

**Paris Session
2022**



CONTRIBUTION-8, Q7
**Evolution of Renewable Utility-scale and
DER Resources in the Brazilian Market**

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QUESTION-7:

How far behind are DER market-based approaches or regulations behind those for utility-scale resources?

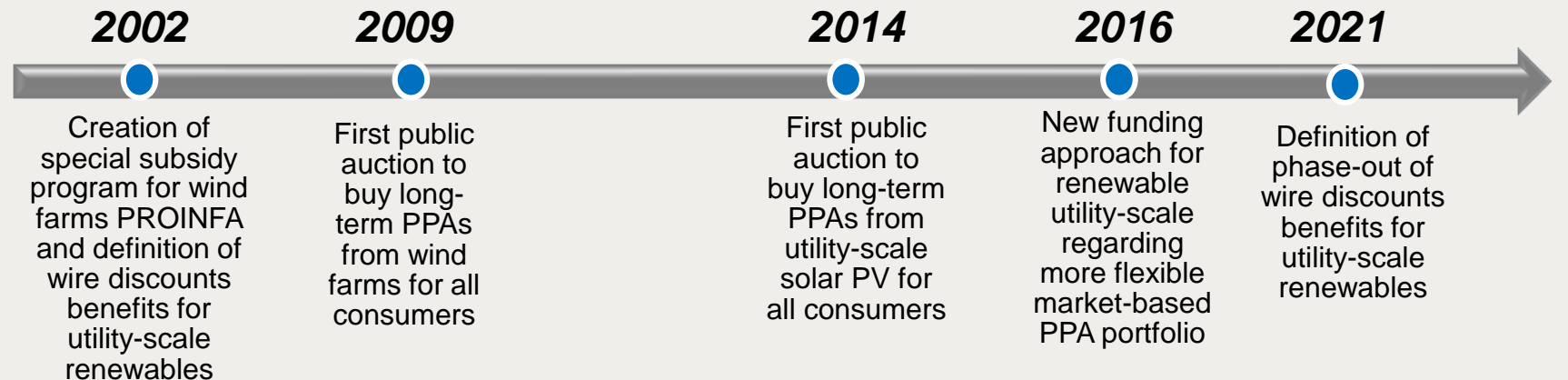


Evolution of Renewable Utility-scale and DER Resources in the Brazilian Market

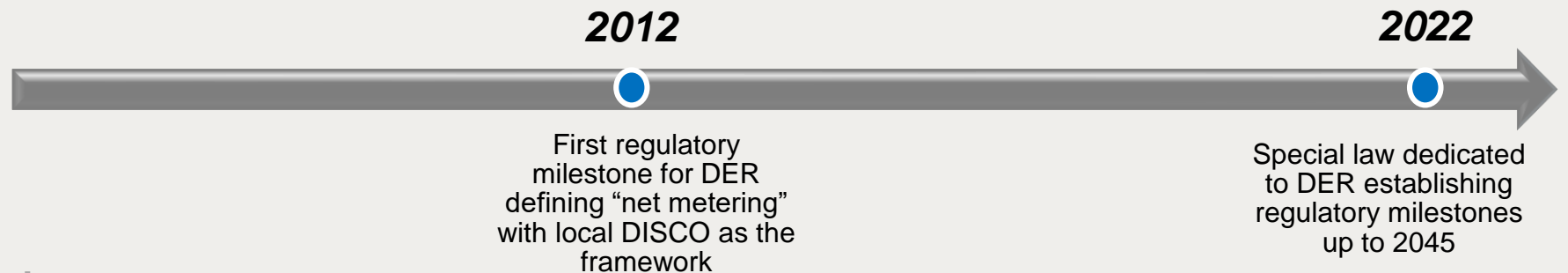
New renewables (wind farms and solar PV) resources received dedicated regulations only 20 years ago in the Brazilian Power Market



