNMIL, Harper
Mr. Shunsuke Saito	First Secretary	Japanese Embassy, Ghana
Mr. Albert S. Quoie	Masonry Trainer	Ganta, Liberia
Mr. Emmos Gbatu	Metal work Trainer	Ganta, Liberia
Mr. Gerry Toluh	Carpentry Trainer	Ganta, Liberia
Ms. Julia Thoms	Hairdressing Trainer	Ganta, Liberia
Ms. Precious Mccoy	Hairdressing Trainer	Ghanta, Liberia
Mr. Immanuel Duoki	Tailoring Trainer	Ganta, Liberia
Mr. Efanso Saye	Tailoring Trainer	Ganta, Liberia
Mr. Michael Musili Nzau	P, M&E Officer/PSEA Focal Point (Integrated Office of the DSRSG/RC)	United Nations in Liberia, Monrovia, Liberia

## Annex D - Survey questionnaires

### Questionnaires for trainees of the UNIDO growth centres

#### A. Interviewee and Interviewer Profile

Trainee signature	Interviewer	Date

Information about you				
1.	How old are you?			
2.	Are you male or female?	Male	<input type="checkbox"/> Female <input type="checkbox"/>	
3.	Where did you attend the Training?			
4.	Level of education	<input type="checkbox"/> No formal education <input type="checkbox"/> Primary School (3 - 6 years) <input type="checkbox"/> Intermediate (7 - 9 years) <input type="checkbox"/> Secondary School (12 years) <input type="checkbox"/> Post-Secondary Education <input type="checkbox"/> Vocational or other training?		
about your situation before the UNIDO training				
5.	Did you take any training before the UNIDO training?	Yes	<input type="checkbox"/> No <input type="checkbox"/>	
6.	If yes, in which area?			
About your experience with the training				
7.	What motivated you to take the training?			
8.	How did you become aware of the training?			
9.	What course did you take?			
	a) Basic training			
	b) Entrepreneurship (e.g. marketing )			
	c) Gender equality			
10.	Were you satisfied with the ability of your trainers?			
11.	Were you satisfied with the course you took			
	PLEASE ONLY TICK THE BOXES FOR THE COURSE YOU ACTUALLY TOOK			
		Very Satisfied	Satisfied	Not Satisfied
	Basic training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Annex D – Survey questionnaires

Entrepreneurship (e.g. marketing )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gender Equality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Did you create your business with the skills you learned in the training? Explain.			
13. When you completed the course, did you believe that you had the skills needed to find work?	Yes	<input type="checkbox"/>	No <input type="checkbox"/>
14. Did you receive the expected Qualification Certificate for the training? If not, why?	Yes	<input type="checkbox"/>	No <input type="checkbox"/>
<b>About your situation after the training</b>			
15. Are there jobs or income earning opportunities where you live for the skills that you learned during the course?	Yes	<input type="checkbox"/>	No <input type="checkbox"/>
16. Have you found employment using the skills you learned during the training?	Yes	<input type="checkbox"/>	No <input type="checkbox"/>
17. Has the training improved the quality of the skills that you learned during the course?	Yes	<input type="checkbox"/>	No <input type="checkbox"/>
18. Have you been able to create your business using the skills you learned during the training?	Yes	<input type="checkbox"/>	No <input type="checkbox"/>
19. Did you receive a tool kit from UNIDO?	Yes	<input type="checkbox"/>	No <input type="checkbox"/>
20. If you received a tool kit, what do you think of the quality of the toolkit?	Good quality	<input type="checkbox"/>	
	Medium quality	<input type="checkbox"/>	
	Poor quality	<input type="checkbox"/>	
21. How useful do you think the toolkit is to your current job?	Very useful	<input type="checkbox"/>	
	Partially useful	<input type="checkbox"/>	
	Not useful at all	<input type="checkbox"/>	
22. Did your income increase because of the course	Yes	<input type="checkbox"/>	No <input type="checkbox"/>
23. If yes, by about how much more?	-----0-25% more than before -----25- 50% more than before -----51-75% more than before -----76-100% more than before		

**Notes:** \_\_\_\_\_



## Annex E - Points raised by previous evaluations

### Thematic Evaluation of Post-crisis Projects (2010)

The following points have been noted as relevant to the post-crisis activities in Liberia (and Sierra Leone) that are currently under evaluation:

