



How to Insure Long-Term Activities in Short-Term Funding:

A Guarantee Mechanism in Humanitarian Energy Contracts

27 April 2020



Things to remember

- The meeting is recorded.
- Please stay muted over the course of the meeting and unmute when you speak.
- Feel free to turn on your video when you take the floor and introduce yourself.
- Introduce yourself in the chat, e.g. Name, Organization, Location.

Agenda:

- 1. Introduction
 - Mr. Thomas Fohgrub, Head of the Global Platform for Action on Sustainable Energy in Displacement Settings, UNITAR
- 2. <u>UNDP Green Energy Team</u>: 7-Step Model for Green Energy Solution
 - Mr. Shathiso Nyathi, ITM Green Energy Team Leader, UNDP Green Energy Team
- 3. <u>GPA CU</u>: Finance Mechanisms; Leasing and Global Guarantee
 - Mr. Mark Gibson, Operational Lead of the Global Platform for Action on Sustainable Energy in Displacement Settings, UNITAR
- 4. <u>UNHCR</u>: Derisking Energy Projects with UNHCR Green Fund
 - Mr. Dominic Grace, Chief, Global Mobility and Infrastructure Services, UNHCR
- 5. Closing

Introduction

Mr. Thomas Fohgrub

Head of the Global Platform for Action on Sustainable Energy in Displacement Settings, UNITAR

Overview of GPA/CEC and Donor Group







Tuesday, 27 April 2021

The **Global Platform for Action** (GPA) is the global initiative to promote actions that enable sustainable energy access and use in displacement settings, as laid out in the Global Plan of Action Framework Document.

Vision: Displaced persons, host communities, and associated humanitarian response mechanisms have access to affordable, reliable, sustainable and modern energy services by 2030 - ensuring SDG7 is inclusive of displacement situations.

Mission: Delivering collective change on energy in displacement settings by providing supporting services to mainstream sustainable, affordable and reliable energy access for crisis affected communities and those that serve them.

What are we talking about today?



Why is it important?



Climate action

- Moral obligation Do no harm
- Reputational risk: UN must "walk the walk" and be seen as a leader



Saving money

- Stop burning money!
- On average 20-40% savings possible



Improved environmental performance

- Reduced carbon footprint
- Reduction in polluting emissions



Support local development and avoid fuelling conflicts

- Provides local job opportunities
- Springboard for private sector to reach out to other end users
- Diesel supply chain controlled by conflict actors

What's the size of the challenge?

Estimated 400 million USD is spent annually on providing electricity to humanitarian operations, through costly and unreliable infrastructure powered by diesel generators equates to approximately 1,000,000 tonnes of CO2



UNDP 7-Step Model

Mr. Shathiso Nyathi

ITM Green Energy Team Leader, UNDP Green Energy Team



United Nations Development Programme

Information and Technology Management (ITM)

Information and Technology Management (ITM)

Prepared by: Created on: Last update: ISO Quality Inspec

Approved for relea

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Photo: Solar Panel Installation South Sudan Rajaf Police Academy / 2018

UNDP MISSION

"On the ground in about 170 countries and territories, UNDP works to eradicate poverty while protecting the planet. We help countries develop strong policies, skills, partnerships and institutions so they can sustain their progress".

ITM/CIAS VISION

"Creating Smart Facilities to build local capacity and inspire a movement".



