



German-Brazilian Cooperation for Sustainable Development

Business Model for the Brazilian Net Metering

José Henrique Zloccowick
Dr. Johannes Kissel

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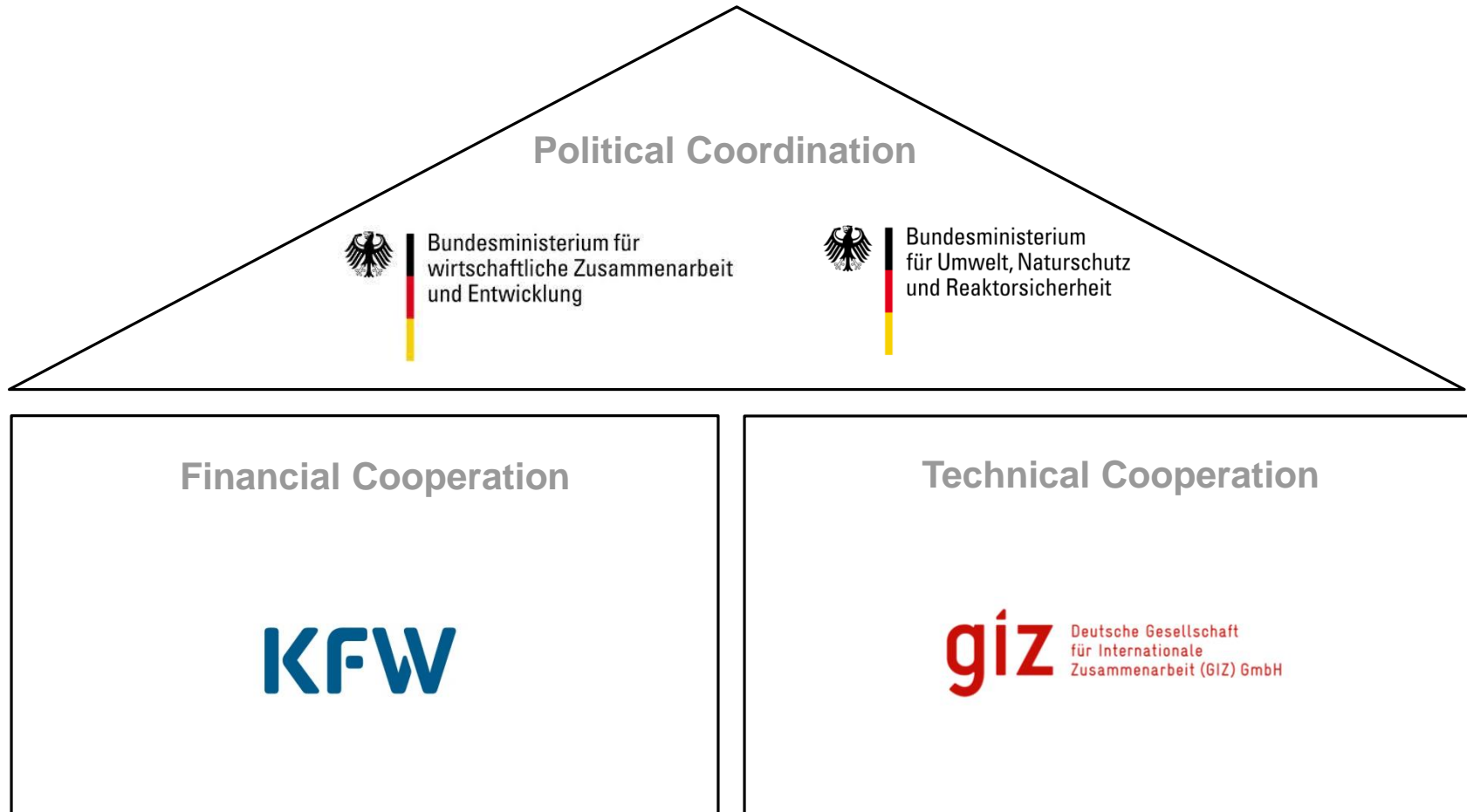


Agenda

1. German-Brazilian Cooperation for Sustainable Development
2. Activities of GIZ in PV in Brazil
3. German and Brazilian framework conditions
4. Business Model for Brazilian Net Metering
5. Parameters of economic viability
6. Project Status and final remarks

