

23 JANUARY 2020
10:30 AM -12 PM CET



**POWERING HUMANITARIAN FACILITIES:
DIALOGUE ON IMPLEMENTATION MODELS**

Webinar Series: Sustainable Energy in Humanitarian Settings

PAST WEBINARS

- JUNE 2019: [State of Play: Sustainable Energy in Humanitarian Settings](#)
- SEP 2019: [Sustainable Energy for Essential Humanitarian Services: Outline of Energy Solutions and a Case Study on Solar Pumping](#)
- Nov 2019: [Sustainable Energy for Powering Household and Community Lighting Needs in Humanitarian Settings](#)
- Dec 2019: [Sustainable Energy for Household Cooking Needs in Humanitarian Settings](#)

Upcoming Webinars

- Energy Efficiency and Designing for Sustainability.



Tell us about you!
- Poll -



- Agenda -

Presenter



Mads Uhlin Hansen, Kube Energy

Mads Uhlin Hansen is the CEO of Kube Energy, a Norwegian renewable energy company dedicated to transitioning international organisations from diesel generators to solar power. Prior to establishing Kube, Mads worked on humanitarian response, first as a donor with the Norwegian Ministry of Foreign Affairs, and later from the United Nations Office for the Coordination of Humanitarian Affairs. He has spent much of his work in field locations and has been based in Burundi, Sudan and Sierra Leone. Today Mads is mostly focused on developing solar systems to power humanitarian operations in South Sudan, Kenya and Somalia. Mads has a Bachelor in Economics from the Norwegian University of Technology and Science and a Master in Political Economics from the University of Stellenbosch.



K U B E
E N E R G Y

Reliable solar power for
sustainable change





Kube Energy is a full integrated solar provider:

- Feasibility assessment
- Design
- Financing
- Installation
- Operations and maintenance



Options for procuring solar

Option 1: Purchase

- Organization contracts a solar engineering firm to design, procure and install the system.
- When installed, ownership transfers to the organization
- Organisation assumes responsibility for operating and maintaining the system
- Can outsource the operations and maintenance of the system for a fee

Option 2: Lease to Own

- Organization leases system from a solar services company and pays a monthly fee.
- Solar services company finances design, installation, operations and maintenance of the system
- Organization operates its generator and procures fuel. Ownership of the system is transferred to the organization when the lease ends
- Lease agreements normally run for 3 to 10 years.

Option 3: Power Purchase Agreement

- A PPA covers energy generated from a complete energy system, including the solar system and diesel generator
- Organisation buys solar and diesel generated energy and pays a monthly bill.
- Solar services company will finance the design, installation, operations and maintenance of the complete energy system.
- At the end of the agreement, the organization can renew or cancel the agreement.
- PPAs normally run for 3 to 10 years.

Considerations

Technical expertise

- What technical support does your organisation need / have?

Financing

- What financing mechanisms are available to your organisation?

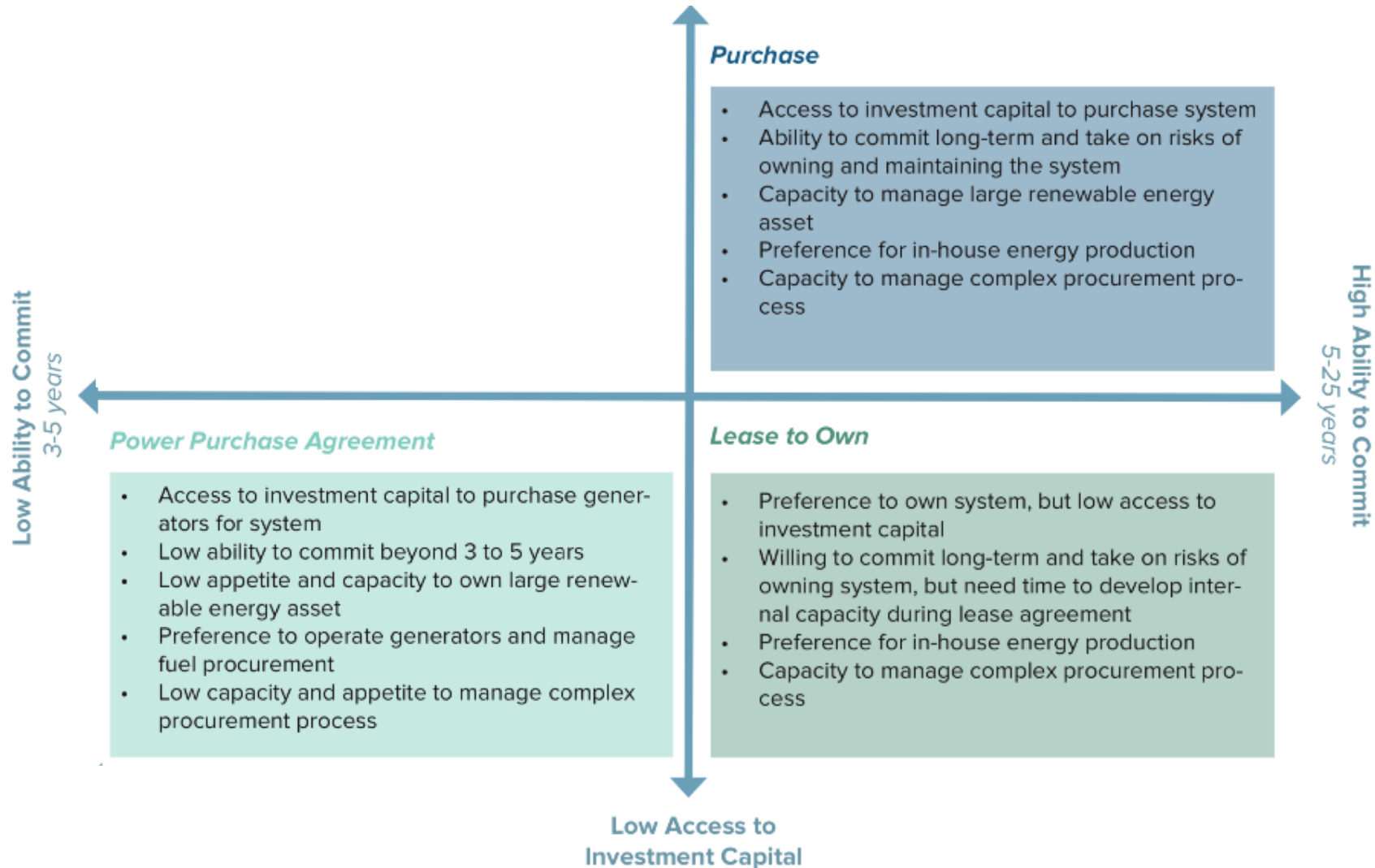
Procurement

- What procurement procedures do you need to comply with?