**Table 5 - Main points from the post-crisis evaluation (2010)**

Evaluation point	Observations
General	<ul style="list-style-type: none"> <li>• 5 out of 10 of the evaluated countries included Vocational Training Centre (VTC) or Growth Centre (GC) projects, similar to those in Sierra Leone and Liberia.</li> <li>• Projects were also short-term with the potential for medium-term interventions untapped.</li> <li>• Project durations of 12 months for the Mano River countries (Ivory Coast, Guinea, Sierra Leone, and Liberia) are far too short for ambitious multi-stakeholder programme with multiple inputs and in all cases projects were also extended by 6 months.</li> <li>• Construction of the GCs in Sierra Leone experienced delays and a change of team leader affected internal efficiency.</li> <li>• The parallel approach (facilities rehabilitated and trainings conducted together) is relevant to the post-crisis situation.</li> <li>• UNIDO has comparative advantage to GC work in post-conflict situations due to the industrial development and adding value to agri-products.</li> <li>• Needs assessments, market surveys and training needs assessments important to be done during the project formulation.</li> <li>• Enterprise-based training using apprenticeships can be cost-effective method of achieving marketable skills.</li> <li>• Recognition that skills training in cases of high illiteracy levels needs to be combined with non-formal basic education.</li> <li>• It is good practice to integrate entrepreneurship training with technical skills training but expertise and adequate training materials need to be provided.</li> <li>• Giving away start-up kits is common practice in post-crisis projects but can counter the drive towards developing a self-help and entrepreneurial culture.</li> <li>• Vocational Education and Training Centres that create facilities for skills development for livelihood recovery and develop institutional capacities that contribute to social stabilisation and economic development often fall under Ministries of Education or Labour but UNIDO naturally partners Ministry of Trade and</li> </ul>

## Annex E – Points raised by previous evaluations

Evaluation point	Observations
	<p>Industry/Commerce.</p> <ul style="list-style-type: none"> <li>• Construction work absorbs substantial project management efforts and always results in delays and project extensions.</li> <li>• The Growth Centre concept has been shown to have 2 major challenges; ownership &amp; financial stability.</li> </ul>
Relevance	<ul style="list-style-type: none"> <li>• Most projects were highly relevant but special efforts have to be made to obtain funding for Track B &amp; C activities (i.e. mid-term local reintegration &amp; medium-term development) where most of UNIDO's comparative advantage is concentrated.</li> </ul>
Efficiency	<ul style="list-style-type: none"> <li>• Centralised UNIDO project management and tendering systems result in delays, especially for procurement of equipment.</li> <li>• Project monitoring focuses on project outputs, with less attention paid to outcome and impact monitoring.</li> </ul>
Effectiveness	<ul style="list-style-type: none"> <li>• There was achievement of project outcomes against the Log-Frames, but the problem was that the Log-Frames were weak and evaluation done too early to measure results.</li> </ul>
Sustainability	<ul style="list-style-type: none"> <li>• Not sustainable without clear institutional anchoring and securing of regular budgets and financial sustainability.</li> </ul>
Impacts	<ul style="list-style-type: none"> <li>• Were livelihoods improved?</li> <li>• Economic reintegration of ex-combatants.</li> <li>• Improved functioning of skills development systems at GCs</li> </ul>
Project Design	<ul style="list-style-type: none"> <li>• Donor priorities, rules and conditionalities (e.g. short project durations) are shaping poor project design, e.g. planning missions, originally not sufficiently funded to identify the best interventions, then pushed into the inception phase that further reduces project implementation.</li> <li>• Deficits in intervention logic, concentration on outputs rather than outcomes, poor log-frames.</li> <li>• Is UNIDO scope deep (as opposed to wide) or concentration on quality (as opposed to outreach)?</li> </ul>
Project Management	<ul style="list-style-type: none"> <li>• The centralised management style of UNIDO adds unnecessary delays, for example minor expenses have to be sanctioned at HQ through the MOD system, which does not favour fast reactions or adjustments, as required from fast-changing post-crisis contexts.</li> </ul>
Conclusions and Recommendations	<ul style="list-style-type: none"> <li>• Sound business planning and clarity on ownership of assets are essential for GC projects.</li> <li>• The critique is not on the Project Managers but on the inefficiencies of the UNIDO Management System.</li> <li>• Training of Trainers should be a focus on capacity development.</li> <li>• GCs pose particular sustainability challenges and UNIDO should conduct ex-post evaluations.</li> <li>• More resources should be given to sound project</li> </ul>

