Smart Systems
for Solar Power

IBC SOLAR

IHK BAYREUTH: AFRIKA NETZWERK - ERFAHRUNGSBERICHT

© IBC SOLAR, Oliver Oswald, Product Manager, Team Power Solutions

Oliver Oswald

- Product Manager Energy Management Systems
- Supply Chain Management, IBC SOLAR AG, Germany

- Previously Technical Applications Engineer at IBC
- Certified Electrician (TÜV)
- Certified O&M technician (TÜV)
- Certified Surveyor for Photovoltaic Systems (TÜV)

Oliver Oswald has been working as an engineer in PV system design and installation since 2014. As an expert for technical planning and designing of PV systems in international markets, he is specialized on *applications with Energy Storage Systems as well as Control & Data Acquisition.* Oliver Oswald is an industrial engineering graduate with a focus on energy technology.

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AGENDA

- IBC SOLAR AG
- Unsere Lösungen
  - Technical Services: Engineering
- Photovoltaik und Speicher Anwendungen
- Herausforderungen bei Offgrid Projekten
  - Namibia PROCEED - Pathway to Renewable Off-Grid Community Energy for Development
- Herausforderungen in Afrika

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Smart Systems for Solar Power - worldwide

37

years of experience

4.2

gigawatt power

2

million people worldwide supplied with solar power

353

employees in 6 countries

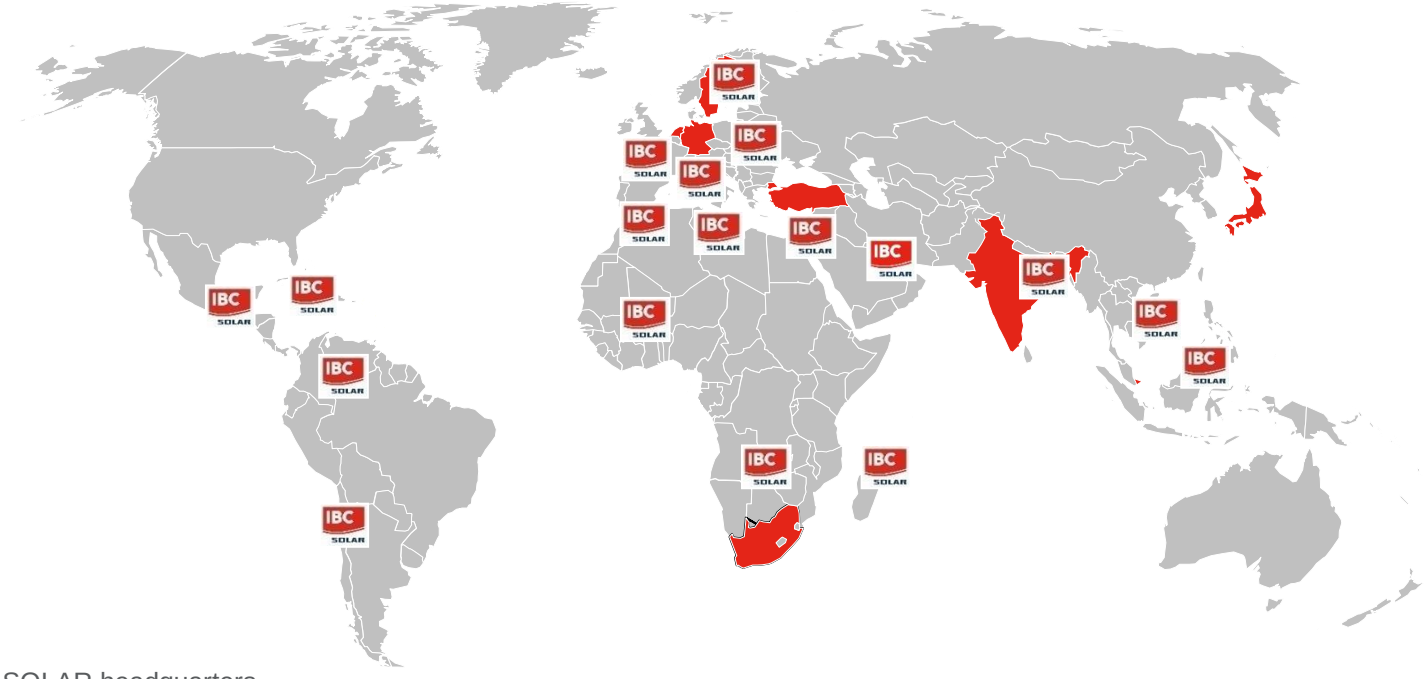
6

foreign subsidiaries

€ 294

million turnover for 2018

IBC Weltweit



IBC SOLAR headquarters and regional companies

Countries served by IBC SOLAR Premium Partners

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4

IBC Solar entlang der Wertschöpfung

Manufacturer → **Distributor** → **Installer** → **End customer**

- PV Modules
- Inverters
- Mounting systems
- Storage systems
- Accessories

Technical Services

- System solutions
- **Engineering**
- Training and E-Learning
- Transfer cost optimization
- Logistics