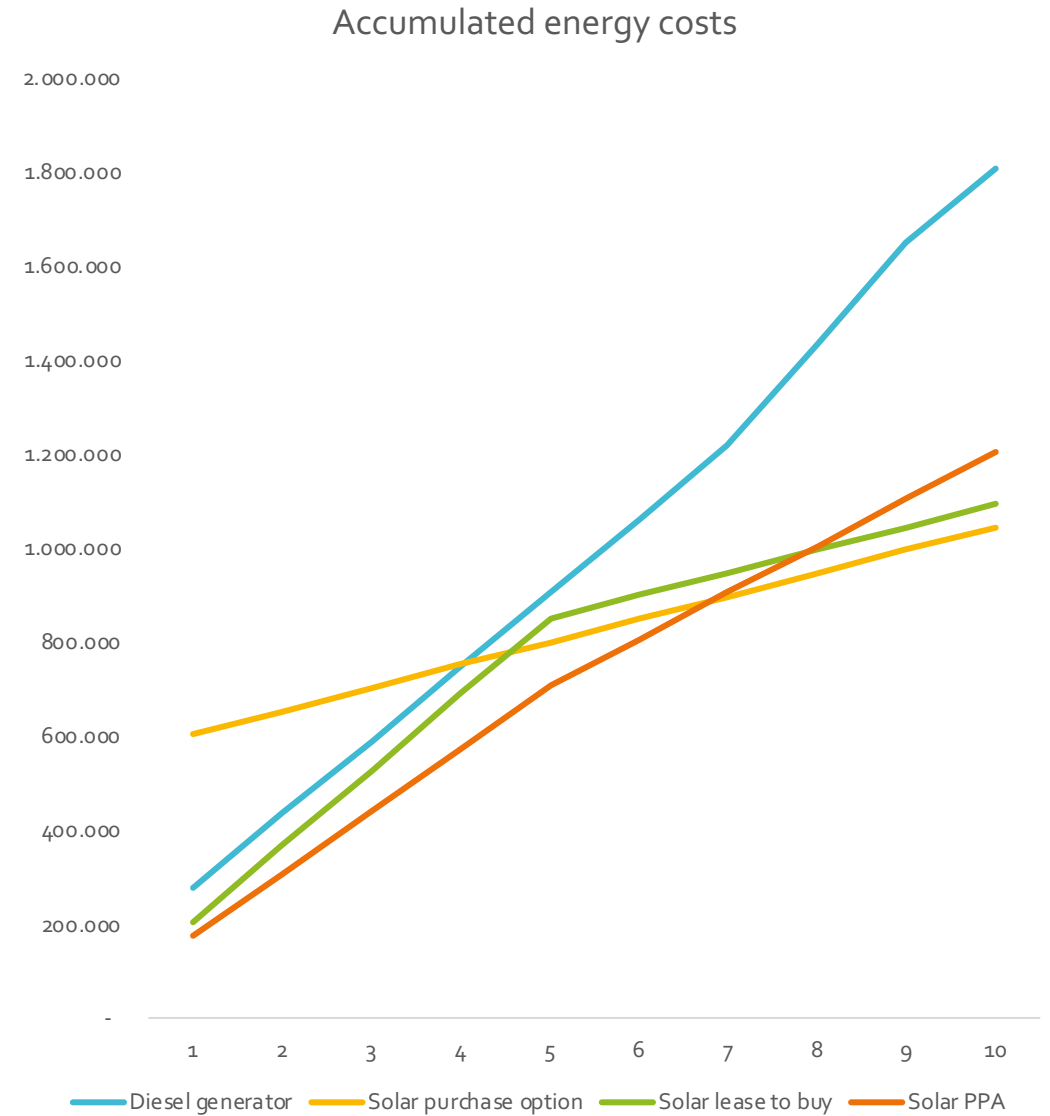
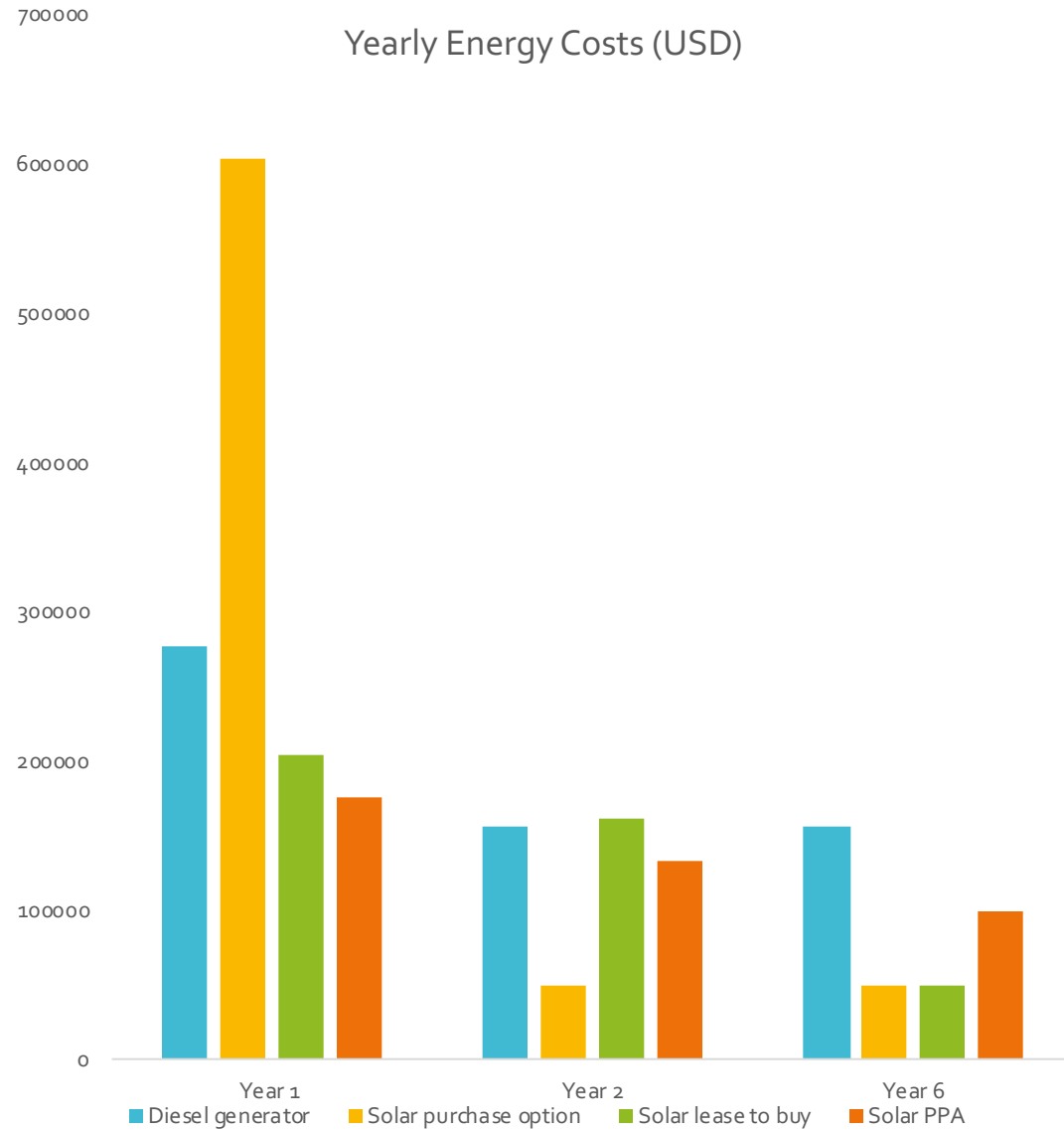
Operations and Maintenance

- How will you manage long term operations and maintenance?