Utility-scale
timeline



DER
timeline

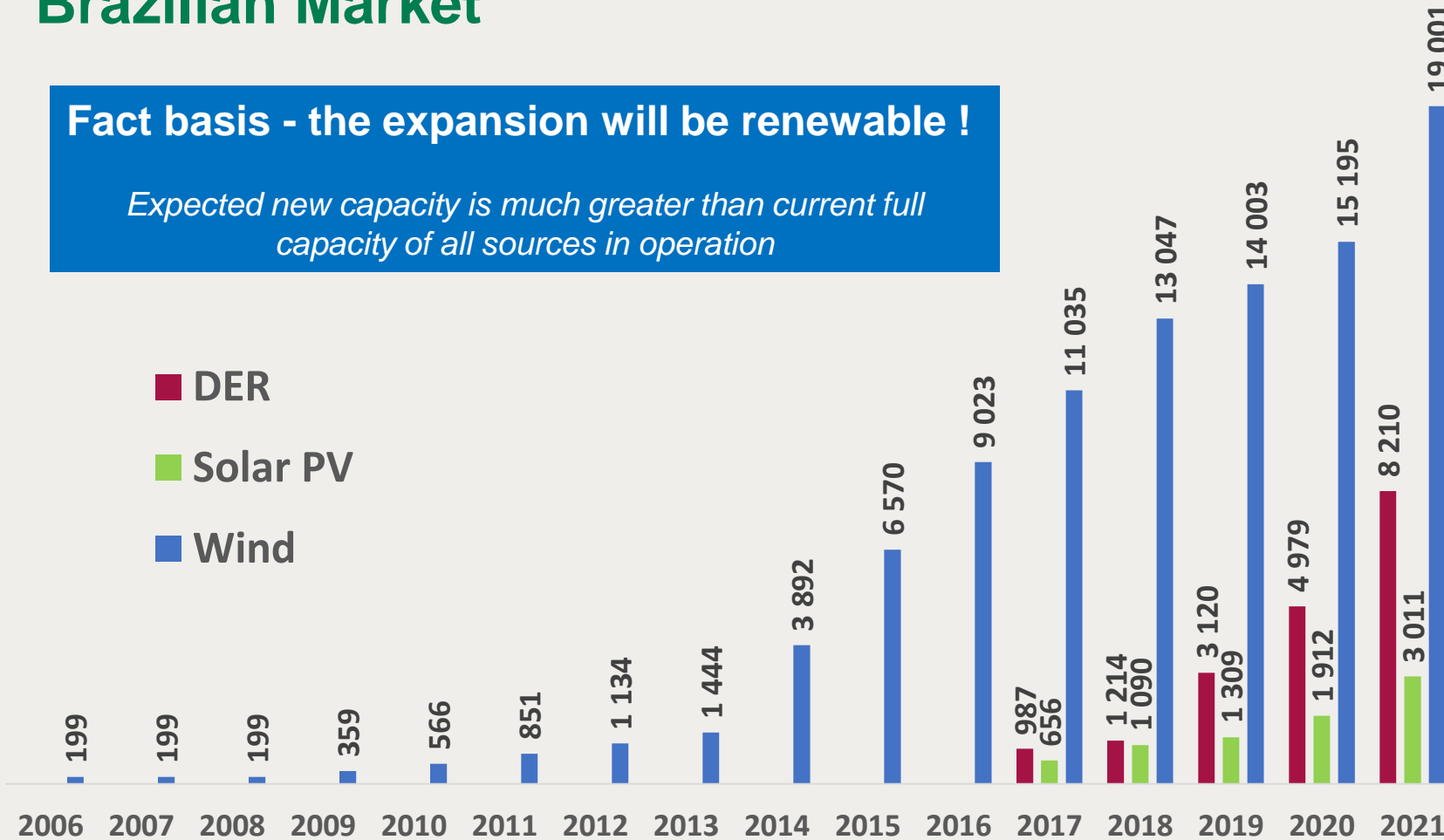


Group Discussion Meeting

Evolution of Renewable Utility-scale and DER Resources in the Brazilian Market

Fact basis - the expansion will be renewable !

Expected new capacity is much greater than current full capacity of all sources in operation

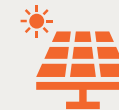


Group Discussion Meeting

Utility-scale renewables growth is consolidated first with stable regulations and competitive prices



- + 6 GW in construction
- + 49 GW grant request
- + 700 GW expected off-shore



- + 5 GW in construction
- + 182 GW grant request

DER growth faster due attractive regulatory incentives combine with higher avoided costs (full tariff) and competitive CAPEX



- + 24 GW expected up 2030

Evolution of Renewable Utility-scale and DER Resources in the Brazilian Market

Utility –scale remarks

- Naturally, there are no market and limitations in infrastructure of transmission for all potential projects in the following years – an intense competition will be in place
- Renewables are "unbeatable" in the price of “product energy”
- A large set of projects (off-shore mainly) will be dedicated to “green hydrogen” production

DER remarks

- Large expansion will be expected in commercial and residential users (currently 77% share)
- Solar PV currently represents 98% of total capacity - remote sites and on-shelter
- Distribution utilities must be prepared to operate the large volume of DER - modernizations are expected

Efficient production and regulatory incentives are the main “drivers” to consolidate renewable