The 7 Step Green Energy Solution

Draft A. 452 - JIU/REP/2020/X	"Good practice from the United Nations systemetry efficiency and internet of thinas" n 5	tem: UNDP Smart Premises concept 9-60
United Nations	Good practice from non-United Nations actors: the ICRC approach to managing its environmental footprint in humanitarias context The ICRC took a step by see approach. The framework for sustainable development (2011) was the first official document adopted to integrate the principles of sustainable into all ICRC activities (including environmental sustainability). Environmental data on five key areas has been collected, voluntarily since 2012 and mandatorily since 2018, from all delegations. (i.e. field officies, the pulled into a databoard, and, in turn, sent back to the delegations to show what their main environmental impacts are and how to reduce them. Based off this assessment, an atrion plan is developed by the delegations. A diverse team in the delegation is preferred to bring the diversity of solutions and have a more comprehensive action plan. The environmental data is collected for the following five key areas: Q energy consumption (circleritivity, ideel appendix) (iv) waster (modersex at this stage, if deve CO2 emissions (electricity) and desel consumption in side buildings and fleet vehicles); (iv) ware consumption; (iv) ware management (although ICRC is to adve be non-auxer the anomator of waste it produces at this stage, if deve	The whole is greater than the sum of its parts" - Aristotle Berevalde formy Berevalde formy Wedges of California Wedges of Calif
Review of mainstreaming environmental sustainability across organizations of the United Nations system	 assess how the waste is treated and provides a score for waste treatment). To overcome the challenge of silf-reporting and validate the data reported by delegations, the ICRC does the following: Cross-reference key performance indicators and proxies, e.g. reported energy reduction but no impact on electricity bill. Gress responsibility to an accountant to enter the data in any system. Uses intend control enans embedded in the functions of the ICRC to look at environmental actions and data reported by the delegation. Uses intend control enans embedded in the functions of the ICRC to look at environmental actions and data reported by the delegation. Uses an addit team that reports directly to the President which has a mandate to look at environment. To ICRC identified the following lesson: from its experience with mainstreaming environmental sustainability: Environmental sustainability is not just GHG emissions. Audits of suppliers on environmental efforted are essential. To the to be arefully determination in the tradition of use of the surface at environment. 	Satellite Insugery 0 Satellite Insugery 0 Energy (Rissay 0 Energy Consumption Monitoring 0 The concept uses a 7-Step Green Exercy Solutione Process to address the mech of United Nations offices, wh has been adored an aborancia of the UNIDG (see finance 2 below).
Report of the Joint Inspection Unit	the next is enjoyed with the sevening province and summing stars for access. Good practice from the United Nations :::UNDP Sumar Premises concept, energy efficiency and intervent of sime.	Figure 2 - 7 Step Green Emergy Solution Process
Prepared by <u>Gopinathan Achamkulangare</u>	The United Nations Development Programme (UNDP) Office of Information Management and Technology (OMT) is Copenhagen is responsible for supporting UNDP country Offices around the world with ICT and Green Energy solutions. Its vision is to build modern age UNDP facilities around the globe that are fully aligned with Sustainable Development Goals (DGOs), to protect UNDP's reputation, pervent financial loss and maintain organizational productivity using technology. The office (<i>Q</i>) promotes the UNDP Smart Premises concept within the United Nations system to that do in government institutions and local communities, builden the protection of the transfer of the transf	A STEP GREEN ENERGY SOLUTION

How We Solve | Smart Facility Model

ENERGY and eMobility

- Renewable Energy
- Electric Vehicles
- Vehicle-to-Grid
- Energy Storage (Li-ion)
- Energy Efficiency

Digitalization & INTERNET OF THINGS (IoT)

- Sensors based
 technologies
- Energy Consumption & Environmental Monitoring
- Artificial Intelligence and Machine Learning integration
- IaaS, PaaS, SaaS



"The whole is greater than the sum of its parts." - Aristotle

CONNECTIVITY

- NextGen broadband connection 5G, *LTE-M*, MulteFire
- Global Mobile Virtual Network Operator (GMVNO)
- OneICTbox
- NextGen Satellite Communications *SpaceX*, SatCube
- IoT connectivity *LoRaWAN,* BLE, Zigbee, Sigfox, NFC
- eMeeting

SECURITY

- End-point protection
 CyberFirewall
- Solar Street Lamps
- Perimeter Security Cloudbased CCTV and Premise Access System
- Access control
- Fire Detection/suppression



7 STEP GREEN ENERGY SOLUTION 2. 3. 5. 6. Installation **Business** Case Site Survey **Operation &** Energy Audit & Procurement & Design Assessment Using IoT Maintenance **Site Preparation**

Continuously striving to promote energy efficiency across solar implementations and enhancing user behavior

Recognized best practice by UNDG for Solar implementation



Step 1 – Energy Audit & Assessment Using IoT

Key points

- 1. **IoT devices** for energy consumption and site-specific data
- 2. Preliminary Site Survey Application
- 3. Assess the current situation and build a load profile