Pros and Cons



Financial considerations





KUBE
ENERGY

CONTACT US
TO LEARN MORE

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Email: mads@kubenergy.com

www.kubenergy.com

KUBEENERGY.COM

Presenter



Mohammad Omar Patan, IOM South Sudan

In over ten years of work experience, Omar has developed strong project management skills ultimately leading to holding overtime accountability for the design, implementation and execution of complex electrical power grid projects in both infrastructure and emergency contexts in Afghanistan and South Sudan. His most recent engagement has been to, considering the concept of green environment and consistency of power generation & reducing electrical power generation cost, transform existing diesel power plants into hybrid, predominantly, photovoltaic systems in Humanitarian Hubs and IOM offices in South Sudan. He has a bachelor's degree in Electrical and Electronics Engineering and further, hold a MSc in Project Management. He possess extensive knowledge of power generation from both renewable and diesel sources and power distribution systems and their utilized components. Additionally, he demonstrates a skillset that includes evolved ability to analyze and evaluate the demands of customers and, reciprocally, to tailor the design of large-scale infrastructure projects such as hybrid (solar and diesel) power plants and systems.

Malakal Humanitarian Hub Hybrid Power Plant

Location: Humanitarian Hub, Malakal, Upper Nile state, South Sudan

Initial power generation source: **Diesel**

Generators Rating: 1* 810kVA, 1*550kVA, 1*275kVA and 2*165kVA

Total area of the camp: **84000 square meters**

Beneficiaries: offices for 36 Humanitarian organizations and accommodation for 300 individuals

Daily electrical power consumption: **3125kWH**

Diesel used annually: **347863.3 liters**

Hybrid (Solar- Diesel) Power Plant

PV array size: **704kWP** using 1850 x 380W Risen PV modules - Battery bank: **1596kWH** using Tesla powerpack 2.5 system

Inverters: 13 x SMA STP-50 -Expected Energy: **2500kWH/Day** - Electricity produced from diesel generators: **625kWH**



Malakal HMH site layout

PV Array

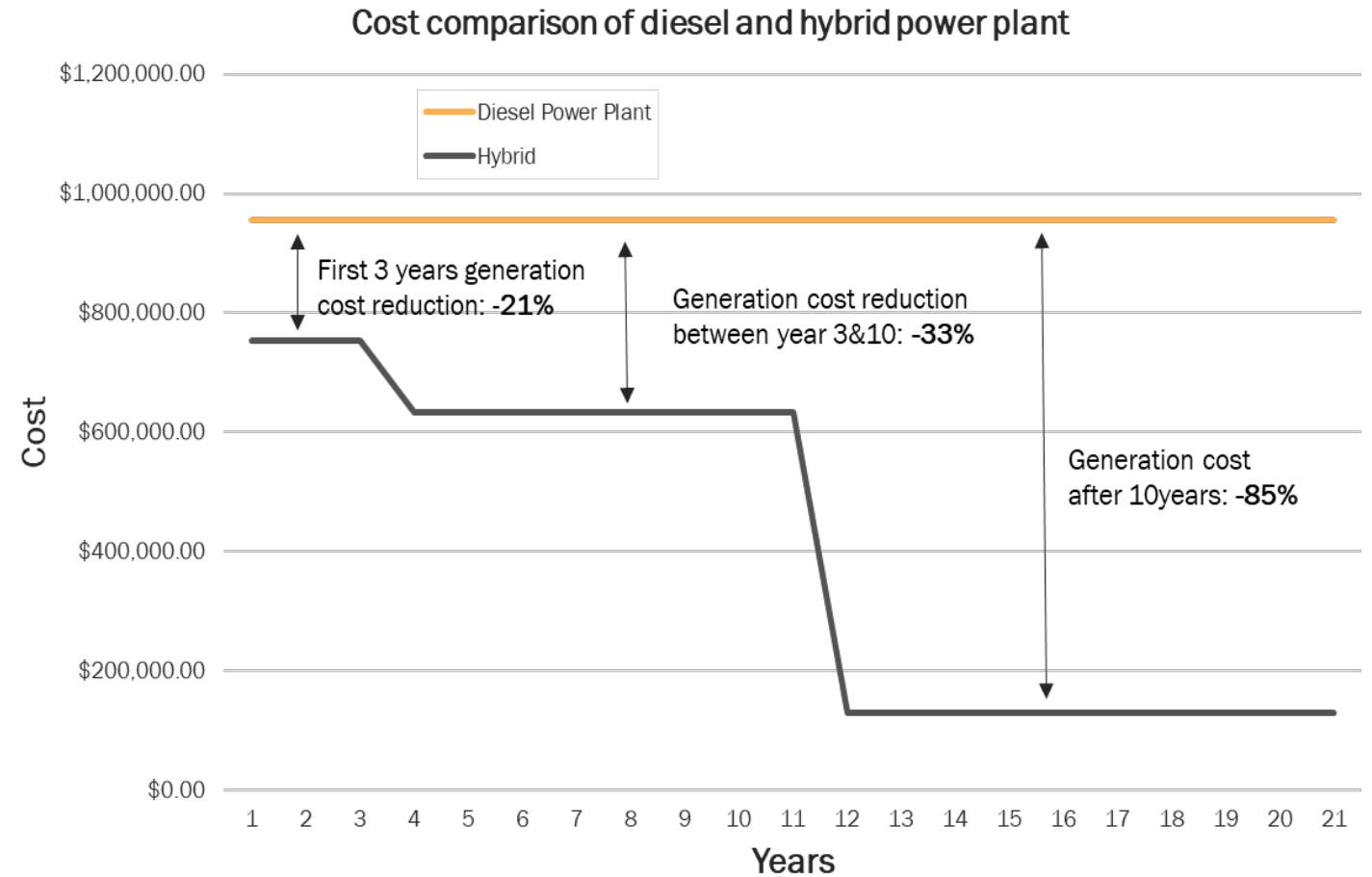
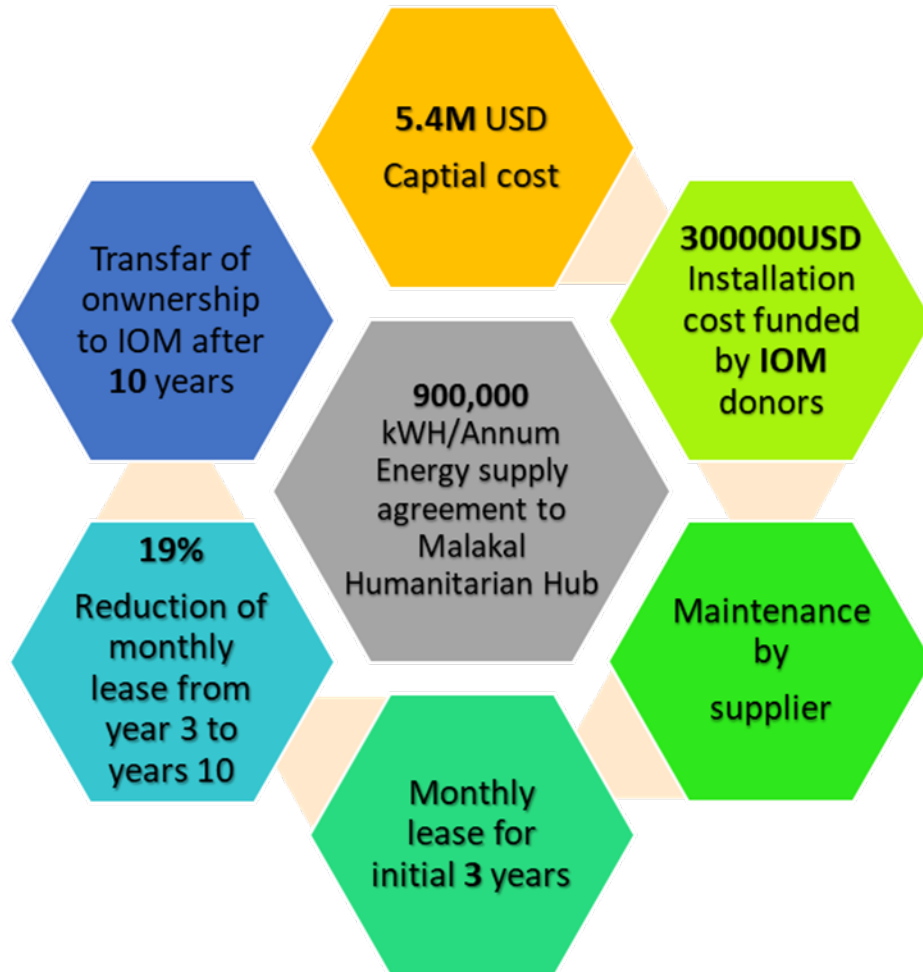
Why solar:

- Remote location
- No road access - complicated supply chain
- Security challenges - armed conflicts, robberies, corruption
- Low quality of diesel
- Difficult to store diesel
- No consistency in supply of diesel and spare parts
- High cost of diesel and spare parts
- Climate change - pollution
- Safe environment - noise produced by DG.

Advantages:

- Reliability and security
- Reduction in CO2: **744** Ton/Year
- Reduction in noise
- **18%** cost saving in electricity production
- Stability of power supply
- Increased lifetime for diesel gensets
- Reduced maintenance
- Low dependency on diesel
- Low dependency on supply chain

Business model & Economical analysis



Cost Analysis

TOTAL COST/MONTH FOR (DIESEL)

Generator running cost including consumables	
Transportation cost for consumables (engine oil, filters, coolant,...etc.)	
Other cost (batteries, battery charger, fan belt and other component breakdowns) avg.	
Generator Cost 60 months life span	
Total	\$69,133.06

TOTAL COST/MONTH FOR (HYBRID)

Solar power plant lease (to decrease after initial 3 years)	
Generator cost for 20% of the time (165kVA required)	
Other cost (batteries, battery charger, fan belt and other component breakdowns) avg.	
Generator Cost 60 months life span	
Total	\$56,529.79

18% Saving

In electrical power generation

How it is managed:

- ✓ Remote monitoring and supervision (Scada software) and video surveillance to oversee and provide assistance on operations;
- ✓ Quarterly maintenance and repairs at the site; and
- ✓ Day to day maintenance and operation managed by IOM staff at site.

Thank you for attention!

Presenter



Naseer Ahmed, ICRC Pakistan

Naseer Ahmed, certified project and facilities management professional having masters in international Relations along with 14 years of experience in administrative, security and facilities management with the additional role of trainer for passive security measures like fire-fighting, office safety, hygiene standards within the developmental sector. Five years' experience of sustainable development program for energy savings, alternative energy, Garbage recycling and water savings. Moreover, also worked in Malaysia and Mozambique Africa for Premises Administration support mission. Overall work experience entails, proactive planning, designing projects, project management, designing and constructing new office premises. Furthermore, having specialties also in events management, active and passive security, staff development and other administrative procedures required to run the office environment.

SOLAR- GREEN NET METERING PROJECT ICRC ISLAMABAD PAKISTAN

50 KVA SOLAR ENERGY



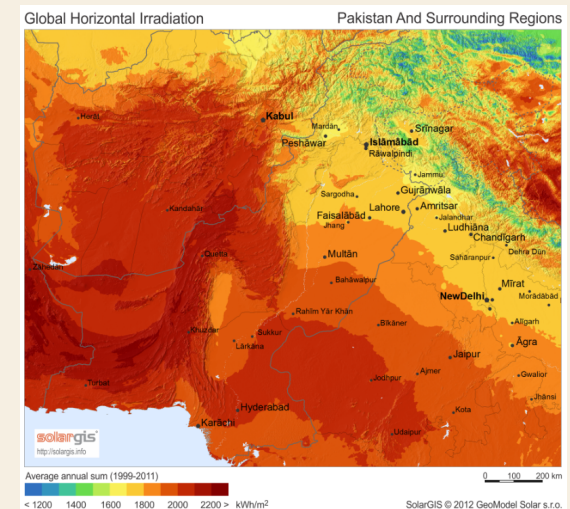
ICRC

In Pakistan, energy prices are increasing day by day because of increase in prices of fossil fuels such as imported furnace oil and liquefied natural gas, which are non-renewable sources of energy. Non-renewable sources of energy are not infinite. And we can run out of them some day. They affect our environment negatively due to emission of green house gases and air pollution.

On the other side, renewable sources of energy (such as solar, hydel, or wind) are infinite, cost effective and are not harmful for our environment. We can reduce our carbon footprints globally by utilizing them.

- Furnace oil: 14% of total
- Natural gas: 31% of total
- Coal: 16% of total
- Hydroelectric: 29% of total
- Nuclear: 4% of total
- Renewable (Solar & Wind) : 5% of total

Solar Energy can play a vital role in Pakistan to overcome the energy shortages in the Country. Pakistan lies in an area of one of the highest solar insolation in the world. This vast potential can be exploited to produce electricity, which could be provided to off-grid communities as well as on-grid to National Grid in the northern hilly areas and the southern and western deserts.



ICRC

ICRC Islamabad office moved to a new location in commercial area from rental residential area. A five floors building of approx. 40,000 SFT (3,700 sqm) was hired in commercial sector. ICRC **management skipped some interior renovations and used that money for SOLAR energy Project** on roof. Total cost for the project approved was USD 30,000/-

Project was awarded to Solar Power Technologies (SPT)-Islamabad through ICRC Logistic process.

