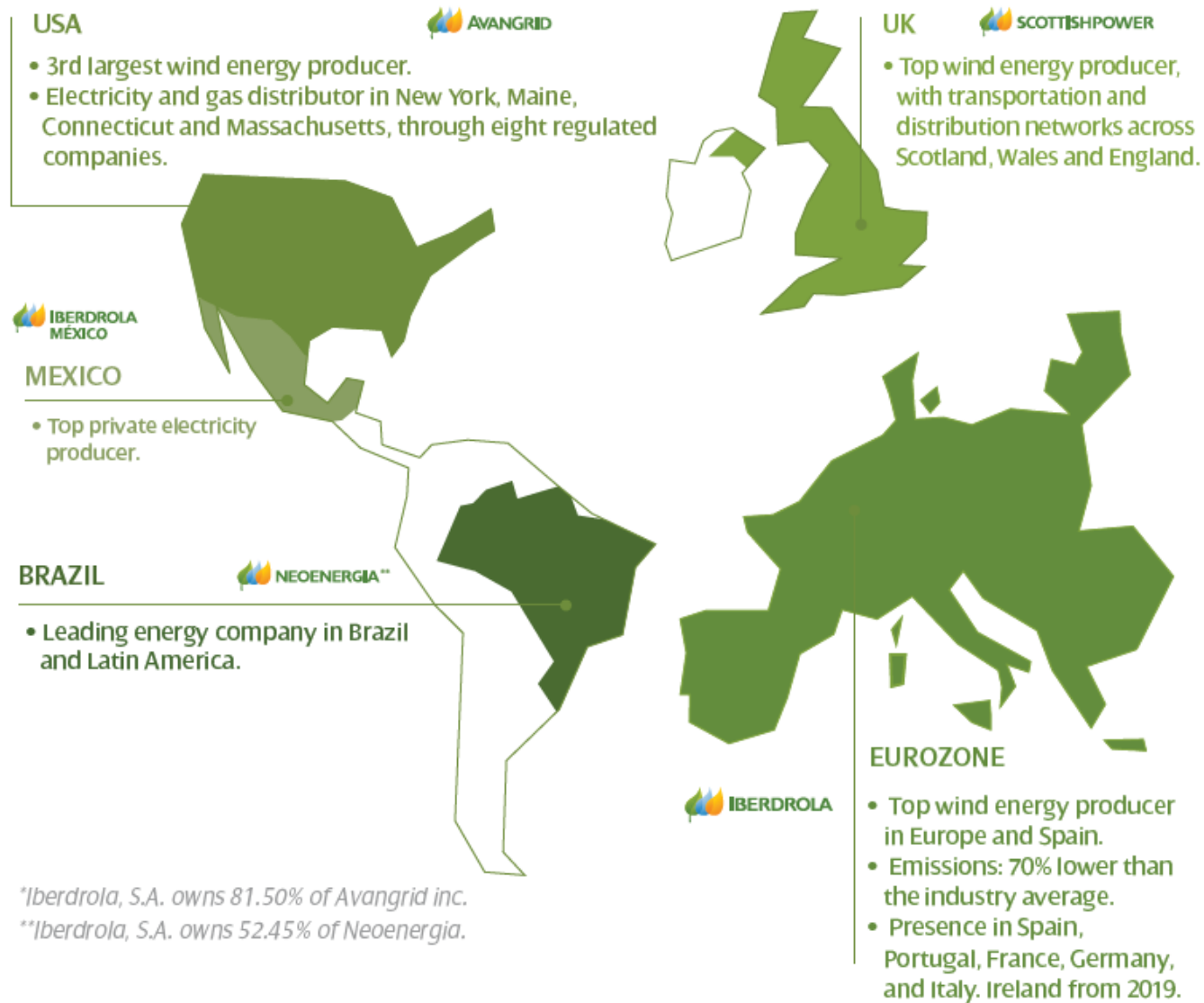




Global Ministerial Conference on System Integration of Renewables
Berlin, 1 October 2019

Innovation in policy, market design and regulation

Xabier Viteri Solaun – *CEO Renewables Energy Business, Iberdrola Group*



MW	TOTAL	RENEWABLES	%
Iberdrola Group	47.448	29.177	61%
Spain	25.887	15.789	61%
UK	2.100	2.100	100%
EE.UU.	7.561	6.713	89%
Mexico	7.471	679	9%
Brazil	3.467	2.935	85%
Rest of the World	961	961	100%

IBERDROLA'S ENVIRONMENTAL COMMITMENT

Reduce CO₂ emission levels by **30% by 2020**,
50% by 2030 and to be **carbon neutral** by **2050**.

Pioneers, not only in renewable energy,
but developing Renewables Control Centers (CORE) in our main countries – Since 2003 –



In order to better manage and integrate clean energy in power systems

Renewables can provide ‘almost’ all services required in the power systems
R&D projects to test Grid forming technology in real assets.

Services	 Conventional	 Wind Farm	 Solar	 Batteries
Active Power Control	✓	✓	✓	✓
Voltage Control	✓	✓	✓	✓
LVRT	✓	✓	✓	✓
Frequency Containment (FCR)	✓	✓	✓	✓
Frequency Restoration (FRR)	✓	✓	✓	✓
Inertia	✓	grid forming	grid forming	(*)
Islanding	✓	grid forming	grid forming	(*)
Black Start	✓	grid forming	grid forming	(*)

(*) Batteries can be the solution /can be part of the final solution

Grid Following

Synchronous generators create the **Voltage & Frequency** references in the power system
Renewables just providing active & reactive power

Grid Forming

“Grid Forming” converters **create the voltage & frequency references**
Renewables **can provide Inertia**, together with **active & reactive power**

We are pushing for getting 100% services provided by Renewables (R&D projects)
in order to provide INERTIA with renewables (Grid Forming)

Thanks so much for your attention



IBERDROLA STANDS OUT BY ITS COMMITMENT WITH SUSTAINABILITY



The company also makes an indirect contribution to all other Sustainable Development Goals.