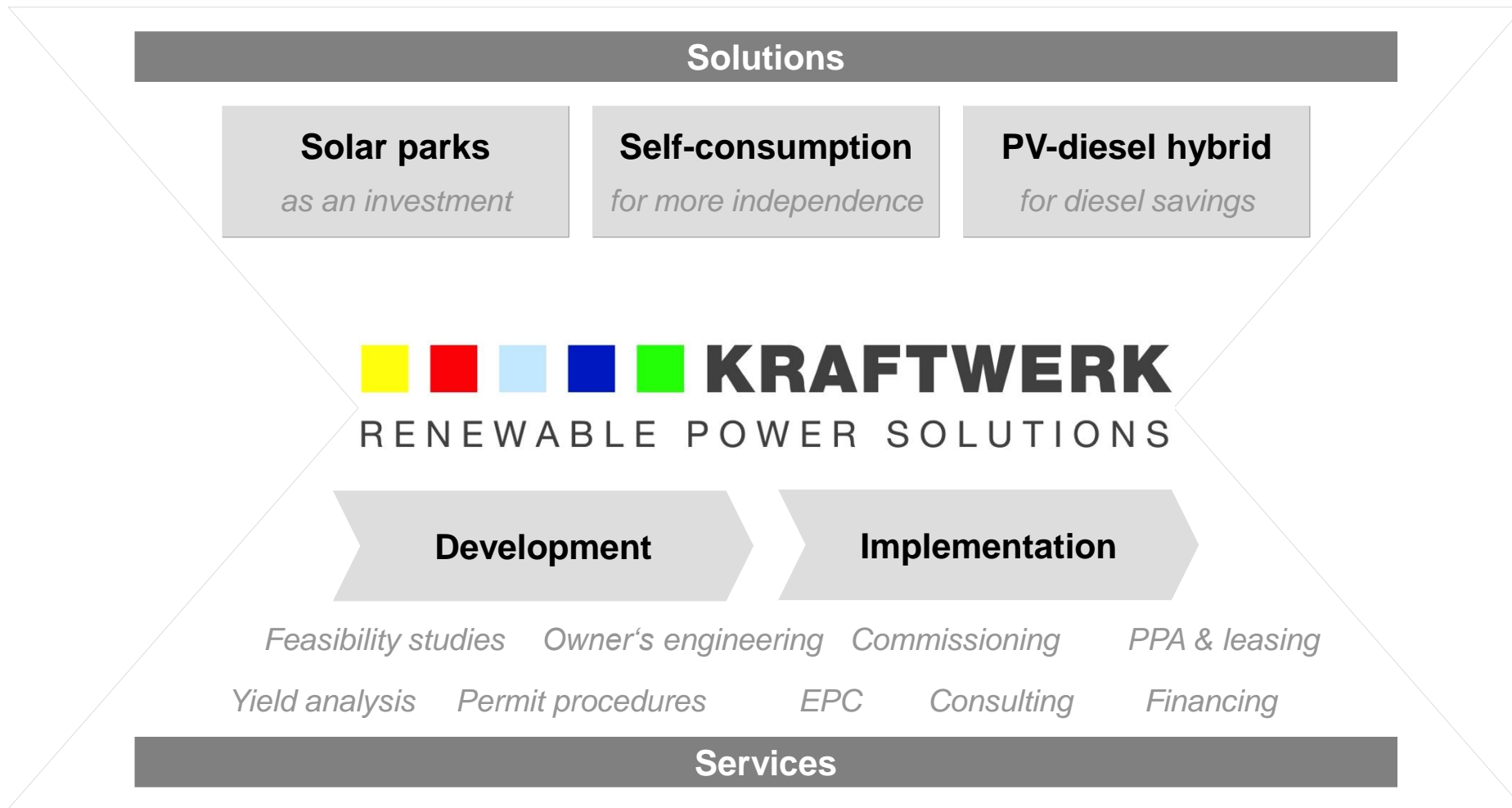




Dena RES Project Chile 2015-17

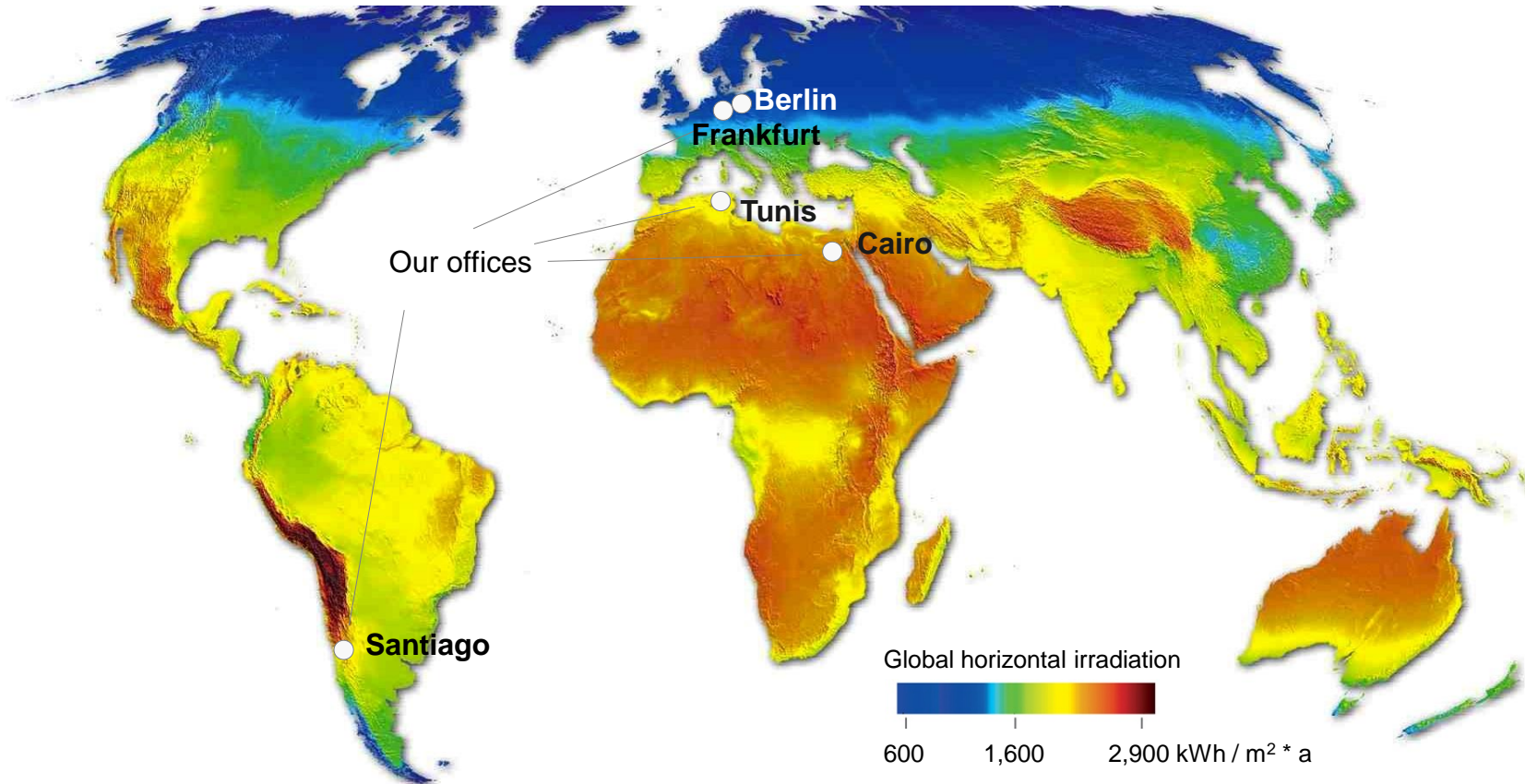
Dr. Roman Brinzanik
Federal Ministry for Economic Affairs and Energy, Berlin
November 5, 2018