Project Start Date 15.02.2019

Installation Completed 30.06.2019

Inverters and electrical connections 15.07.2019

License from NEPRA 20.08.2019

Cost Breakdown	
Solar Panel(Jinko320)	= 16,650 USD
Civil work	= 6,900 USD
Inverters/Electrical work	= 6,795 USD
Net metering	= 619 USD



ICRC

Equipment Specifications

SOLAR PANEL

Brand = Jinko 320 MP
 Cell Type = Poly Crystalline 156 X 156 mm
 Weight = 26.5 KG
 Front Glass = 4.0 mm High Transmission
 Max Power = 320 Wp
 Operating Temp= - 10C to 85 C

Inverter

Brand = Crown ORCEDO
 Model = Orcedo 30000TL3-S
 Input = 37500 W PV power
 output = 30kW
 Warranty = 5 years
 Operating Temp= - 10C to 85 C

ORCEDO, ON-GRID PV INVERTER 30KW / 33 KW

Max. efficiency up to 99%, 2 MPPTs, string monitoring, Leading IPM, Compact



Crown Micro Orcedo Range	Orcedo 30000TL3-S	Orcedo 33000TL3-S
Max. DC input power	37500W	41250W
Max. DC input voltage	1000V	1000V
Start Voltage	250V	250V
PV Voltage range	200V - 1000V	200V - 1000V
MPP work voltage range/nominal voltage	450V - 800V / 580V	450V - 800V / 580V
Full load DC voltage range	450V - 800V	450V - 800V
Max. input current	34A/34A	38A / 38 A
Max. input current per string	12A	12A
Number of independent MPP trackers/strings per MPP tracker	2 / 4	2 / 4



User-Friendly

Large LCD for display, easy for LCD operation

Smart cooling design, ensure for long life time

Remote service available on Crown portal



High Yields

Max. efficiency up to 99%
 Wide working voltage range; Integrated Anti-PID function

Wide working voltage for longer production time



Safe & Reliable

Leading IPM and thin-film design, more reliable

8 strings monitoring and fuse protection
 Type II surge arrester for both DC and AC
 IP65 protection rating

www.jinkosolar.com



Eagle HC 60M 300-320 Watt

MONO CRYSTALLINE MODULE

Positive power tolerance of 0-+3%

- Half Cell
- Mono PERC 60 Cell



PERC



KEY FEATURES

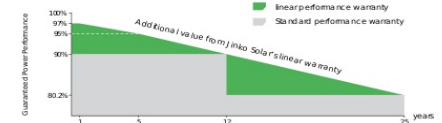
- 5 Busbar Solar Cell:**
5 busbar solar cell adopts new technology to improve the efficiency of module, offers a better aesthetic appearance, making it perfect for rooftop installation.
- High Efficiency:**
Higher module conversion efficiency (up to 19.37%) benefits from Half Cells structure (low resistance characteristic).
- PID RESISTANT:**
Limited power degradation of Eagle module caused by PID effect is guaranteed under strict testing condition (85 / 85%RH, 96hours) for mass production.
- Low-light Performance:**
Advanced glass and solar cell surface texturing allow for excellent performance in low-light environments.
- Severe Weather Resilience:**
Certified to withstand wind load (2400 Pascal) and snow load (5400 Pascal).
- Durability against extreme environmental conditions:**
High salt mist and ammonia resistance certified by TÜV NORD.



LINEAR PERFORMANCE WARRANTY

30 Year Product Warranty • 25 Year Linear Power Warranty

- ISO9001:2008 ISO14001:2004 OHSAS18001 certified factory.
- IEC61215 IEC61730 certified products



ICRC

Solar Energy Calculations

SOLAR Energy 48 kW

Sun hours per day avr	= 4.7 hrs
Solar Energy (Wp)	= 48,000
System losses @ 20%	= 9,600
Energy production per day	= 157,920
Units produced (PV)	= 158
Error rate from grid 13%	= 21
Total units per day	=137

Cost Calculations

Price of Project	= USD 30,968
Solar Energy (Wp)	= 48,000
System losses @ 30%	= 33,600
Running/Maintenance cost per year	= USD 161
Energy production per day	= 157,920
Units produced (PV)	=158
Error rate from grid 13%	= 21
Total units per day	=137

Return on investment (ROI)

Price of Project	= USD 30,968
Units produced per year	= 50,147
Cost of units Produced	= 1,002,950
Saving per year (Aprox)	= 1,002,950
ROI (in years) aprox	= 5.5 years

Project Constraints

Challenges and Constraints

- Installation on Rented building
- NO technical expertise for supervision in the ICRC team in Pakistan
- Bad weather
- Lack of technical staff with company (SOLAR)
- Lengthy approval process from Govt
- Slow process of importing PV panels
- Small incidents in project due to lack of technical skills
- Inflation in Pakistan (USD rate, increase prices of material and labor)
- NO work in office working hours
- No professional staff related to SOLAR energy in Pakistan

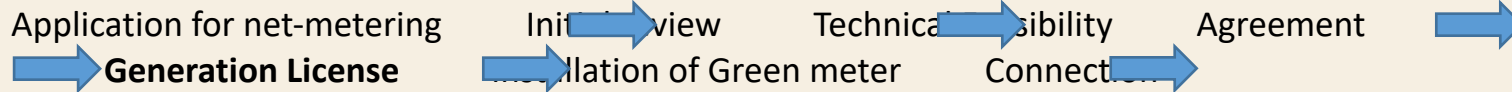



Net metering (Green Metering)

Net Metering in Pakistan

Net metering is a relatively new concept (started in 2015) which requires a bi-directional meter or two different meters. Net metering allows the **residential** and **commercial** customers with on-grid or hybrid rooftop **solar panels** having a three-phase electricity connection to inject the excessive electricity into the national grid, thus offsetting some or all of the electricity which has been generated by solar panels.

LICENCE for Energy Generation



**National Electric Power Regulatory Authority**
Islamic Republic of Pakistan

NEPRA Tower, Attaturk Avenue (East), G-5/1, Islamabad
Ph: +92-51-9206500, Fax: +92-51-2600026
Web: www.nepra.org.pk, E-mail: registrar@nepra.org.pk

Registrar

No. NEPRA/DL/LAN-2049/ 15146-49 August 20, 2019

Mr. Mughal Baz,
Plot No. 31, G-11 Markaz,
Islamabad,
Phone No. 0321-5667020


Subject: **Generation Licence No. DGL/2049/2019**
Licence Application No. LAN-2049
Mr. Mughal Baz, IESCO

Reference: IESCO's letter No. 11111/ dated June 27, 2019 (received on July 17, 2019).

Enclosed please find herewith Generation Licence No. DGL/2049/2019 granted by the National Electric Power Regulatory Authority to Mr. Mughal Baz for 48.10 KW photo voltaic solar based distributed generation facility located at Plot No. 31, G-11 Markaz, Islamabad, pursuant to Regulation 4 of NEPRA (Alternative & Renewable Energy) Distributed Generation and Net Metering Regulations, 2015.