## Annex E – Points raised by previous evaluations

Evaluation point	Observations
	<p>planning and fact-finding and proper Log-Frame and monitoring techniques.</p> <ul style="list-style-type: none"> <li>• UNIDO should decentralise decision-making processes and budget authority to the field and simplify the MOD payment structure.</li> <li>• Fast-track procedures are required for post-crisis projects including special funds reserved for fast approval.</li> </ul>

### Independent Evaluation of Mano River Union Project (2010)

Although the programme was designed for US\$ 21.5 million, only US\$ 5 million for operations in the first year was granted by the Government of Japan (GOJ) for the first year. But 2,600 youths did receive training in traditional trades (tailoring, hairdressing, carpentry etc.) in the same border areas of the current project by entrepreneurs through 'supported apprenticeships'. There were other activities carried out such as setting up a competitive grant scheme (called Start-and-Improve-Your -Business (SIYB)) and partnerships with the private sector, skills development training and plans to set up a sub-regional Labour Market Information System and a Youth Forum.

A good start was made on these initiatives but the programme was never finished due to lack of funds and there was uncertainty that the trainings would lead to gainful employment and decent work for the youth. Some of the key evaluation points are given in the table below:

**Table 6 - Main points from the independent evaluation of the Manu River Union Project (2010)**

Evaluation point	Observations
Relevance	<ul style="list-style-type: none"> <li>• Selection of the border areas was highly relevant because of the history of conflict there and the fact that young people did not get full schooling and therefore lack employable skills.</li> <li>• Short-term emergency funding for medium-term income creation activities entails considerable risk and should be avoided.</li> </ul>
Effectiveness	<ul style="list-style-type: none"> <li>• The contents of trainings were not designed with reference to market surveys and future trends.</li> <li>• Very little training done on agriculture-related fields such as improved food-processing and services for agricultural production.</li> </ul>
Efficiency	<ul style="list-style-type: none"> <li>• Administrative practices of the UN agencies negatively impacted on efficient delivery and led to delays and hiring of project staff as not co-ordinated and with short contracts.</li> </ul>
Sustainability	<ul style="list-style-type: none"> <li>• Short time period of implementation meant that not all activities have the potential to be technically or financially sustainable.</li> </ul>

## Annex E – Points raised by previous evaluations

<p>Project Management</p>	<ul style="list-style-type: none"> <li>• Monitoring and evaluation not given enough attention due to extreme implementation pressure.</li> <li>• Project funds were not retained for an independent evaluation.</li> <li>• The need to produce results in a short time became a constraint and a project extension had to be agreed for UNIDO.</li> <li>• Administrative bureaucracy led to extensive delays and costly wasting of time that should have been spent on substantive issues.</li> <li>• Logistical challenges in working in remote border areas and across 4 countries with linguistic diversity.</li> <li>• Procurement of equipment and training materials to a variety of small businesses under complicated procedures took up too much of the field staff's time. An outside procurement agent should be used with experience of local conditions.</li> </ul>
<p>Conclusions and Recommendations</p>	<ul style="list-style-type: none"> <li>• The funding principles for carrying out the trainings created much debate; UNIDO takes the position that trainees should not receive any incentive payments and trainers are not paid salaries and although this gives some assurance of commitment, it is counter to the majority of assistance programmes which the beneficiaries are used to.</li> <li>• Identify new and innovative sectors and technologies for development assistance, beyond simple training, such as in agriculture, fisheries and renewable energy.</li> <li>• Promote the grant SIYB initiative as the main business tool with 20 master trainers in each country to ensure sufficient ToT capacity.</li> <li>• Enter into negotiations with MFIs about innovative financing, with Government providing a collateral fund, a concept that has worked in other West African countries.</li> </ul>