KRAFTWERK – intelligent use of renewable energy



Our focus: high potential regions

Global irradiation map



PV is competitive in countries with high irradiation or low capital cost

PV plant and battery integrated in diesel grid of luxury hotel



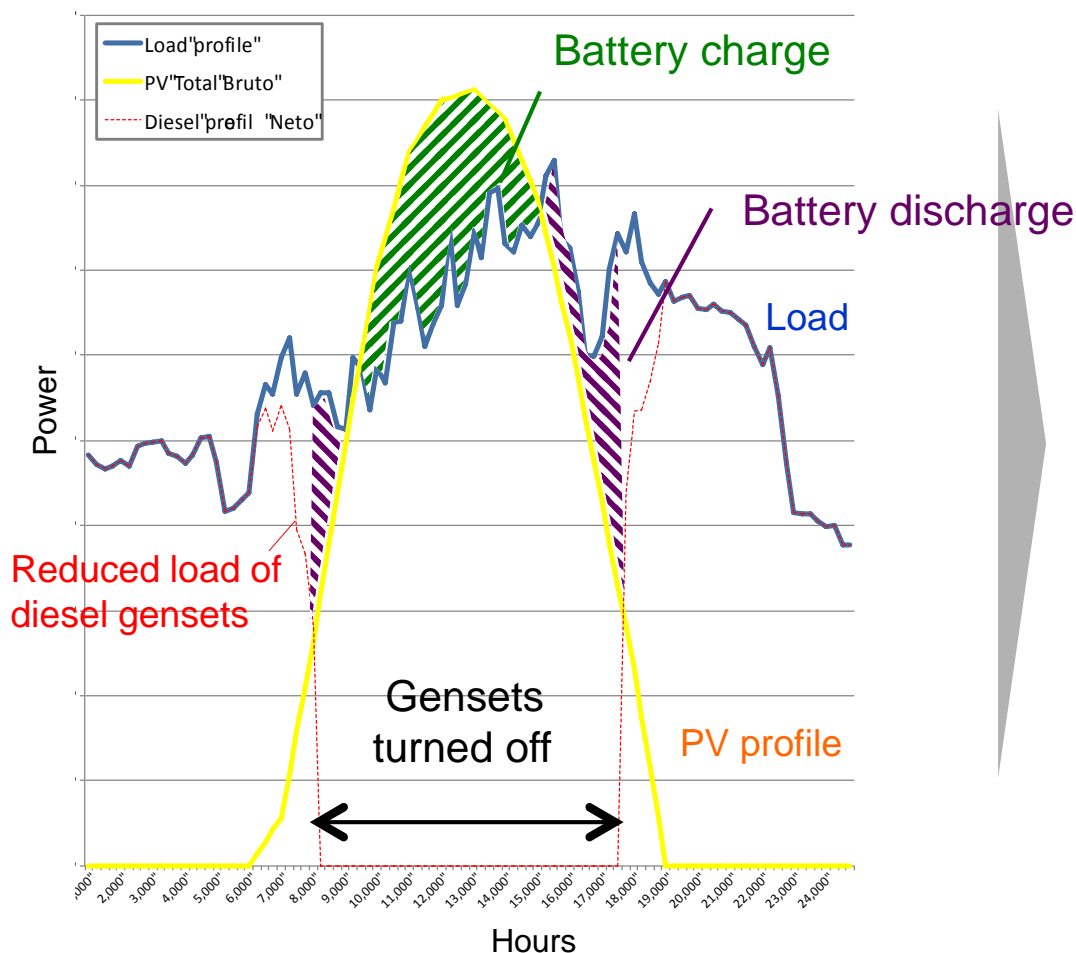
- Luxury hotel in the Atacama Desert, Chile
- Island system supplied by 3 diesel generators
- ~ US\$ 100,000 annual diesel costs
- Diesel price of ~0.85 US\$ per litre
- Phase 1: 23 kWp PV-hybrid plant (2013)



- Phase 2: Dena RES project Chile
- 133 kWp PV plant extension
- 180 kW/335 kWh Lithium-ion battery storage with micro-grid and energy management system (Qinous)
- Commissioned: September 2017

PV/battery-diesel hybrid enables complete switch-off of diesel gensets during daytime

Load and solar profile during day



- Detailed load profile data
- System solution: integration of PV and battery in diesel network, diesel generator completely switched off for extensive periods
- 100% solar share during daytime
- Diesel savings up to ~65% p.a.
- ~340 tons of CO₂ savings p.a.
- Higher independence from fuel deliveries
- Uninterrupted power supply
- Investment payback in 5-6 years

Dena support: main benefits for KRAFTWERK

Marketing plan	Technical assistance in planning of extensive marketing and sales activities
Financial support	Enabled marketing activities for showcasing reference project
Opening event and networking	High-visibility inauguration of PV system attended by German ambassador
Accelerated investment decision	Hotel commissioned PV/battery system faster
Flexibility	Dena team supported adaptation to changing market situation and customer needs

Reference project strengthened KRAFTWERK's position in Chile

Some impressions ...

Meeting with investors



Installation



Battery delivery



Training



Inauguration



Why do we do all this?



▶ **Affordable and clean energy enables sustainable development**

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