- End customer contacts
- Consulting
- Customer-specific system design and installation
- Market and product knowledge

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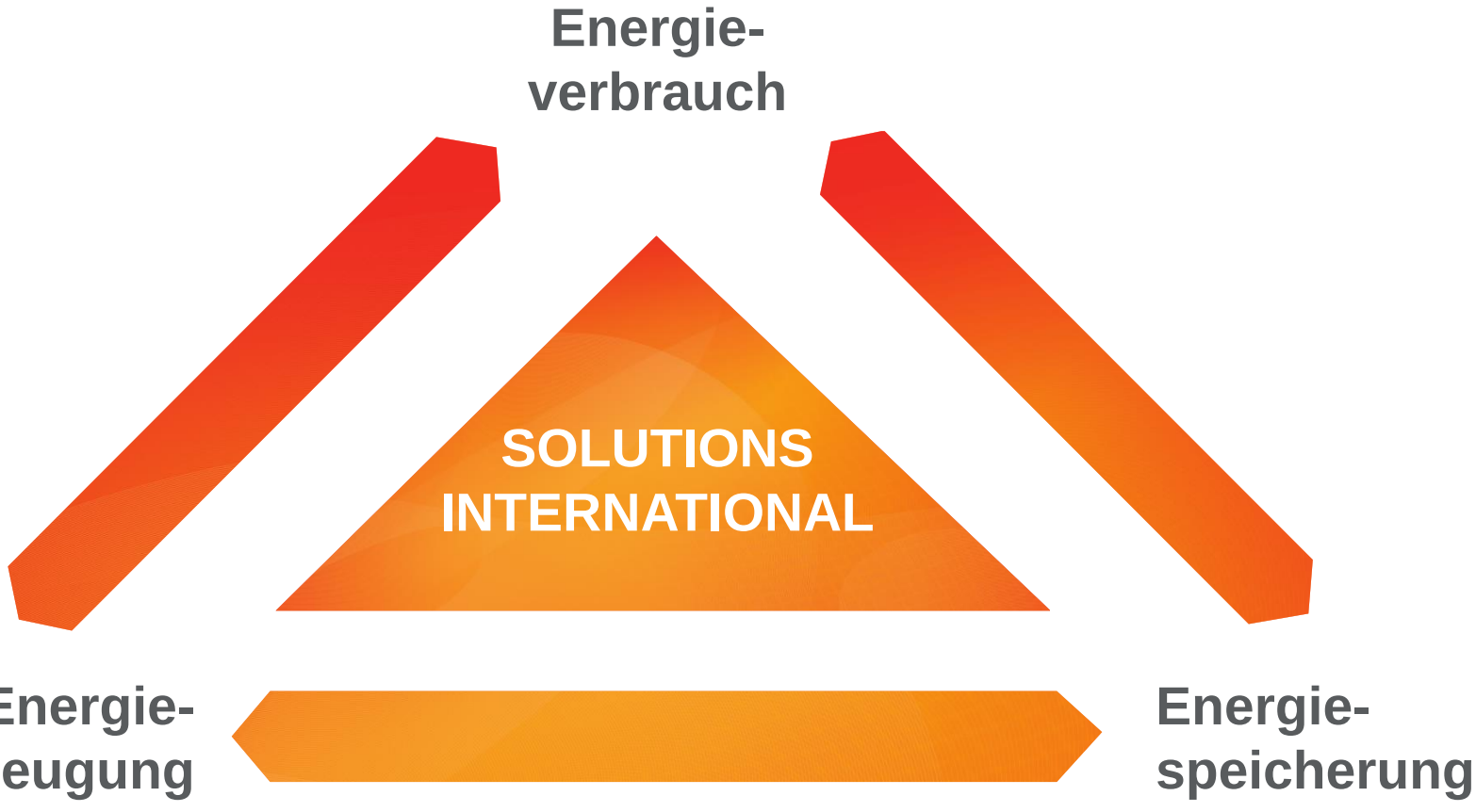
Unsere Lösungen



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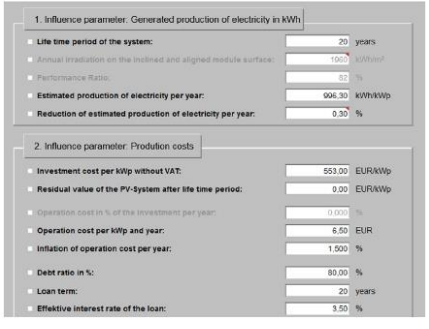
Energy shortages
Rising energy prices
High diesel costs
Challenges
Lack of grid integration
Increasing energy demand
Solutions International
Energy generation
Energy storage
Energy consumption
D
Li
Pb