## Annex F - Solar Appendices

### Appendix 1 - Harper (RSTI) load details and demand assessment

Category	Equipment	Source of electricity	No of units	Load per unit (kW)	Total load (kW)	Operating hours per day	Total demand per day (kWh)
Classroom	Power Zone 5	SPV	1	6.6	6.6	4	26.4
Classroom	Power Zone 6	DG	1	22.0	22.0	3	66.0
Laboratory	Power Zone 2	SPV	1	13.2	13.2	3	39.6
Laboratory	Power Zone 3	DG	1	13.2	13.2	3	39.6
<b>Solar PV Total</b>					<b>19.8</b>		<b>66.0</b>
<b>Diesel Gen. Total</b>					<b>35.2</b>		<b>105.6</b>
<b>Grand Total</b>					<b>55.0</b>		<b>171.6</b>

Note that the total energy demand for all RSTI purposes including lighting, experimental and common load was found to be more than the capacity of the proposed solar power plant. In view of this, the possible peak load has to be adjusted such that the solar power plant is operated at optimum capacity throughout the year. At the same time maximum load of perhaps 18 - 19 kW should only be connected (some plant capacity considered as auxiliary load for running lights and exhaust fans at the control and battery room), and thus a reliable load scheduling is required for the safe operation of the power plant.

## Appendix 2 - Ganta (MYS) load details and demand assessment

Category	Equipment	Source of electricity	No of units	Load per unit (kW)	Total load (kW)	Operating hours per day	Total demand per day (kWh)
Community radio	Bulb, Microphone, Transmitter	PV	331	0.015 0.01 1	0.045 0.03 1	24	
<b>Total</b>					<b>1.075</b>		<b>25.80</b>
High school	Bulb Fan	PV	64	0.015 0.06	0.09 0.24	8	
<b>Total</b>					<b>0.33</b>		<b>2.64</b>
MYS Building	Computers CFL/FL Fans	PV	0.09 0.01 5 0.06	10 36 10	0.9 0.54 0.6	3 3 3	
<b>Total</b>					<b>2.04</b>		<b>6.12</b>
Household Shops	Lights etc.	PV	0.2	10 5	2 1	3 3	
<b>Total</b>					<b>3</b>		<b>9.00</b>
<b>Solar PV Total</b>					<b>6.445</b>		<b>43.56</b>
<b>Diesel Gen. Total</b>					<b>0</b>		<b>0</b>
<b>Grand Total</b>					<b>6.445</b>		<b>43.56</b>

Note that the 10 kWp unit was designed for the following demands (with load scheduling reducing the overall demand to 9 kWp) which in the end were not catered for:

Category	Total load (kW)	Total energy demand per day (kWh)
Beauty parlour	3.76	15.2
Carpentry	4.11	18.42
Tailoring shop	1.80	7.35
Metal works	2.47	12.14
Shops	0.75	4.50
<b>Total</b>	<b>12.89</b>	<b>57.62</b>

### Appendix 3 - Notes on renewable energy for productive uses

UNIDO has a mandate on clean energy access for productive use: “Enhancing access to modern and reliable energy supplies is widely regarded as a prerequisite for economic development in developing countries and countries with economies in transition. For such development to be sustainable, this energy must be used to promote productive uses that create jobs and more income-generation opportunities for local communities. UNIDO therefore helps countries increase access to modern energy supplies, especially based on renewable energy, in order to support the development of productive capacities in rural and urban areas.”<sup>20</sup>

So by the start of the Growth Centres projects in Sierra Leone and RSTI and MYS projects in Liberia in March 2011, UNIDO’s own (now well established) experience in development of renewable energy projects across a wide range of technologies and countries and their link to productive uses should have been easy to draw on in the design of the solar PV projects.

However, it is found that the projects were somewhat isolated from the main PD outcomes; in Sierra Leone that of using new equipment, infrastructure and training to expand and improve the quality of the commercial operation in processing local agricultural produce; and in Liberia that of introducing training programmes in rubber and rubber wood processing in Harper and acquiring trainings in masonry, metal working, plumbing, soap making, carpentry, gara tie-tying, hairdressing, tailoring and auto-mechanics in Ganta. This may have been due to their highly technical nature and the decision by UNIDO to assign a separate solar PV budget holder and project manager, with little overlap with the main Project Manager.