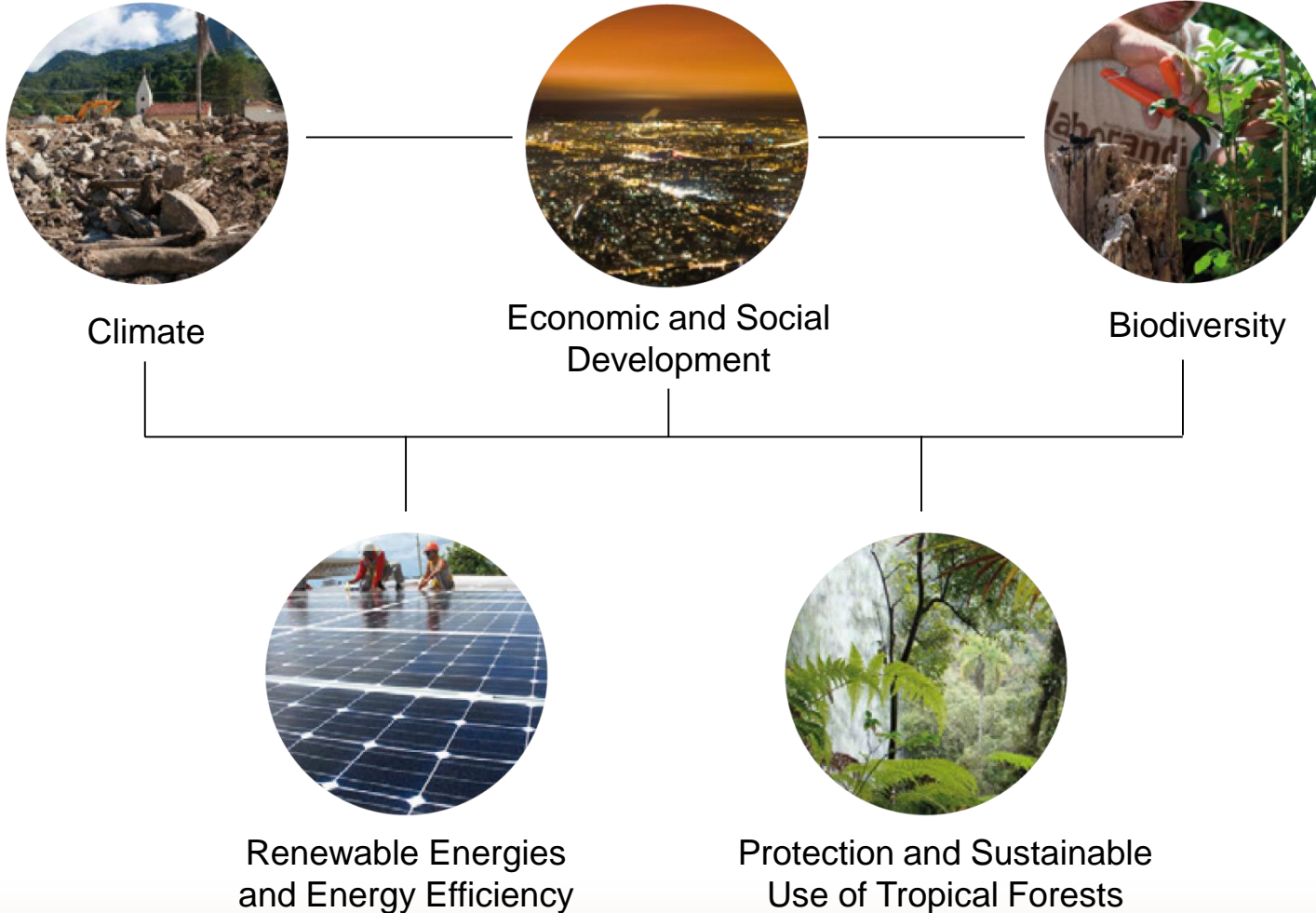


German Cooperation for Sustainable Development





Together for Climate and Biodiversity





Activities of GIZ in PV in Brazil

1. Support - Brazilian partners in regulation/incentive issues:

- ANEEL - Net Metering
- EPE - PV in general

→ [Energypedia website \(PV auctions and net metering\)](#)