Technical Services: Engineering

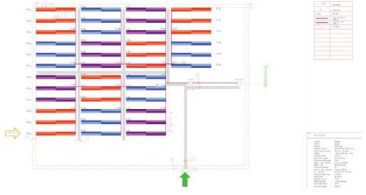
TECHNICAL FEASIBILITY

lfd.No.	Cable type	Use	Length [m]	Relative losses [%
1	FlexiSun(Cu) 6mm²	String-CB		
2		CB-Inverter		
3		Inverter-Transformer		
4		Transformer-HOS		
5	CAT 7	Communication		-
6	Patch cable	Connection inverters		-
7	Round steel	Potential equalization		-
8	Galvanized strip steel	Potential equalization		-
9	Sigma post	Potential equalization		-
	Cable trench	Dimensions	Length [m]	
10	Type A	30x60		
11	Type B	40x60		
12	Type C	60x80		
13	Type D	60x100		
14	Type E	60x120		
15	Type F	30x120		
	Total losses	[W]	[%]	

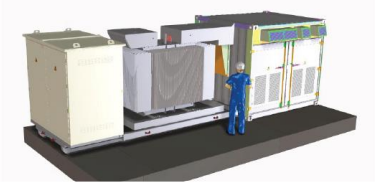
FINANCIAL FEASIBILITY



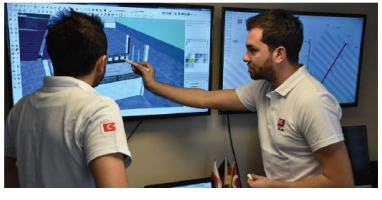
DC-ENGINEERING



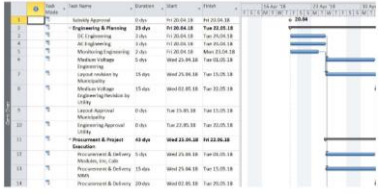
AC-ENGINEERING



MONITORING ENGINEERING



PROJECT MANAGEMENT



SITE MANAGEMENT

COMMISSIONING

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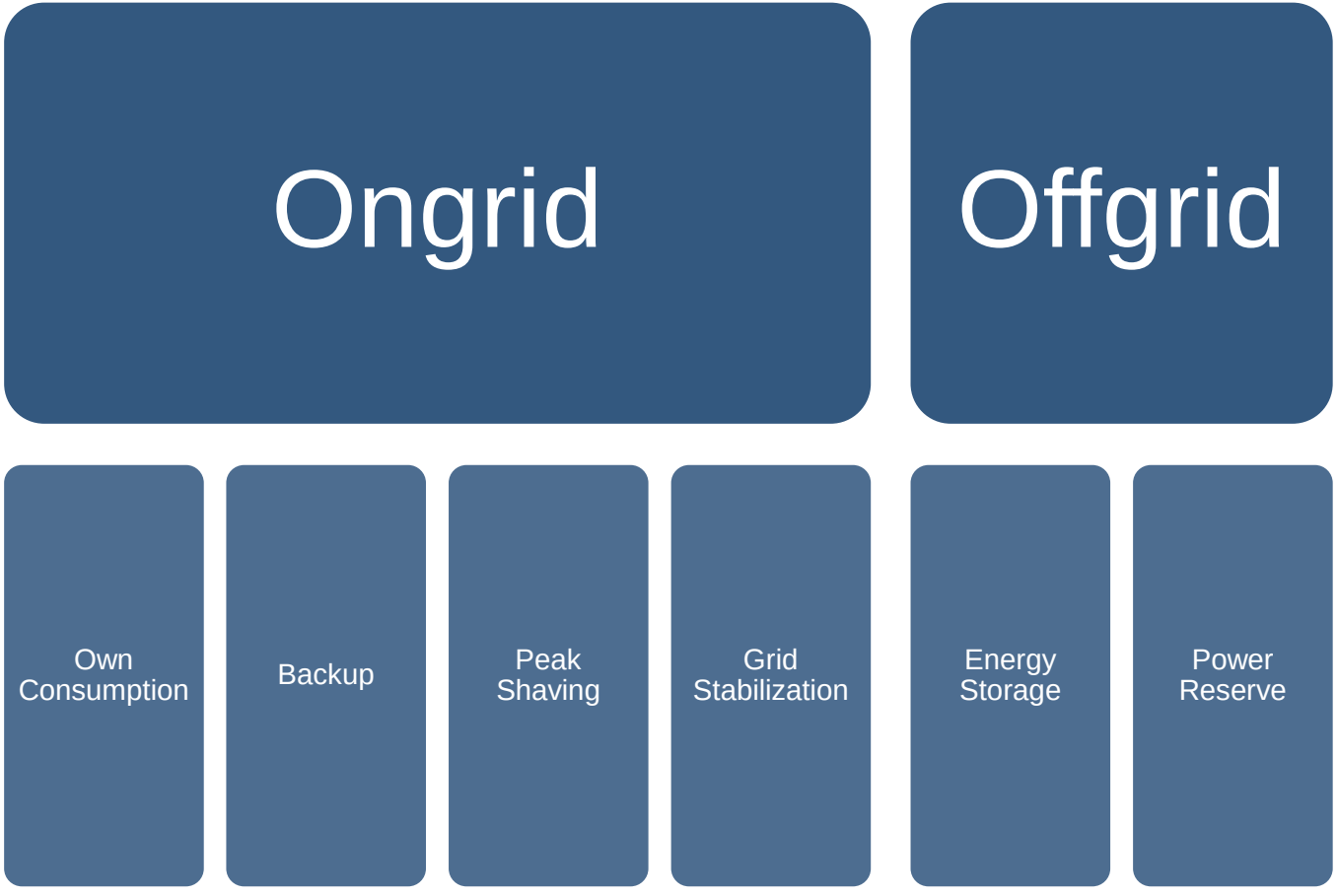
Speicher Anwendungen