Step 1 – Energy Audit & Assessment Using IoT



IoT for Generator Monitoring

- i. Generator use
- ii. Frequency
- iii. Active Power
- iv. Alarms

Drones

- i. Site Survey
- ii. Communications

Other IoT

- i. Power Analyzers
- ii. AC and Motion Sensors
- iii. Water Consumption Sensors











Step 2 – Business Case



Key Aspects

- Technical, economic, and 1. environmental analysis.
- 2. Business Case gives essential information for decisionmaking.
- 3. Data collected from Step 1: Software for system modeling and in-house developed tools



Central African Republic

Business Case













Step 3 - Procurement



Key points

- 1. Collaboration with UNDP PSU
- 2. Existing LTAs with vendors providing international standard installations
- 3. Secondary bidding process
- 4. RfQ published among LTA holders
- 5. Local partner Development of local capacity







U N D P

Terms of Reference: Solar Hybrid System

Smart Solar Hybrid System for UN South Sudan Country Office (CO), contributing to Create Smart UNDP Facilities Powered by Renewable Energy





Photo: Training to CO during installation in Nigeria Suboffice





Site Survey

Step 4 – Site Survey

Key Aspects

- Vendor carries out a detailed site survey
- Vendor submits the Site
 Survey Report to ITM and
 PSU



Site Survey Report Guidelines

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ISO 9001 Approved for Release by Gerald Demeules Global ICT Advisor

United Nations Development Programme Office of Information Management & Technology

Country Office ICT Advisory Services



On the picture below, the future prefab building roof has been indicated. Its position will reduce the available space for a carport on area B. The carport option on this area has therefore been rejected. Buildings Parking areas Generators Main Distribution Room /// Roof area to strengther /// Damaged roof area We were advised by the local UNDP team that using area A would not be possible as it is too close from the fence and is exposed to damages or robbery from outside. Finally, it was agreed that area C would only 4 Technical room The proposed battery room is not suitable to house the sensitive electrical equipment and batteries at its current state and needs a number of adjustments > Door to open to the outside and removal of the board ➔ Installation of water guard door or cill ➔ Anti-theft measures: Strong lock and closing of gaps Without these adjustments, we recommend using another room for the equipment. Description tsions 110 cm by 92 cm, plus an estimated additional square mete behind the board Space is small but sufficient if the board can be > Door need to be replaced/adjusted to open to the outside! On the ground floor within the → Very conveniently with direct access for cabling to the roof and a distance of about 16m to the transfe switch. on Ventilation is good Lack of air-conditioning will slightly decrease efficiency and lifetime of Climate decrease efficiency and lifetime of electrical equipment. High humidity may occur due to proximity to toilets. Flooding of the room must be avoided at all ➔ Installation of a waterguar door or cill required The room in it's current state does not provide sufficient securi to avoid theft or tampering of the A strong lock and closing the current gaps is recommended FAOUG Kampala Office Solar Hybrid System Site Assessment report 2nd July 2019







7.

Step 5 - Design



Key Aspects

- Vendor prepares the final technical design
- 2. Vendor submits **technology certificates** which are issued by manufacturers





Step 6 - Installation



Key Aspects

- 1. The installation is clearly outlined in the installation plan, with management, milestones, risk etc. covered
- 2. Step 6 is concluded by commissioning of the systems and training of on-site staff









Step 7 – Operation & Maintenance

Key Aspects

- 1. 3 years bi-annual maintenance guaranteed by the system provider
- 2. Local partner engaged ensuring prompt response to potential issues
- 3. Remote monitoring and troubleshooting
- 4. Lifetime long monitoring and performance evaluation Biannual Reports
- Support CO with maintenance agreement with local company after 3 years







Biannual Report - Afghanistan







Green Energy – Additional Services











Other Services

- 1. Vehicle Grid Integration (VGI)
- 2. Security Lighting Solar Street Lamps smart lighting
- 3. Training and Capacity Building
- 4. Missions



Q and **A**

Finance Mechanisms; Leasing and Global Guarantee

Mr. Mark Gibson

Operational Lead of the Global Platform for Action on Sustainable Energy in Displacement Settings, UNITAR

Decarbonising energy infrastructure: why hasn't it happened?