2. Support - Dissemination activities in distributed generation

→ NGO Instituto Ideal – americadosol.org

3. Support market development

→ p.ex. Enabling PV

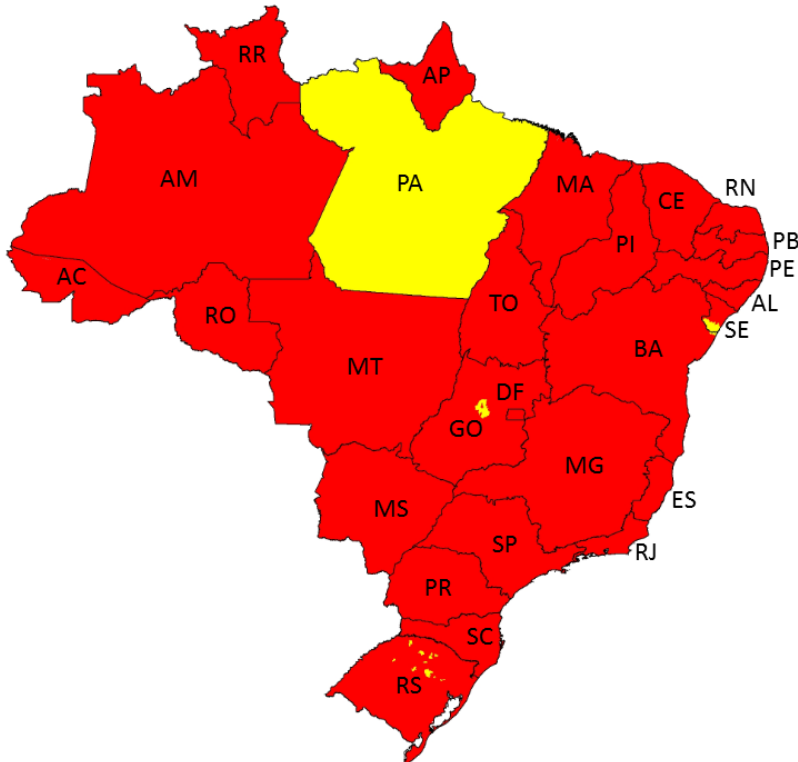
→ Development of Business Models



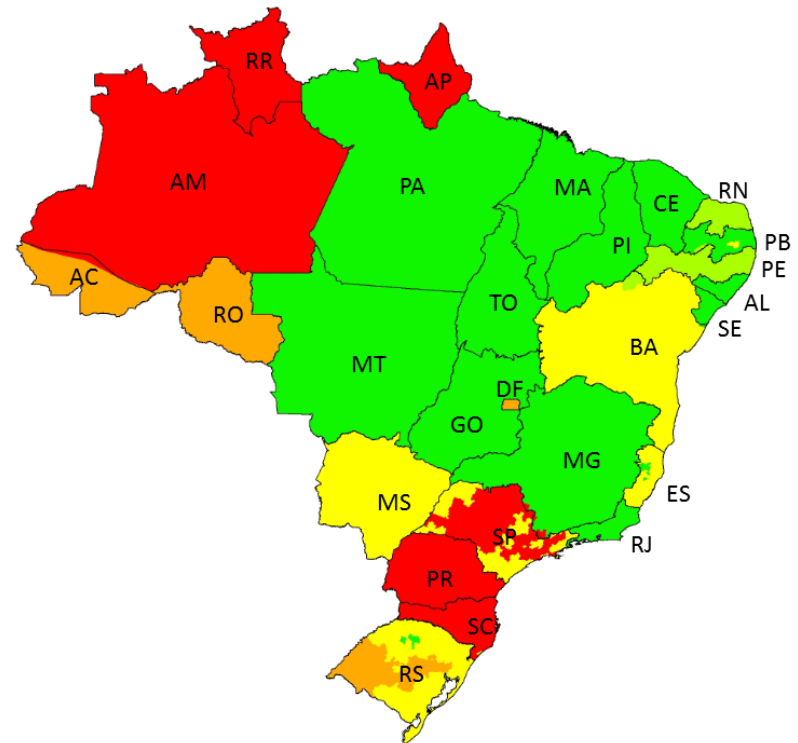