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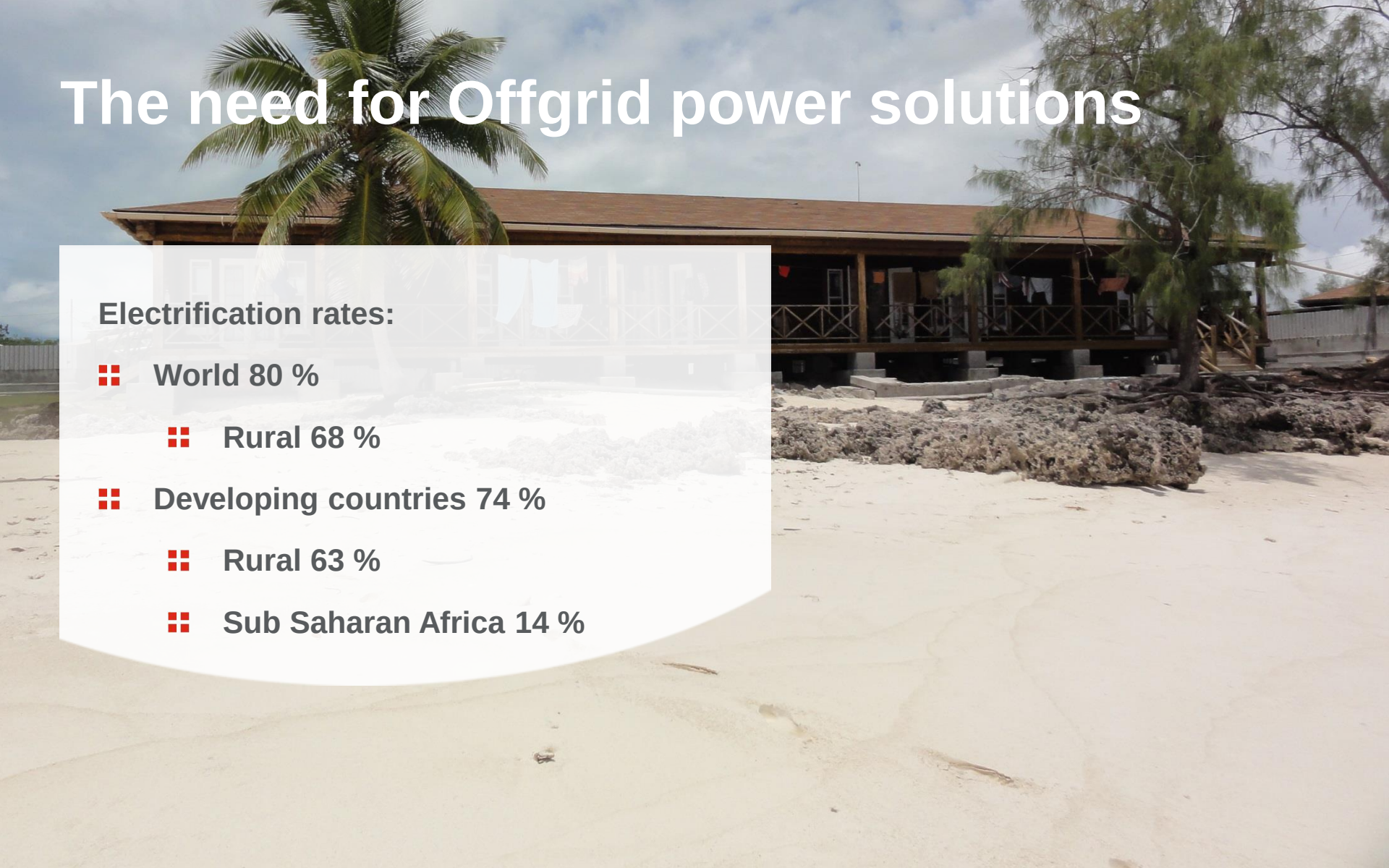