2. Please quote above mentioned Generation Licence No. for future correspondence.

Enclosure: **Generation Licence (DGL/2049/2019)**


20 08 19
(Syed Safer Hussain)

Copy to:

- Chief Executive Office, Alternative Energy Development Board, 2nd Floor, OPF Building, G-5/2, Islamabad
- Chief Executive Officer, Islamabad Electric Supply Company Limited, IESCO Head Office Street 40, Sector G-7/4, Islamabad
- Director General, Pakistan Environmental Protection Agency, Plot No. 41, Street No. 6, H-8/2, Islamabad

National Electric Power Regulatory Authority (NEPRA)
Islamabad-Pakistan
GENERATION LICENCE
No. DGL/2049/2019

The Authority hereby grants Generation Licence to Mr. Mughal Baz, for 48.10 KW photovoltaic solar based distributed generation facility, having consumer reference number 28-14126-1793604 U, located at Plot # 31, G-11 Markaz, Islamabad under the National Electric Power Regulatory Authority (Alternative & Renewable Energy) Distributed Generation and Net Metering Regulations, 2015 (the "A&RE Regulations") for a period of seven (07) years. This Licence is valid up to 20th day of August 2026.


2. The Licensee shall abide by the provisions under the A&RE Regulations during the currency of the Generation Licence.

3. The technical parameters of Net Metering arrangements are shown hereunder:-

(i).	Primary Energy Source:	Solar
(ii).	Size of Distributed Generation Facility:	48.10 KW
(iii).	Generator/Inverter Information:	
	Manufacture:	Crown
	Model No.	1 X 30 KW TL3-S
(iv).	Generation Type:	Inverter

4. This Licence may be renewed subject to the A&RE Regulations.

This Licence is given under my hand on 20th day of August Two Thousand & Nineteen


20 08 19
Registrar

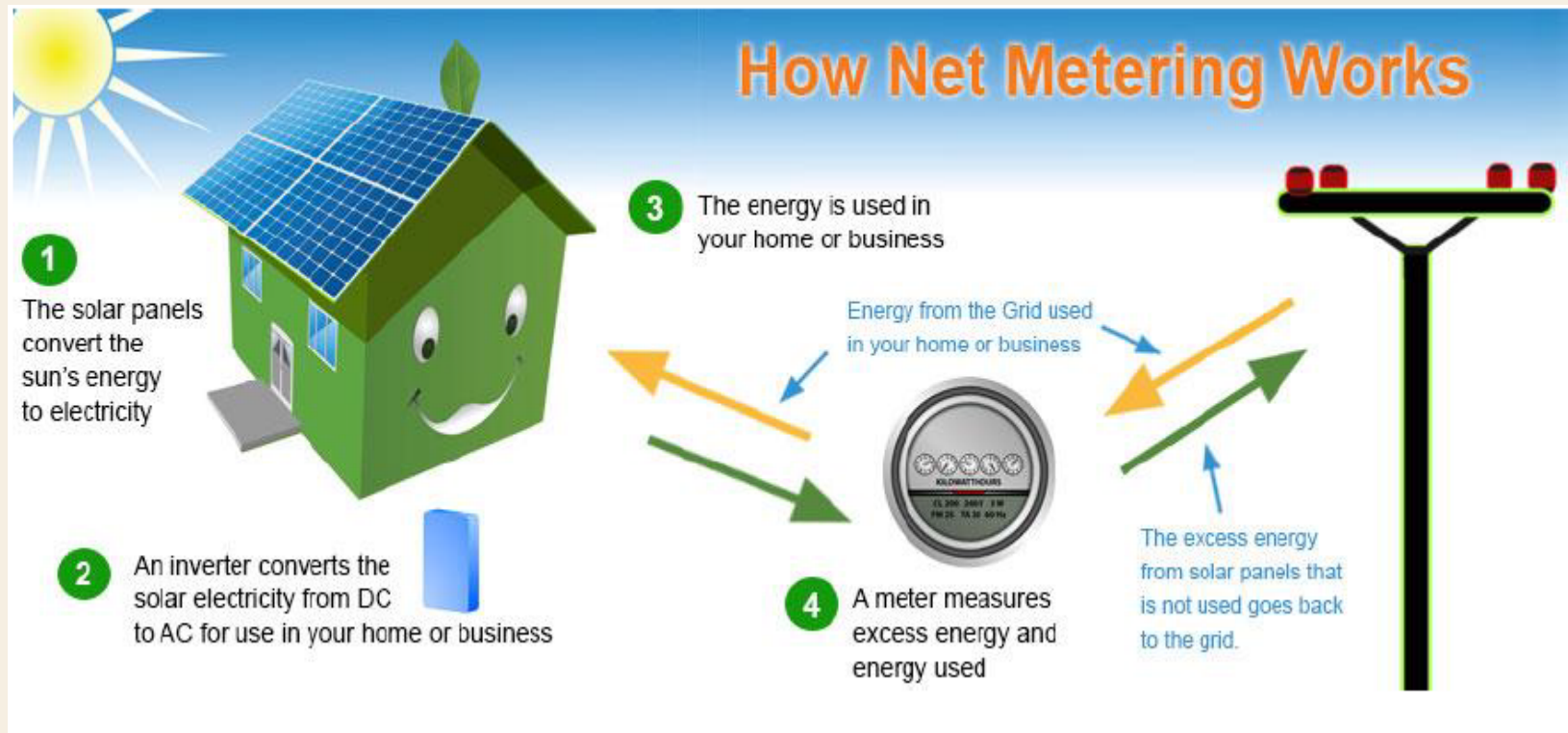


ICRC

Net metering (Green Metering)

Benefits of Green Metering

- By generating electricity for own use, we reduce the amount of electricity we buy from our National Grid
- We also get credit on our electricity bill of next billing cycle on any excess electricity exported to the national Grid
- Reduction in consumption imported fuel and Green & clean electricity
- Less load on national grid transmission system
- Saving of Transmission & Distribution (Line) Losses



Excess Energy to National Grid

Load Calculation per Day

Total required load in working hours (8 am to 5PM)	= 70 KVA +
Total required load in weekend days	= 5 KVA Max
Energy Generation from SOLAR Power (AVG) all season	= 25 KVA
Energy to National Grid on weekend and OFF hours (after 5PM)	=15-20 KVA

Units Calculation and cost Per day

Daily units consumption from National Grid	= 510 Kwh
Daily units generated from Solar	= 165 Kwh
Cost per unit from national Grid	= 0.105 USD (Without Tax)
Monthly saving in Electricity bill	= 600 USD approx.