WORKSHOP SERIES REPORT

Prepared by Paul Quigley for Workshop I, held with UN Agencies and ICRC on 2 July 2019, and Workshop II with private sector energy and finance organisations on 16 July 2019

- High capital costs for renewable systems
- Lack of interest from donors efficient use of resources
- Annual budgeting cycles and existing procurement processes favour status quo, i.e. purchasing of generators and diesel

HOWEVER: Series of workshops in 2019 with UN Agencies, INGOs and Private Sector, identified "buying energy as a service" as the best way forward

Buying energy as a service: what is it?

<u>New Model</u> – Energy as a Service



Buying energy as a service: advantages and disadvantages



Advantages:

- Project risks and responsibilities transferred to energy provider
- ✓ Financing for capital costs transferred to energy provider
- System warranties and service guarantees provided by the energy provider
- ✓ Accessing know-how and experience from private sector

Disadvantages:

✓ Little interest in small, single systems in remote locations

Buying energy as a service: the challenges

 Little (to no) use of energy service contracts (PPAs and Lease Agreements) to date as opportunity to do so locked by:

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link to report		

 UN and Private Sector speaking different languages and having different operational risk profiles, most evident when <u>negotiating terms for a energy</u> <u>service contract</u>



The **UN's standard contractual termination clause** that permits the UN to cancel a long term contract at any point in time, resulting in a contractual and financial risk to the energy service company (no interest / cost increase)

Buying energy as a service: the challenges

Little (to no) use of energy service contracts (PPAs and Lease Agreements) to date as opportunity to do so locked by:

- UN and Private Sector speaking different languages and having different operational risk profiles, most evident when <u>negotiating terms for a energy</u> <u>service contract</u>
- The <u>UN's standard contractual termination clause</u> that permits the UN to cancel a long term contract at any point in time, resulting in a contractual and financial risk to the energy service company (no interest / cost increase)





De-risking: how could it work?

Two phased approach:



Phase One: A short term **liquidity facility** would provide post-termination cashflow to the energy service company for up to 12 months, which would provide an opportunity to explore alternatives uses for, and/or off-takers to, the existing energy system to offset termination liabilities and act as a time buffer for the UN Agency to draw down on the guarantee mechanism



<u>Phase Two</u>: If no alternative solution identified a <u>guarantee mechanism</u> would cover the costs of termination

De-risking: what does it achieve?

- It mitigates the private sectors contractual and financial risks associated to the UN's Termination Clause, in doing so:
 - It permits the UN to outsource electricity supply and concentrate on its core activities, resulting in <u>cheaper costs</u>
 - It attracts energy service companies to the humanitarian sector resulting in more competition and <u>cheaper costs</u>
 - It limits the possibility of energy service companies charging a premium for electricity to cover its contractual and financial risks resulting in <u>cheaper costs</u>



High-level modelling suggest a guarantee fund of just 6m USD could underwrite 65m USD of investment, which would translate to 70MW of solar plant or approximately 700 humanitarian facilities.

Q and **A**

Derisking Energy Projects with UNHCR Green Fund

Mr. Dominic Grace

Chief, Global Mobility and Infrastructure Services, UNHCR

Greening and Sustainability UNHCR

Actual Contestion into the local



Greening and Sustainability Team

UNHCR

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UNHCK Atnum EDecember 2020 (Work in Progress)



UNHCR Framework for Climate Action: Three Pillars





Greening the Blue

Greening the Blue Report 2020

UNHCR Today

- High carbon footprint
- Low implementation of greening activities

Where do we want to go?

- Optimized global infrastructure
- Transition to Renewable Enegies





4-Step Process

Collect global environmental data, real-time monitoring, and data visualization

Complete concrete projects and business cases with close field collaboration to transition from fossil fuel to renewable energy



Analyze global environmental data and find solutions to decrease UNHCR environmental footprint by adjusting current behaviors and processes without additional financial investment

Create field-driven business cases with additional financial investment for country operations by using innovative approaches and financing mechanisms