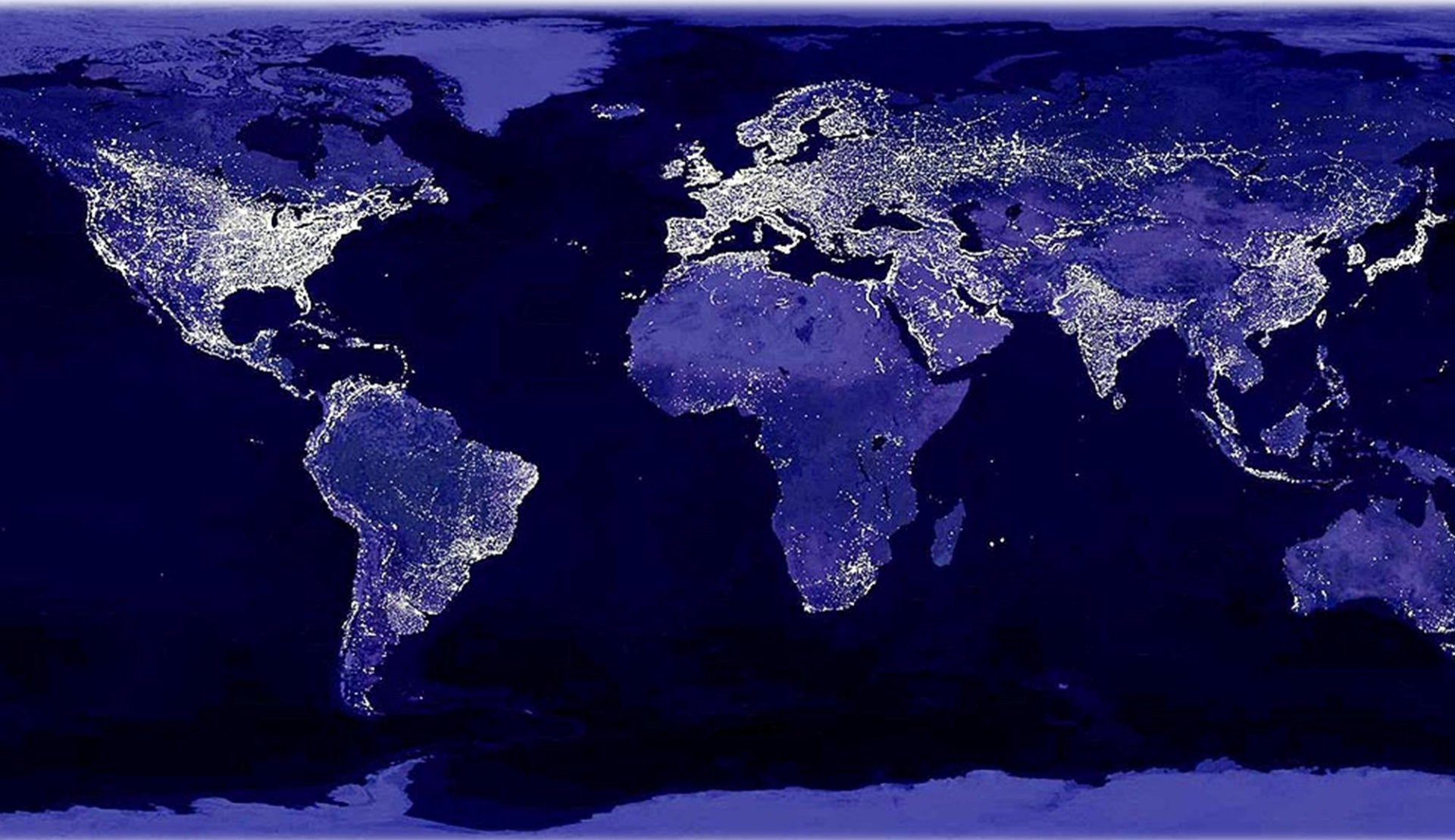
The need for Offgrid power solutions