Good emphasis of the Project

- One of the first project in Humanitarian organizations in Pakistan using net metering and generating own Energy
- We will be able to generate 30 to 40 % of daily use Electricity from SOLAR system free of cost and reduce monthly bill.
- We are contributing 16 % of SOLAR Energy generating in capital city
- Energy board approach us to present our project as a role model to other organization/entities planning for net metering
- Negative impact on environment and saving the green planet





Thank You



ICRC

Presenter



Gerald Demeules, UNDP

Gerald has 30 years of experience in ICT and green energy with technical and humanitarian organizations. Since 2010, he is the [UNDP](#) Chief of the Country Offices ICT Advisory Services based in Copenhagen. His team leads the implementation of Smart UN Facilities consisting of 4 pillars: Energy and eMobility; ICT Infrastructure and Business solutions; Security; and Internet of Things. Gerald joined the UN in 1998 as the Project Manager of the [Global Communications Infrastructure \(GCI\)](#) of the [Comprehensive Nuclear-Test-Ban Treaty Organization - CTBTO](#). In 2007, he was appointed to the Chief of ICT Services for the [UN Mission in Liberia](#). He led the “Delivery as One” initiative in collaboration with the UN country teams, establishing and developing unified common ICT services. Moreover, Gerald was a co-chair of the UN-Development Group (UNDG) ICT Reference Group, the UN inter-agency committee coordinating ICT collaboration and harmonization between all UN Agencies, funds and programmes.

Gerald started his career as a research associate (1988-89) at the [Centre de recherche industriel du Québec \(CRIQ\)](#). He served as an Officer in the [Canadian Armed Forces](#) (1989-95), as the Chief of ICT Services and Operations Officer across Canada, Israel/Syria (1992) and Ex-Yugoslavia (1995) and the Head of National Command and Control Information Strategic Systems (NCCIS) from (1995-98).

Gerald holds a Bachelor in Mechanical Engineering from the Royal Military College of Canada (1982-87) and a Master in Applied Science of Automation and Networks from the École Polytechnique de Montreal (1987-89).



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Resilient nations.*

Powering Humanitarian Facilities: Dialogue on Implementation Models
Approach to Develop Local Capacities for System O&M / UNDP Smart Facilities

Gerald Demeules
Global ICT Advisor





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How much greenhouse gas is produced per year globally?



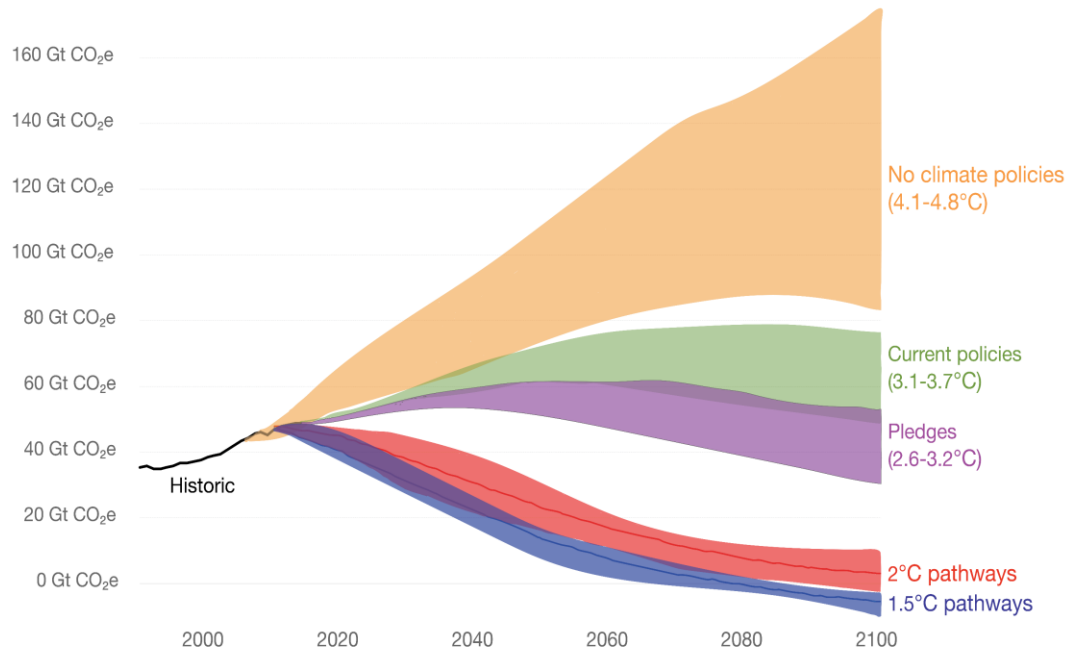
GHG Emissions



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Global greenhouse gas emissions scenarios

Potential future emissions pathways of global greenhouse gas emissions (measured in gigatonnes of carbon dioxide equivalents) in the case of no climate policies, current implemented policies, national pledges within the Paris Agreement, and 2°C and 1.5°C consistent pathways. High, median and low pathways represent ranges for a given scenario. Temperature figures represent the estimated average global temperature increase from pre-industrial, by 2100.

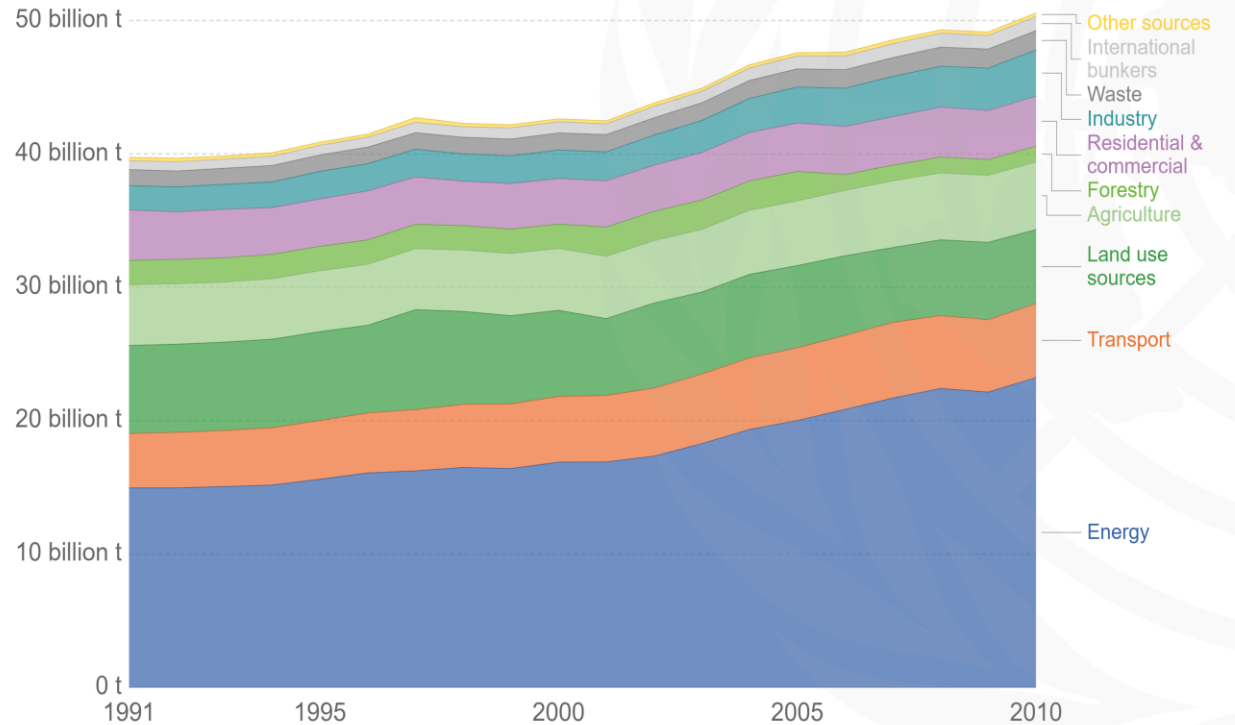


Based on data from the Climate Action Tracker (CAT). The data visualization is available at [OurWorldInData.org](https://ourworldindata.org). There you find research and more visualizations on this topic.

