



# Enel Green Power

Keys to Unlocking the Value of Storage:  
Lessons from the Field

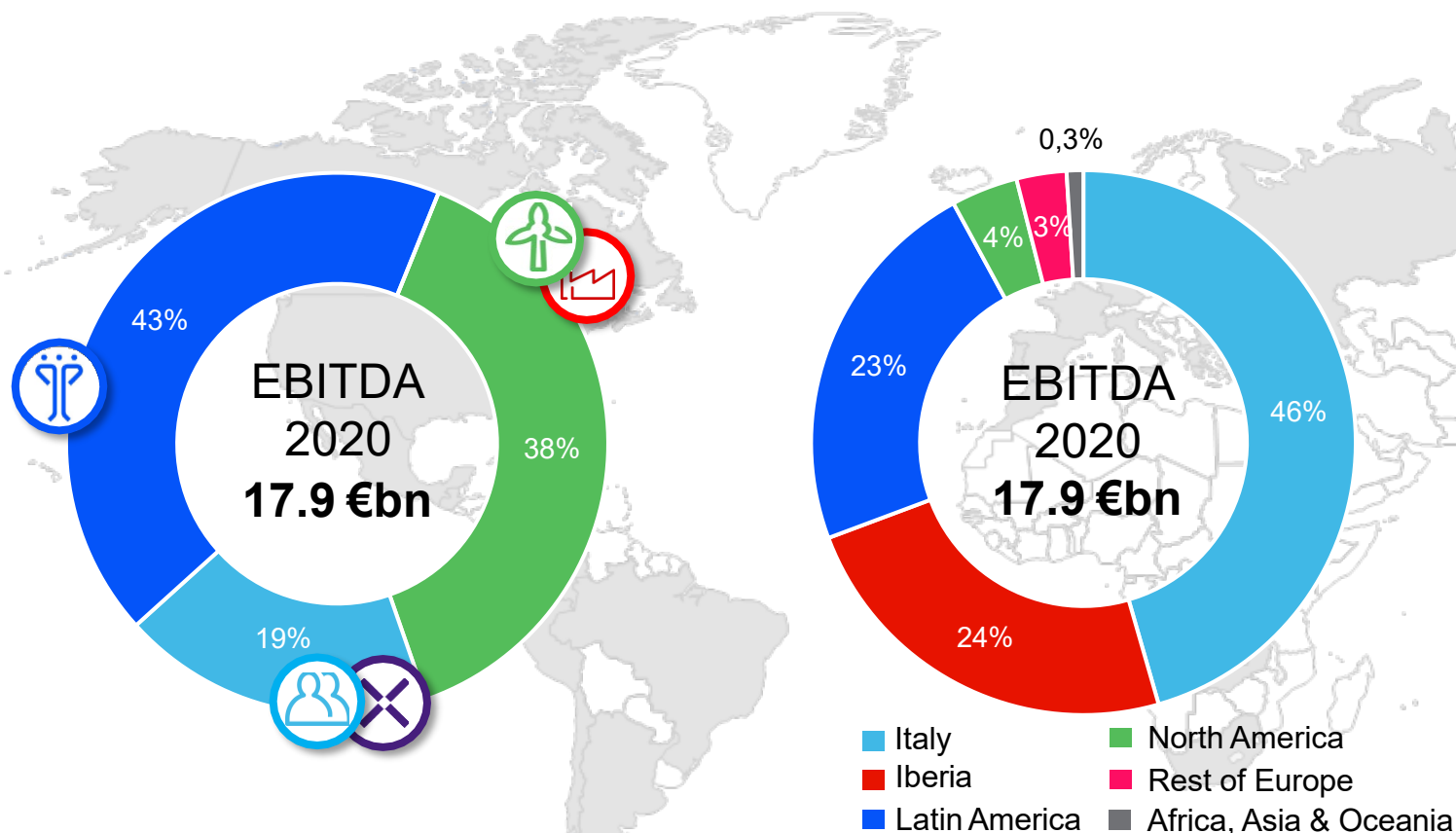
CIF – GESP: Keeping the Power On: Sparking Energy  
Storage Solutions in Developing Countries

May 13<sup>th</sup>, 2021



# Enel Group

Leading energy world transformation



Active in 5 continents

**32 countries**

World's largest player in renewables<sup>1</sup>

**49 GW capacity**

1<sup>st</sup> network operator<sup>2</sup>

**74 mn end users**

Largest retail customer base worldwide<sup>3</sup>

**70 mn customers**

**TSR 2015-2020<sup>4</sup> +164%**

Publicly owned operators not included.

1. By installed capacity. It includes managed capacity for 3.6 GW
2. By number of end users
3. Including customers of free and regulated power and gas markets
4. From December 31st 2015 to December 31st 2020

# Enel @2030 – our ambitions

Hybridization of renewables - **Battery storage**



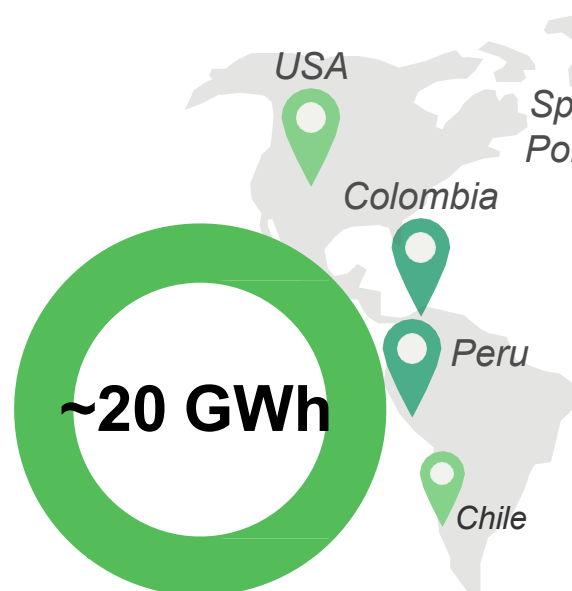
## Value proposition

RES electricity and BESS integration **provides competitive decarbonization offer**