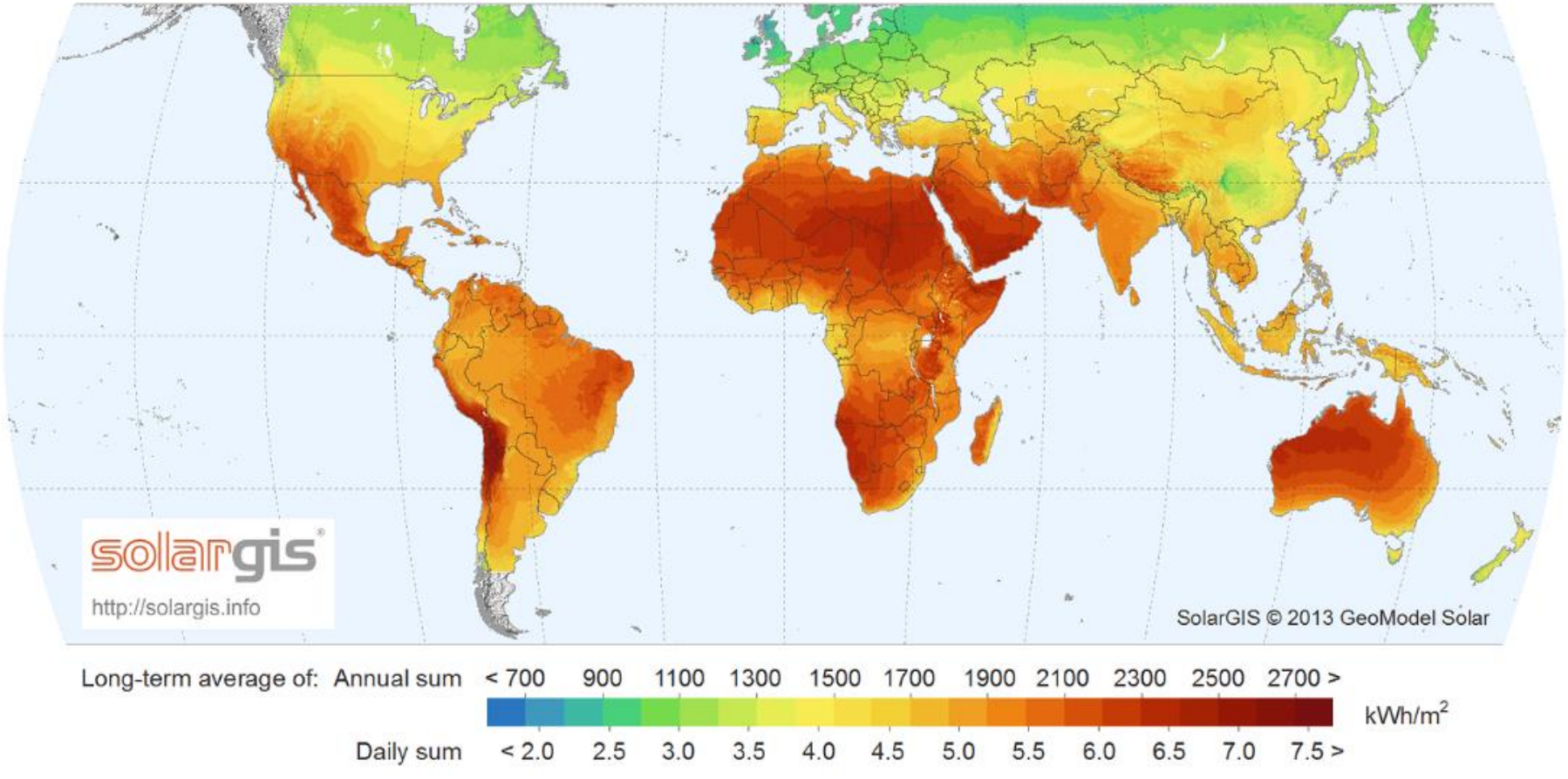


Electrification rates:

- World 80 %
  - Rural 68 %
- Developing countries 74 %
  - Rural 63 %
  - Sub Saharan Africa 14 %



Irradiation World



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BESONDERE HERAUSFORDERUNGEN OFFGRID

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Besondere Herrausforderungen Offgrid

- Ohne Netzanschluss, oft auch ohne Notstrom Generator
  - Keine Elektrowerkzeuge
- Fachpartner vor Ort
  - Einfach Installation, verständliche Planungsunterlagen
- Einfache Wartung, robuste Bauweise und verlässliche Funktionalität
  - Langjährige Erfahrung

Skalierbare Anlagen,

somit ähnliche Funktionsweise und gleiche Produkte,

egal welche Größe

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INDEPENDENT POWER SUPPLY

Solar energy right where you need it

- **DC Coupled**
- AC Coupled
- Hybrid systems
- Pumping

Solar Home Systems

INDEPENDENT POWER SUPPLY

Solar energy right where you need it

- DC Coupled
- **AC Coupled**
- Hybrid systems
- Pumping

Power supply for multiple consumers or entire villages

INDEPENDENT POWER SUPPLY

Solar energy right where you need it

Reference project:

Offgrid AC Coupled Systems 25 kWp, Seychelles

INDEPENDENT POWER SUPPLY

Solar energy right where you need it

Reference project:

Offgrid Power Plant,

1,5 MWp, Malaysia

Marokko 2017

https://blog.ibc-solar.com/2018/07/how-moroccan-fishermen-benefit-from-solar-energy/

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Tschad 2017

https://blog.ibc-solar.com/2018/06/solar-system-with-battery-storage-makes-bethel-education-centre-in-chad-less-dependent-on-diesel/