Net Metering in Brazil – economic viability for PV

Situation in 01/2015



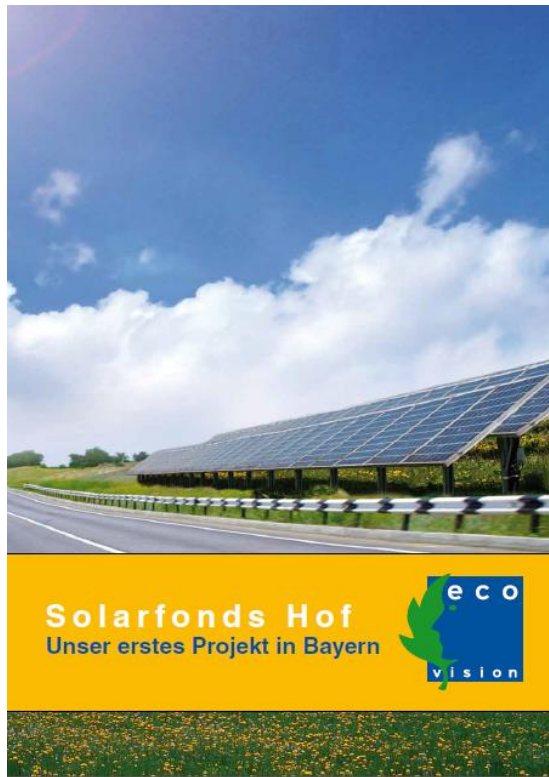
Current situation



Source: Holdermann, Kissel 2015



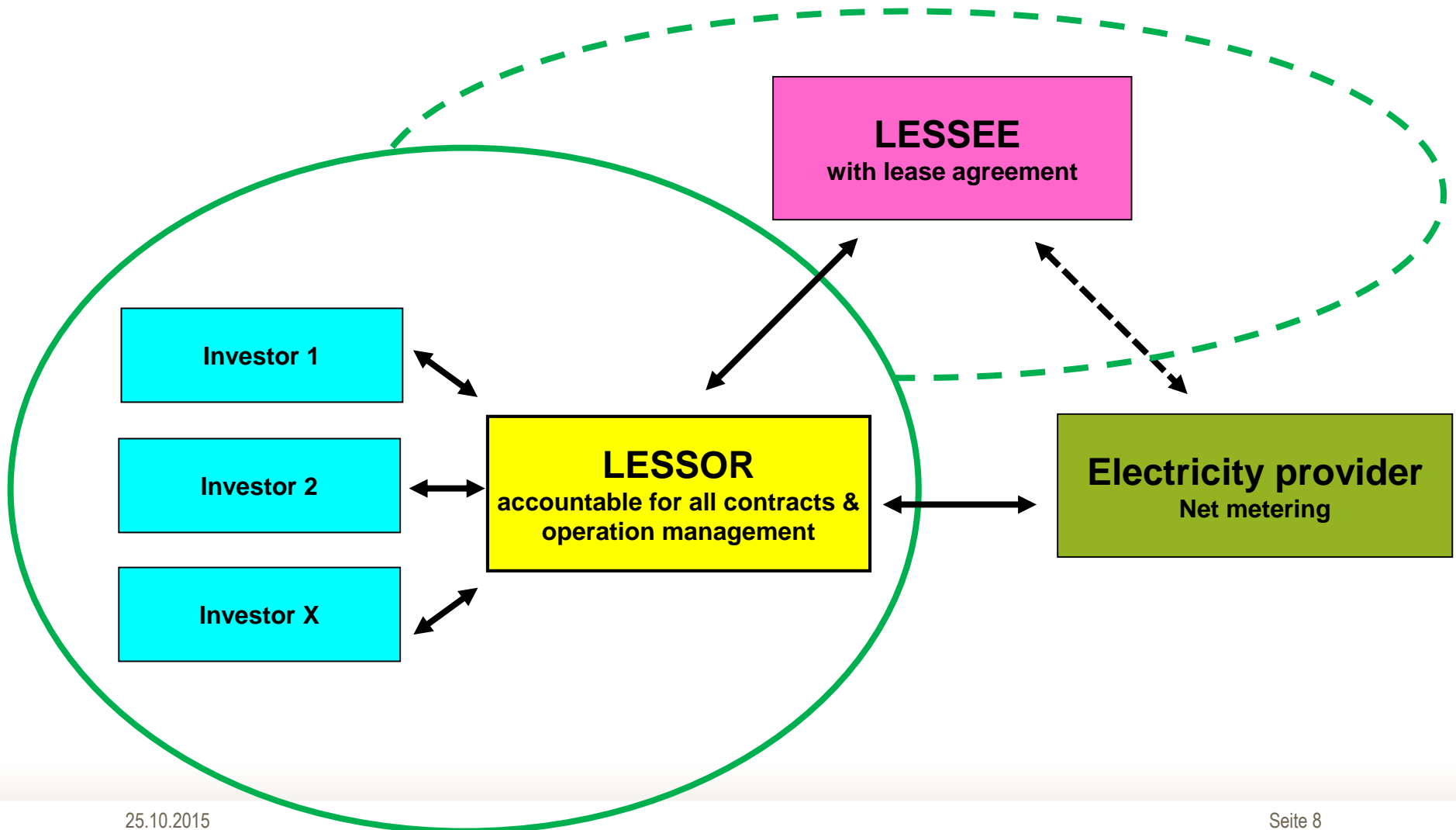
German and Brazilian framework conditions