Our Vision – Green the Blue

Sustainable solutions to reduce and offset UNHCR Carbon Footprint

Greeni Sustair	ng and nability	Infrastructure	Fleet	Travel ⁴¹
The UN Refugee Agency		61% [*]	23%*	16% [*] (b) *of total UNHCR CO ₂ emissions
1 Measure		Green Box	Vehicle Tracking System FleetWave	Travel Management System ICAO
2 Manage & Reduce	6	Behavioral change Efficient appliances	Share vehicles Driver training	Reduce non-essential travel Online collaboration
3 Create a Business	Case	Green Fund	Right profiling Electric vehicles ?	Most direct route for air travel Land-based travel
ImplementChange	ıt	Green Data	Carbon + Car pooling application	Travel policy review Carbon +



Greening and Sustainability

Projects Overview

Green Data

Implement dynamic technology platform for real-time monitoring and data visualization

Energy & Site Survey

Greening the Blue **Reporting 2021**

Green Box

Measure global energy consumption of UNHCR offices and create feasibility studies on selected UNHCR offices

Phase I

Procure and install energy meters for UNHCR offices:

Phase II

- Carry out energy audits and feasibility analyses of UNHCR offices; and
- Prepare business cases for selected offices.

Green Fund

Innovative financing model to migrate UNHCR offices from fossil fuels to renewable energy

- If business case suggests viable procurement model, Green Fund will initiate RFP for private sector
- Guarantee mechanism exists to back solarization contracts with the private sector

Successful transition from fossil fuel to renewable energy



Green Box Progress

Phase I: Green Box Installation





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PowerBl report

* 249 Green Boxes requested as of 22 April 2021



Green Box Dashboard







Greening and Sustainability Team



Problem to be addressed

- UNHCR runs diesel generators in 30+ large staff compounds in Africa, contributing to annual greenhouse emissions
- Financially, diesel is also **more expensive** than solar energy in many markets.
- Traditionally, solarizing would require longterm contracts and/or a large up-front capital outlay.



Ethiopia

Kenva

Project set-up

- Currently piloting in Ethiopia, Kenya,
 Uganda at 10 potential sites in close
 liaison with Country Offices
- Seed funding Sida provided a seed grant to establish the internal guarantee fund

Expected Impact

- Carbon savings of ~50-300 tons of CO₂ annually for most field locations but up to 1000 tons annually for large sub-offices
- Recurring annual financial savings of up to 35% compared to diesel (note: depends significantly on site characteristics)



Proposed Solar Contract Design

How the contract would work in the normal scenario

C	Lo	6
Term	Technology	Cost
10-year contract	 Combination of solar, battery, grid, and/or diesel – exact combo depends on site characteristics and needs. All systems will have diesel backup. 	 Designed so that for the UNHCR country operation, new annual energy cost will be less than or equal to old costs for diesel and diesel-related costs. This takes into account the monthly payment to the energy company as well as any residual diesel for hybrid systems.

What happens if something breaks?

- Diesel backup system kicks in.
- Company will fix it at their expense.
- Diesel usage for backup system during the time the main system is offline is paid by company.

What happens if UNHCR needs to terminate the contract?

• Green Fund acts as guarantee and pays the company a termination fee equivalent to the net present value of remaining capacity payments.



Greening and Sustainability Team

Awareness & Behavior Change

Policies & Guidelines

- UNHCR-wide environmental policy on emissions, waste, and water management of internal processes
- Environmental Management System



Green UNHCR Meetings

 Sustainability Green Meetings check list for more sustainable procurement, waste management, communication, etc.

Staff Awareness

- Promote energy efficiencies & eco-conscious behaviors
- Support voluntary staff meetings on greening initiatives

Thank you



Greening and Sustainability Team

Q and **A**

Closing Remarks

Mr. Thomas Fohgrub

Head of the Global Platform for Action on Sustainable Energy in Displacement Settings, UNITAR

<u>What next</u>: future opportunities

Use lessons learnt to develop similar solutions for:



<u>Humanitarian Activities</u>: providing derisking mechanism to transition schools, health clinics, water pumping activities, training centres, community centres and public lighting to "energy service delivery models" which are presently limited by annual budgets and annual contract breaks



<u>Household Energy Access & Productive Use</u>: using UN energy service contracts as an anchor for energy service companies to provide affordable renewable energy to displaced and host community households and for productive uses





Thank You

Website: www.humanitarianenergy.com

LinkedIn expert group: https://www.linkedin.com/groups/12310695