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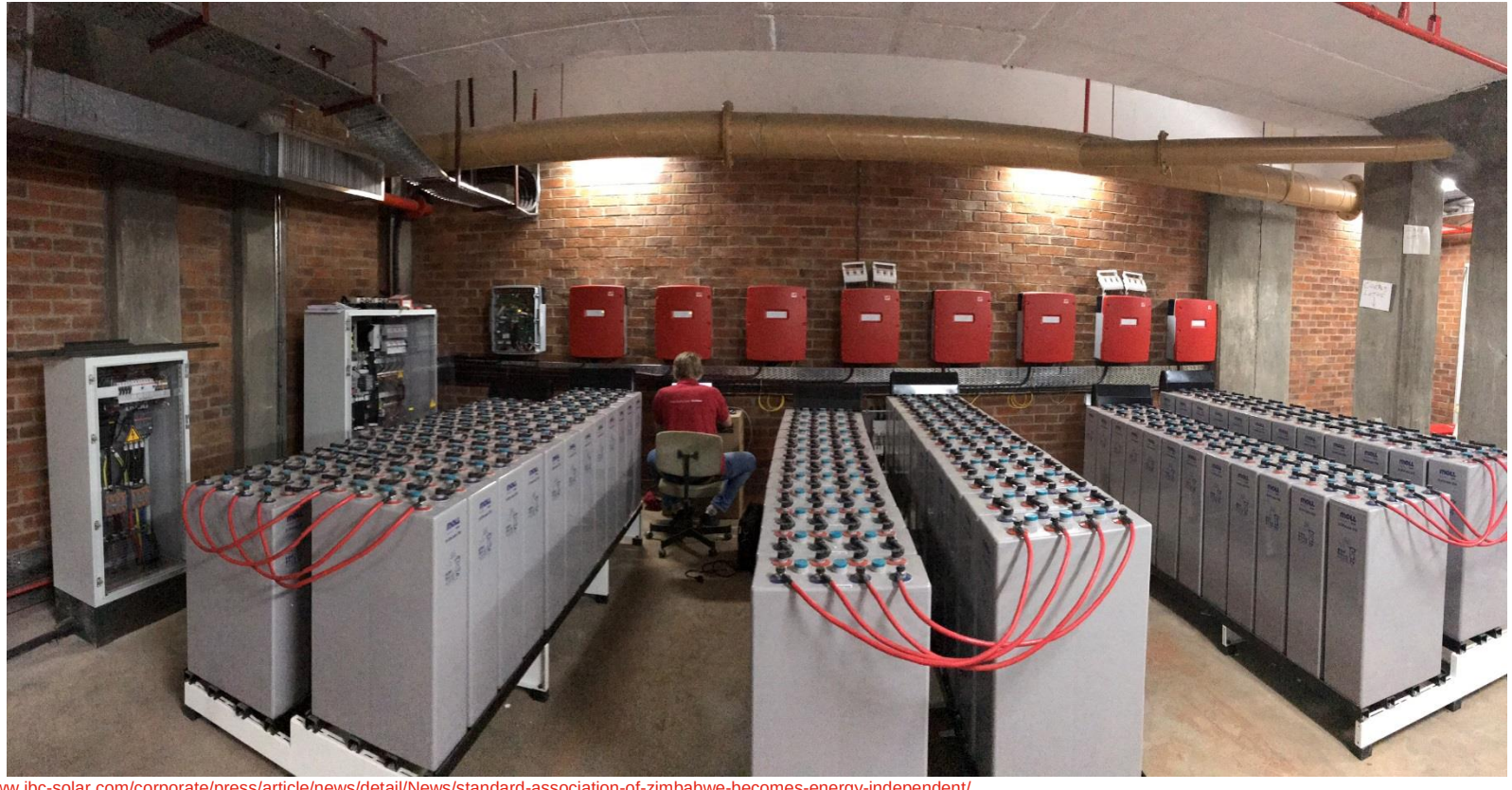
Simbabwe 2018



https://www.ibc-solar.com/corporate/press/article/news/detail/News/standard-association-of-zimbabwe-becomes-energy-independent/

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Schweden 2018

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INDEPENDENT POWER SUPPLY

Solar energy right where you need it

- DC Coupled
- AC Coupled
- **Hybrid systems**
- Pumping

Solar Power for fossil fuel powered communities

Libanon 2018

https://www.ibc-solar.com/corporate/press/article/news/detail/News/ibc-solar-provides-solar-hybrid-solution-for-private-housing-estate-in-lebanon/

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Namibia PROCEED - Pathway to Renewable Off-Grid Community Energy for Development (on going)

https://www.ibc-solar.com/corporate/press/article/news/detail/News/ibc-solar-helps-universities-to-improve-namibias-energy-supply/

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Namibia PROCEED - Pathway to Renewable Off-Grid Community Energy for Development (~2022)

- Existing renewable micro grids
- **Data collection of energy flow**
- Data Analysis
- Payment & Metering solution
  - Prepaid mobile phone
  - PAYG Pay-as-you-go System

Dieter Miener, Solutions International, IBC Solar AG

Partners:
TH Ingolstadt, Hochschule für angewandte Wissenschaften Neu-Ulm,Universität Bayreuth, Namibia Energy Institute, Alensy Energy Solutions, Renewable Energy Industry Association of Namibia, SADC Centre for Renewable Energy and Energy Efficiency, Hanns-Seidel-Stiftung Namibia

https://www.ibc-solar.com/corporate/press/article/news/detail/News/ibc-solar-helps-universities-to-improve-namibias-energy-supply/