- Insolation is much higher in Brazil. The worst place in Brazil receives 20% more insolation than the best place in Germany.
- Germany: Feed-in, Brazil: Net Metering
- In Brazil, electricity tariffs increased more than 50% in 2015.
- German investors accept a lower return on investment than Brazilian investors.



Private Investment - Business Model for Brazilian Net Metering





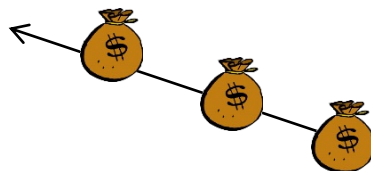
Cash Flow between Agents



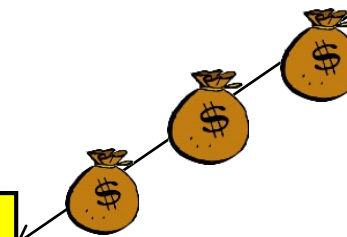
INVESTORS



LESSEE
with lease agreement



LESSOR
accountable for all contracts &
operation management





Who can be an Investor ?



Enterprises

LESSOR
accountable for all contracts &
operation management

LESSEE
with lease agreement



Parameters of economic viability

	Unit	
Installed Capacity	kWp	25
Generation	MWh/yr	32
Annual Yield	kWh/kWp	1280
Discount Rate	% / p.y.	9,00%
Electricity tariff	R\$/kWh	0,78
Electricity CAGR (Cumulative Average Growth Rate) - for adjustment purposes	% / p.y.	3,0%
CAPEX	R\$/Wp	6,0



Shared Benefits & Risks

- PV system **performance** and electricity **tariff**
- Shared variation: Lessor (50%) and Lessee (50%)

Increased Generation (+10% / year)

	Estimated	Measured
Generation	32 MWh / yr	35,2 MWh / yr
Savings	R\$ 24.836,80	R\$ 27.322,24
Balance	Lessee reimburses Lessor ~ R\$ 2.500 / 2	

