

3RD AIEE ENERGY SYMPOSIUM

*ENERGY INDUSTRY CHALLENGES TO A
LOW-CARBON ECONOMY, THE GAS ROLE
IN THE TRANSITION*

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1 THE GAS ROLE: WHERE DO WE COME FROM?

- **2010** A GOLDEN AGE FOR GAS?
 - *AAA = Affordable, Acceptable, Abundant,*
- **2013** GAS LOOSES ITS FIRST A: NO MORE AFFORDABLE
 - *Coal price down; gas prices up (Fukushima)*
- **2015** GAS LOOSES ITS SECOND A: NO MORE ACCEPTABLE
 - *Gas as a transition energy, not a destination energy*
- **2018** WHERE ARE WE KNOW??

2 KEY ROLE OF GAS IN ENERGY TRANSITION

1. **ELECTRICITY ONLY WORLD IS NOT POSSIBLE:** Batteries are not delivering + not enough grid capacity
2. **RES CANNOT «SURVIVE» ALONE:** intermittent; not dispatchable; huge investments required for sufficient capacity
3. **GAS TO REPLACE COAL IN FOSSIL FUEL COMPETITION IN THE LT:** CO2 reduction targets, coal phase out
4. **SECURITY & RESILIENCE OF THE SYSTEM STRONGLY RELIANT ON GAS:** to be supported by proper gas infrastructure
5. **EU STILL REQUIRING GAS IN THE FUTURE:** coal phase out + nuclear issue + declining domestic sources



**FINALLY, THESE FACTORS HAVE BECOME
INCREASINGLY EVIDENT FOR POLICY MAKERS**

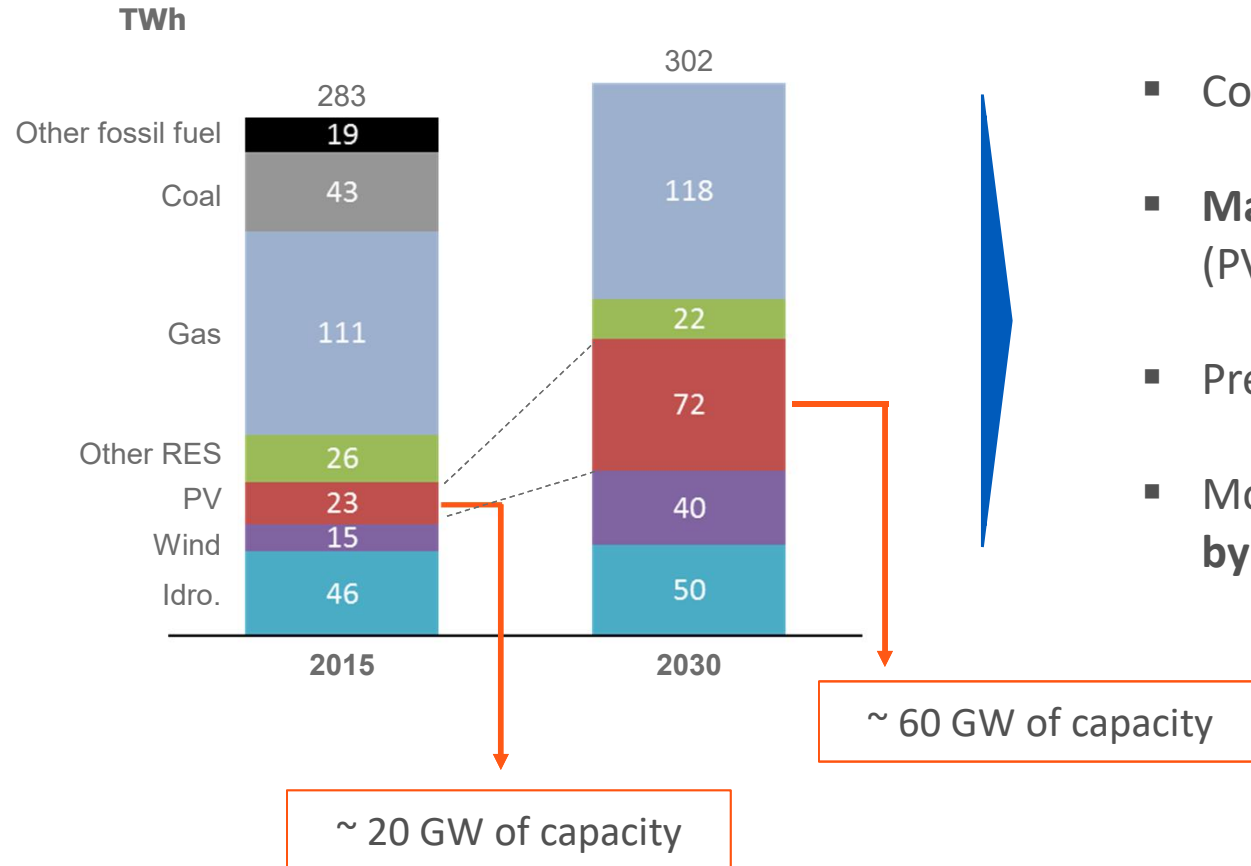
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«THE ITALIAN CASE»: NATIONAL ENERGY STRATEGY (2017) CONFIRMING KEY ROLE OF GAS FOR A SUSTAINABLE ENERGY MIX

Evolution of power generation mix according to the National Energy Strategy (SEN)