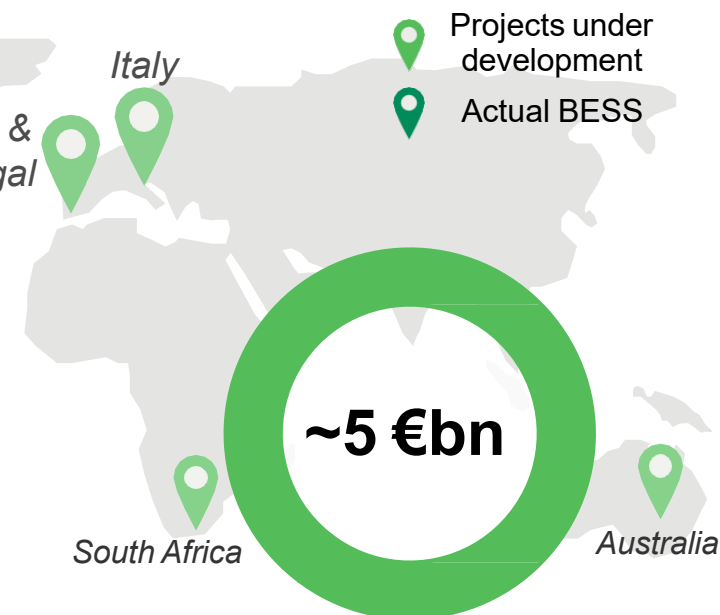
## Main value drivers

- ✓ RES **risk mitigation**, avoiding curtailments for RES
- ✓ Generate **additional margins** through capacity payments and ancillary services
- ✓ Compliance to **regulated tenders**

## BESS energy storage 2030



## Cumulated capex 2021-30



% Plants hybridized with battery storage<sup>1</sup>

2020E

0%

2030

~30%

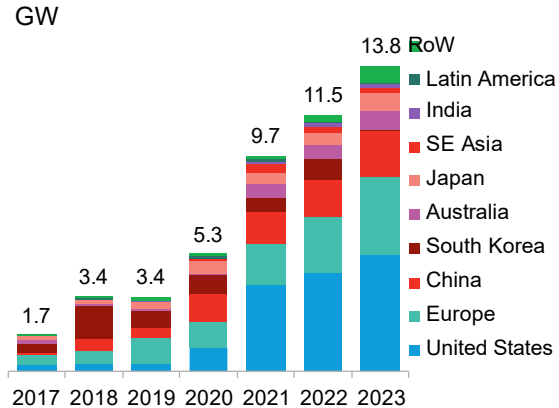
1. Calculated on ~95 GW additional capacity

# Storage as enabler of energy transition

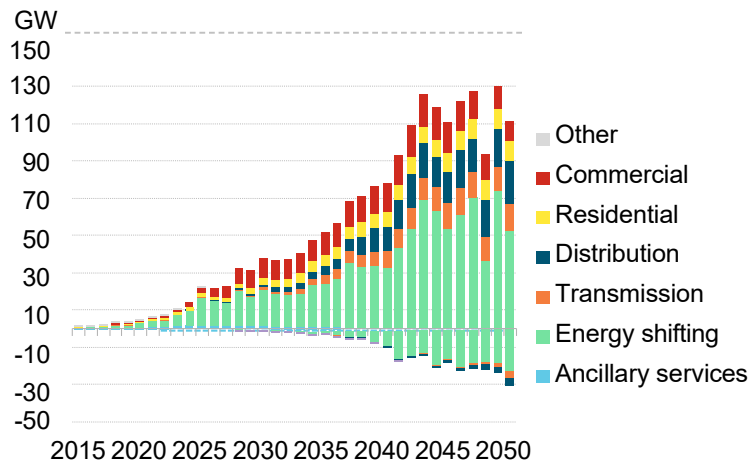
## Global trends and opportunities



### Energy storage build by country



### Long term outlook by application



- **Developed economies** are **driving** global **storage installations** thanks to the presence of mature regulatory frameworks and market mechanisms capable to remunerate the value added services from storage
- **Solar and Wind** are today the **cheapest energy source** across two-thirds of the world, by 2030 they undercut existing coal and gas almost everywhere
- Thanks to decreasing costs, **storage can** now be used to **make Solar and Wind dispatchable** at lower cost than fuel based generators
- **Flexible** sources such as **Storage** and dynamic demand are an enabler for the energy transition thanks to their capability to:
  - **Compensate the intermittency** of **RES** production;
  - **Shift bulk energy** production in excess;
  - Provide **ancillary services** to ensure **system security** and efficiency;

**Storage and Renewables offer to Developing Countries** the opportunity to fill the gap and **meet their future power demand** without the need to install additional coal and gas capacity (avoiding exposure to imported fuels)

# Storage in developing countries

Path to enable unlocking the value

Market “Stalling”

1

- No opportunities for project deployments
- Storage and renewables used only for niche demonstrations

Barriers removal

2

- Storage included in grid code (integrated with renewables and standalone)
- Transparent dedicated licensing and grid connection procedures

Applications  
definition

3

- Identification of applications and volumes needed in the country by system operator
- Remuneration mechanisms rewarding accuracy and response times

Tenders and  
energy planning

4

- Dedicated or technology neutral procurement to test the applications
- Long term contracts to attract investors

Market  
development

5

- Creation of real time and forward energy markets and ancillary services markets allowing competitive participation of different technologies



**Storage as key component for renewable energy transition**