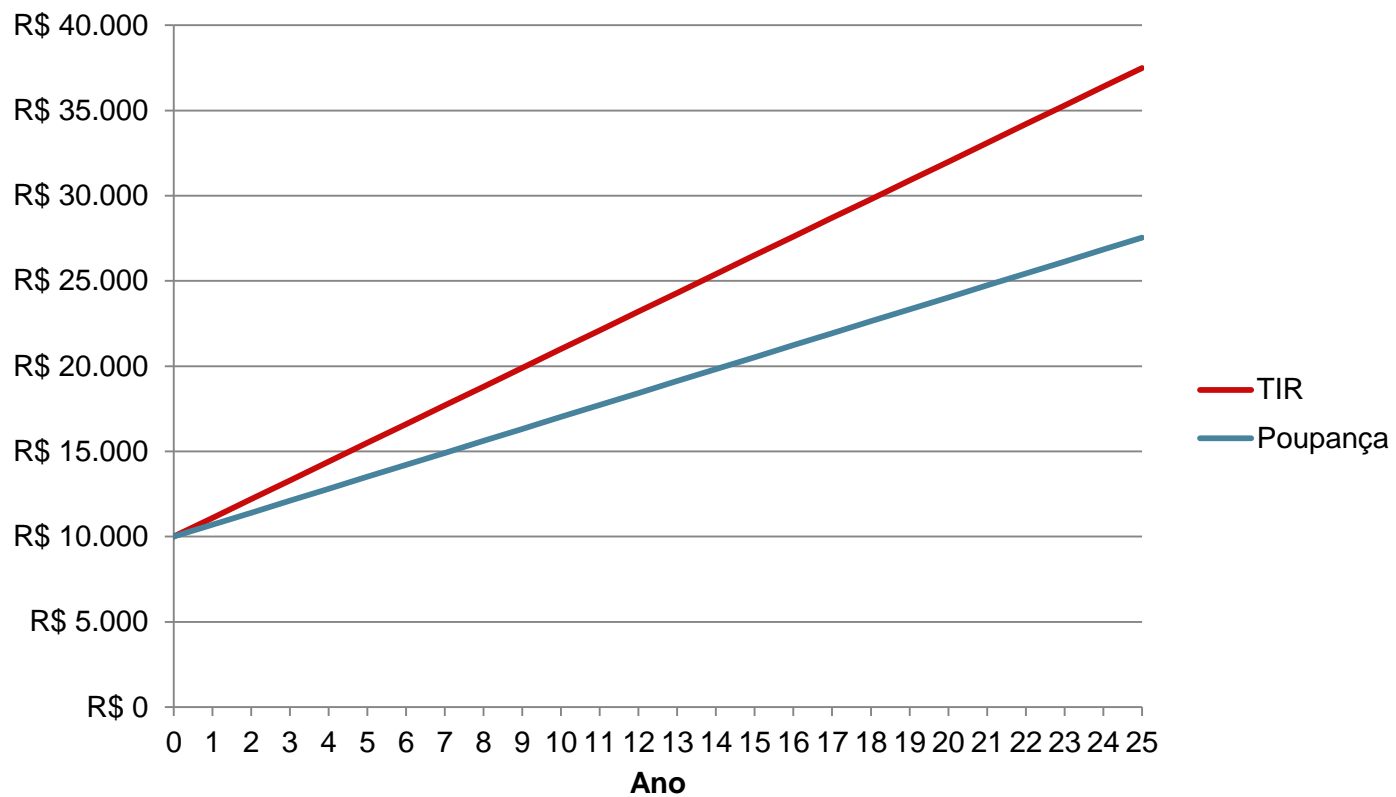
Decreased Generation (-10% / year)

	Estimated	Measured
Generation	32 MWh / yr	28,8 MWh / yr
Savings	R\$ 24.836,80	R\$ 22.354,56
Balance	Lessor reimburses Lessee ~ R\$ 2.500 / 2	

- **The same principle applies for tariff change.** Except if tariff decreases to less than the current value. In this case, the current tariff is assumed for the remuneration calculations.



Compared Yields – IRR X regular deposits (nominal values)



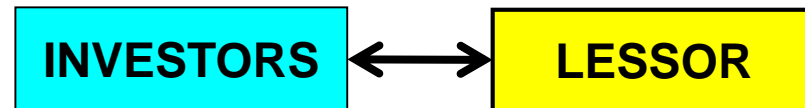


Project Status

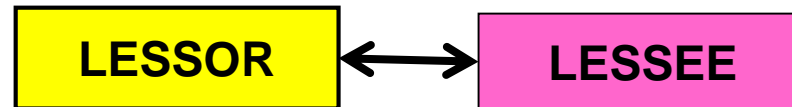
- Company's establishment contract



- SCP establishment contract



- Lease agreement



- Legal support



- Accountancy support





Final remarks

- High electricity tariffs and the lack of other financing options can be the driver for the lessee
- Low or no CAPEX for Lessees and immediate cost reductions
- Favorable IRR and relatively low risks can be the drivers for investors.
- The current Brazilian prime/base rate of more than 14% is an obstacle for private investments in PV



As a federal enterprise, GIZ supports the German Government in achieving its objectives in the field of international cooperation for sustainable development.

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GIZ Brazil

SCN Quadra 1 Bloco C Sala 1501

Ed. Brasília Trade Center

70711-902 Brasília - DF, Brasil

T +55 61 2010-2070

E giz-brasilien@giz.de

I www.giz.de/brazil

Responsible

José Henrique Zloccowick

Dr. Johannes Kissel