Therefore some guidance is suggested for the future design of renewable energy projects within the context of productive use beneficiaries:

- 1) Don’t develop a renewable energy project for its own sake - for example at the proposed project site, is there existing electrification which could be used or improved for productive use activities? Even if the plan is based on diesel generators, the key outcome is the productive use and value-added activity, not the electricity system itself.
- 2) Carry out a full demand survey - this should be done without any assumption of technology and should allow for future growth data (population and economy).
- 3) Design of the system - based on the full survey, design the energy supply as much as possible within UNIDO’s mandate of using renewable energy where possible, but accepting that if capacities cannot be met by the available resource, then consider hybrid systems or extension of the grid.
- 4) Local technology - use technology with sustainability in mind, using locally available components as much as is possible (e.g. batteries, control systems, ancillaries, lighting etc.).
- 5) Maintenance - design final systems with local capabilities on maintenance in mind or have a full training programme that transfers skills as appropriate.
- 6) Use local knowledge - what previous knowledge or experience can be drawn on locally or regionally in development of energy systems for productive uses?

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<sup>20</sup> UNIDO website - “Clean energy access for productive use”

## Annex G - Assessment of project activities by rank and output

Activity grouping	Activities	Rank (1-5)	Assessment (Red-Amber-Green)
Training centre for rubber processing, rubber wood processing and entrepreneurship at Tubman University in Harper	1) Recruit project staff	5	Green
	2) Establish a technical working group to steer the project implementation	4	Amber
	3) Conduct meetings to coordinate a) technical requirements on installation of equipment for rubber processing, rubber wood processing, photovoltaic solar system, and b) draft work plan	3	Amber
	4) Selecting existing damaged premises at Tubman University and renovate them into a skills development training centre	2	Green
	5) Prepare blue print and Bill of Quantities (BOQ) for the rehabilitation of selected premises, reflecting technical requirements for installing equipment for rubber processing, rubber wood processing and photovoltaic solar energy system	5	Amber
	6) Select a construction group for renovation	3	Green
	7) Purchase construction materials	5	Green
	8) Carry out the renovation of the buildings	5	Green
	9) Prepare technical specifications for equipment for rubber processing, rubber wood processing and photovoltaic solar energy system	3	Green
	10) Place order for equipment	3	Green
	11) Install and test equipment	4	Amber
	12) Select trainers and recruit, e.g. technicians from rubber plantations in Maryland County and elsewhere	2	Amber
	13) Prepare the syllabus and training materials	2	Amber
	14) Train the trainers	3	Amber



Annex G – Assessment of project activities by rank and output

Activity grouping	Activities	Rank (1-5)	Assessment (Red-Amber-Green)
	15) Start the training programme	3	Amber
On-the-job training programme in Ganta	16) Recruit coordinator and monitor for the on-the-job training in Ganta	5	Green
	17) Establish a technical working group to monitor and steer the project implementation	4	Amber
	18) Design the on-the-job training programme with MYS including the target skill type and levels with already involved enterprises and local authorities, including work plan	4	Green
	19) Define technical specifications of the consumable and non-consumable training materials in consultation with the enterprises participating in the training programme, within the project budget	3	Amber
On-the-job training programme in Ganta	20) Select local suppliers of the consumable and non-consumable training materials	2	Red
	21) Prepare technical specifications of the photovoltaic solar energy system	4	Green
	22) Purchase, deliver and install the equipment and materials	4	Green
	23) Implement the training programme, including assessment of trainees and awarding of certificate	3	Green
<b>Overall</b>	<b>24) Conduct evaluation</b>	<b>3</b>	<b>Green</b>
<b>Totals</b>	<b>Count</b>	<b>Weight</b>	<b>Percentage of weighted</b>
Green	13	49	58%
Amber	10	33	39%
Red	1	2	2%

In terms of achievement, the programme reached nearly 60% of full completion of its targeted outputs, with only the preparation of architect's blue prints and BOQ for the rehabilitation of the rubber and rubber wood processing facility at Tubman University not satisfactorily done and as at August 2012, the various equipment and trainings for use of the RSTI not fully installed or completed. These various activities have now been completed in Harper through hard work through September and October. For Ganta, it was

not clear whether the technical specifications of the consumable and non-consumable training materials had been drawn up in consultation with the enterprises participating in the training programme and whether local suppliers for those materials had been selected for the future. Overall however, at the end of the project the evaluation team are confident that the bulk of the activities would have been completed, with a less than 5% incidence of activities not completed. When compared to the sister project in Sierra Leone, this is a better result.

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