Licensed under CC-BY-SA by the authors Hannah Ritchie and Max Roser.

Greenhouse gas emissions by sector

Breakdown of total greenhouse gas emissions by sector, measured in tonnes of carbon-dioxide equivalents (CO₂e). Carbon dioxide equivalents measures the total greenhouse gas potential of the full combination of gases, weighted by their relative warming impacts.



Source: UN Food and Agricultural Organization (FAO)

[OurWorldInData.org/co2-and-other-greenhouse-gas-emissions/](https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions/) • CC BY

Source: <https://ourworldindata.org/co2-and-other-greenhouse-gas-emissions>





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How can we enhance the development of local capacities?



Who We Are



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1965

UNDP was established



170 countries

UNDP is present



17,000

Working for UNDP



372,000

Rural households had improved
access to renewable energy



256 million

Tonnes of carbon emission
cut with our support



What We Do



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Our three main focus areas:

- Sustainable Development
- Democratic governance and peacebuilding
- Climate and disaster resilience

MISSION

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 and **develop a more sustainable future**.





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Leaving No One Behind

Photo: Yemen 2019





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What Do We Develop in UNDP / OIMT



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VISION

Creating Smart Facilities to Build Local Capacity and Inspire a Global Movement

Photo: South Sudan 2018



What Are We Facing | Unreliable & Unsustainable Future

CLIMATE CRISIS

- Global Warming
- Unreliable Grids
- Volatile Diesel Prices
- Energy Dependence

LARGE AMOUNT OF DATA

- Reliable Information
- Availability of Data
- Ability to Process



ICT INFRASTRUCTURE

- High Cost and Complexity of the ICT Infrastructure
- Lack of Standardization
- Large Data Centre Footprint
- High Energy Consumption

SECURITY RISKS

- Cyber Threats
- Identity Theft
- Civil Unrest
- Internet Fraud

Local Capacity
No Investment Instrument
Lack of Funding



How We Solve | Smart Facility Model



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ENERGY & MOBILITY

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



BIG DATA & INTERNET OF THINGS

- Satellite Imagery
- Drones
- Energy Efficiency
- Energy Consumption & Environmental Monitoring



smart
facilities



ICT, BUSINESS INTELLIGENCE & AI

- Atlas (ERP)
- Digital Workspace
- Cloud Computing
- OneICTbox
- Satellite Connectivity



SECURITY

- Cyber Security
- Identity & Access
- Solar Street Lamps
- CCTV Cameras



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

Interconnecting Smart Technologies and People in the pursuit of Economic and Social Development



7 STEP GREEN ENERGY SOLUTION



Recognized best practice for UNDG Solar implementation

Why 7Step Method Is Successful



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7 STEP METHOD

- Is a structured and well defined methodology that eliminates ambiguities
- Ensures timely execution and high quality results for client satisfaction
- Defines clear milestones and checkpoints from project inception to final commissioning
- Creates suitable environment for effective skills/knowledge transfer

Why Was 7Step Method Created



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7 STEP METHOD

- To support sustainable initiatives towards the SDGs
- To address the implementation of green energy solutions within UN offices
- To reduce the current 38% emission (23,526 tonCO₂eq/y) in order to lower the environmental impact of UNDP operations worldwide
- To enable an effective and safe deployment of renewable sources in the facilities, both for the normal client's operation and as a crisis response

Success Stories | Liberia



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During the Ebola crisis in Liberia, **UNDP** stepped in and installed a **solar panel** in order to **enable** a Liberian hospital to keep its operations on.

This was a showcase that inspires a global movement, since after that **4,873 solar panels were installed** and **13 other offices** around the world were involved thanks to the Green UNDP initiative.

Success Stories | South Sudan



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- South Sudan relies **100% on fossil fuels**
- Little existing infrastructure makes it difficult to provide uninterrupted power supply.
- **OIMT Team** started with the implementation of a Solar PV installation in the UNDP CO (2016) and this inspired other 12 UNDP projects with different stakeholders around the country, that are currently under development.
- Nowadays, a **boom on solar business** is noticeable in any project in **South Sudan**.
- Other UN agencies and humanitarian players are coming onboard to deploy projects in countries of presence.
- Our **LTA contractors** have reported that compared to 4-5 years ago, it is **not** difficult anymore to **find local partners** to work in any region in the country.
- This is aligned with our vision of inspiring other projects around the world.

Photo: South Sudan 2018, Rajaf Police Training Academy

Overview



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On the pipeline PV systems

- Cuba: safeguard against grid instability
- Haiti: payback time of less than 4 years
- Brazil: net metering system active
- UNICEF Denmark
- UNITAR Djibouti
- Guyana Hinterland

Currently operating systems

- 14 Solar PV installations
- 1.3 MWp Solar PV capacity
- 1000 tons of CO2 saved/year
- Pilot project: V2G electric car in Namibia





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BE PART OF IT

Moving towards a sustainable future

Photo: Timor L'este UN House 2016

Presenter

Paul Quigley, UNITAR





Workshop Series July 2019

- 1. Humanitarian Agencies :
UN & ICRC
- 2. Private Sector :
Energy Providers and Financial organisations







Key Recommendations from workshops

1. Create long-term agreements for humanitarian agencies & energy providers
2. Develop Financial Guarantee mechanisms to mitigate risk
3. Training program for procurement staff on evaluating long-term energy finance models
4. Develop clear pathways and strategies which organisations can follow towards sustainable energy solutions
5. Collate relevant data to demonstrate benefits
6. Improve collaboration and communication between humanitarian and private sector actors
7. Increase multi-year funding resources for energy projects

Energy Efficiency First

1. Implement systematic metering of energy use in operations, increase accountability for its efficient use and report the cost of energy as a cost per person across an operation;
2. Procure energy efficient appliances to reduce energy demand;
3. Implement behavioural change programmes that support staff in adopting energy efficient measures;
4. Where practicable to do so, clustering buildings and energy consuming activities to enable shared power sources, including those from other organisations
5. Site planning to consider orientation of buildings to the sun, insulation, shading and other possible ways to design facilities for lower energy needs.

Lower Energy Consumption, Lower Power, Lower Costs



- Q&A -

Thank you

- Feedback: info@energypedia.info
- Upcoming webinar on Energy Efficiency and Designing for Sustainability.
- Webinar documentation/Additional Resources:
https://energypedia.info/wiki/Webinar_Series:_Sustainable_Energy_in_Humanitarian_Settings#tab=5th_Webinar