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Namibia PROCEED - Pathway to Renewable Off-Grid Community Energy for Development (~2022)

Tsumkwe

https://www.ibc-solar.com/corporate/press/article/news/detail/News/ibc-solar-helps-universities-to-improve-namibias-energy-supply/

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INDEPENDENT POWER SUPPLY

Solar energy right where you need it

- DC Coupled
- AC Coupled
- Hybrid systems
- **Pumping**

PV to Pumping

Spanien 2016

https://www.ibc-solar.com/corporate/press/article/news/detail/News/ibc-solar-presents-system-solution-for-agricultural-irrigation/

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BESONDERE HERAUSFORDERUNGEN IM AUSLAND

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Besondere Herausforderungen im Ausland

Rechtliche Hürden

- Visa Beantragung
- Mehrwertsteuersatz für Services nach Erfüllungsland
- Versicherung und Abrechnung

Herausforderungen Personal

- Lange Tage auf der Baustelle
- Sprachbarrieren
- Undurchsichtige Abhängigkeiten Vertragsverhältnisse

Lokale alltägliche Herausforderungen

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Herausforderungen Personal

- Lange Tage auf der Baustelle
  - Meistens **höhere Motivation** als erwartet
- Sprachbarrieren
  - Ansprechpartner 24/7
- Undurchsichtige Abhängigkeiten Vertragsverhältnisse
  - Stakeholder identifizieren

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Lokale alltägliche Herrausforderungen

- Klimatische Herrausforderungen
- Wetterbedingte Zufahrt
- Abgeschiedene Baustellen und lange tägliche Anreise

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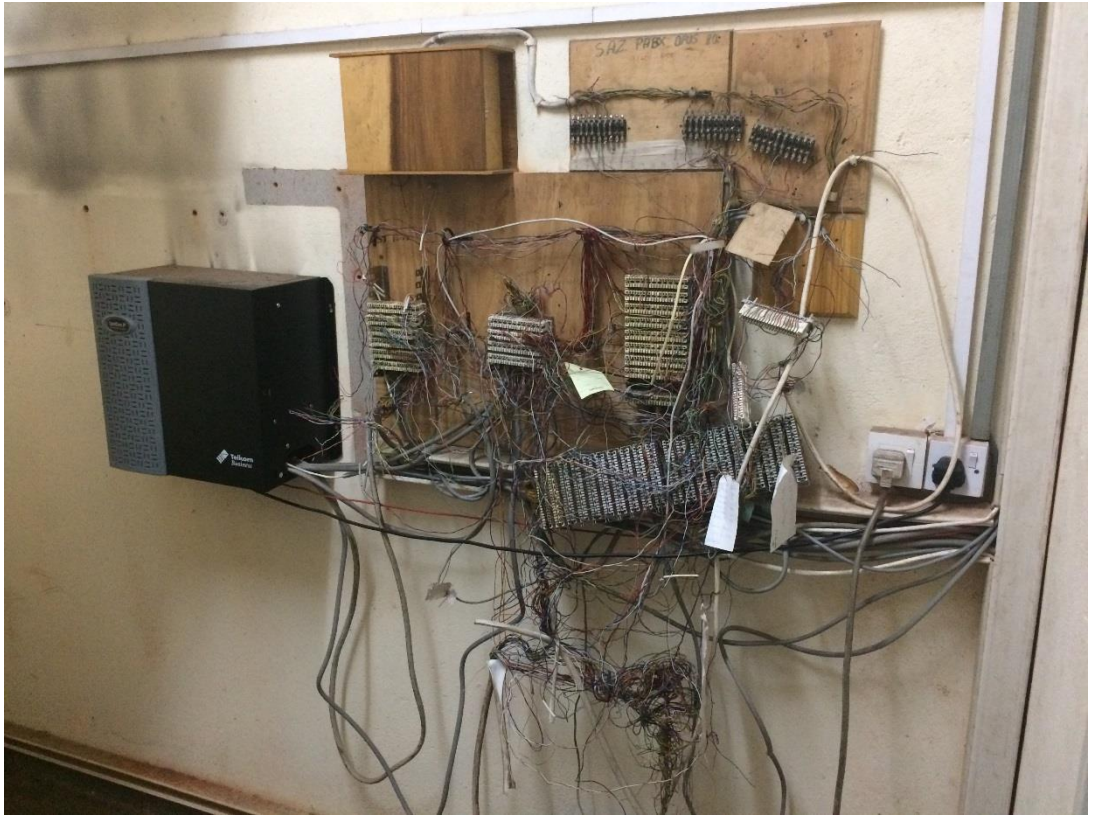
Lokale alltägliche Herrausforderungen

- Qualitätsanspruch
- Verfügbarkeit von Materialien und Werkzeug



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