Key messages

Source: Strategia Energetica Nazionale 2017

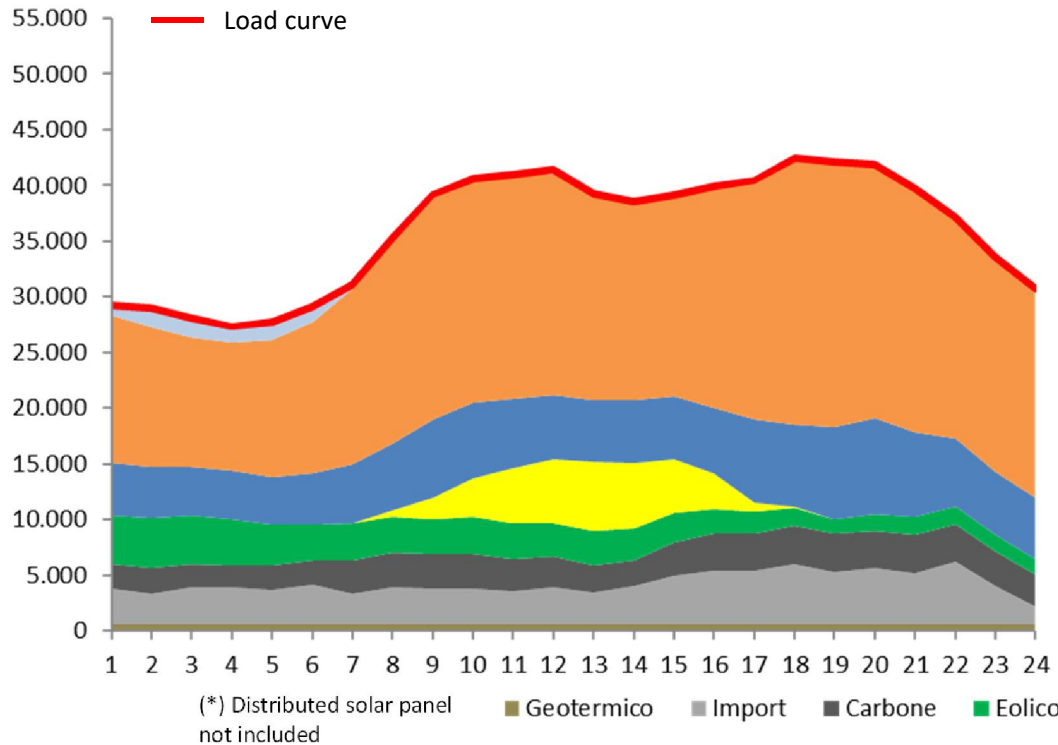


- Complete **coal phase out by 2025**
- **Massive development of not-dispatchable RES** (PV x3 & wind x3)
- Preserve the **key role of Hydro**
- More than **one third of the generation** still provided **by gas**

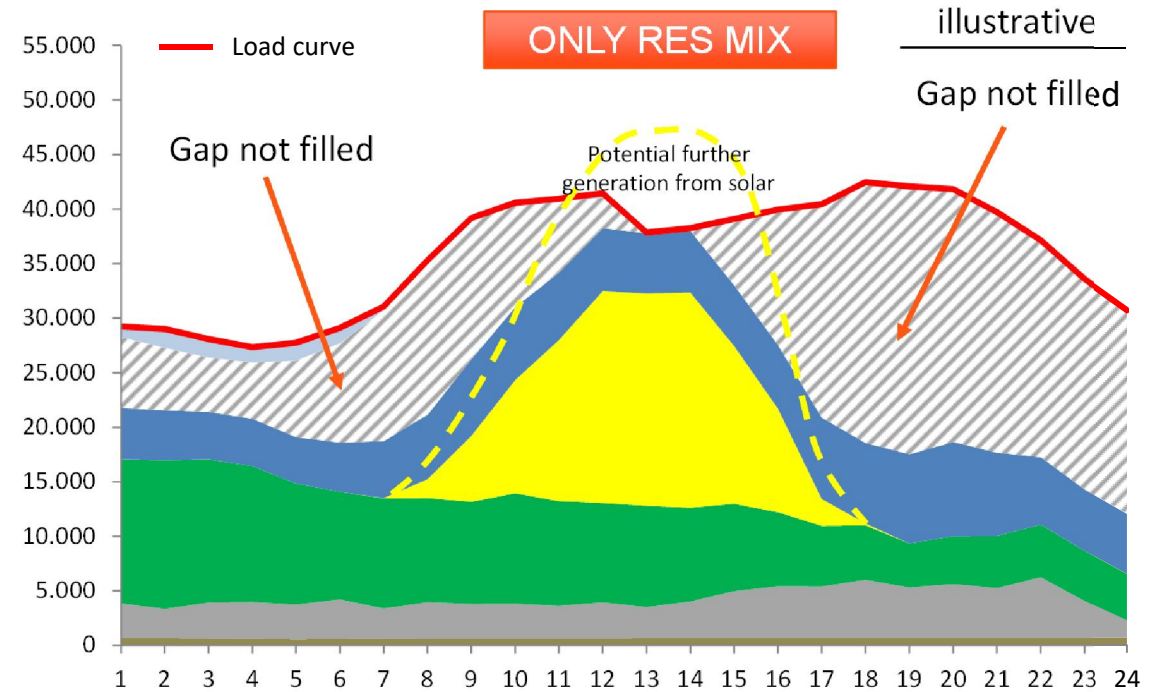
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GAS HAS A PIVOTAL ROLE IN THE LOAD CURVE FLEXIBILITY & SECURITY TO THE SYSTEM: ITALIAN CASE

ITALIAN LOAD CURVE(*) in MW – 30th of October 2018



HYPOTETICAL FUTURE ITALIAN LOAD CURVE in MW

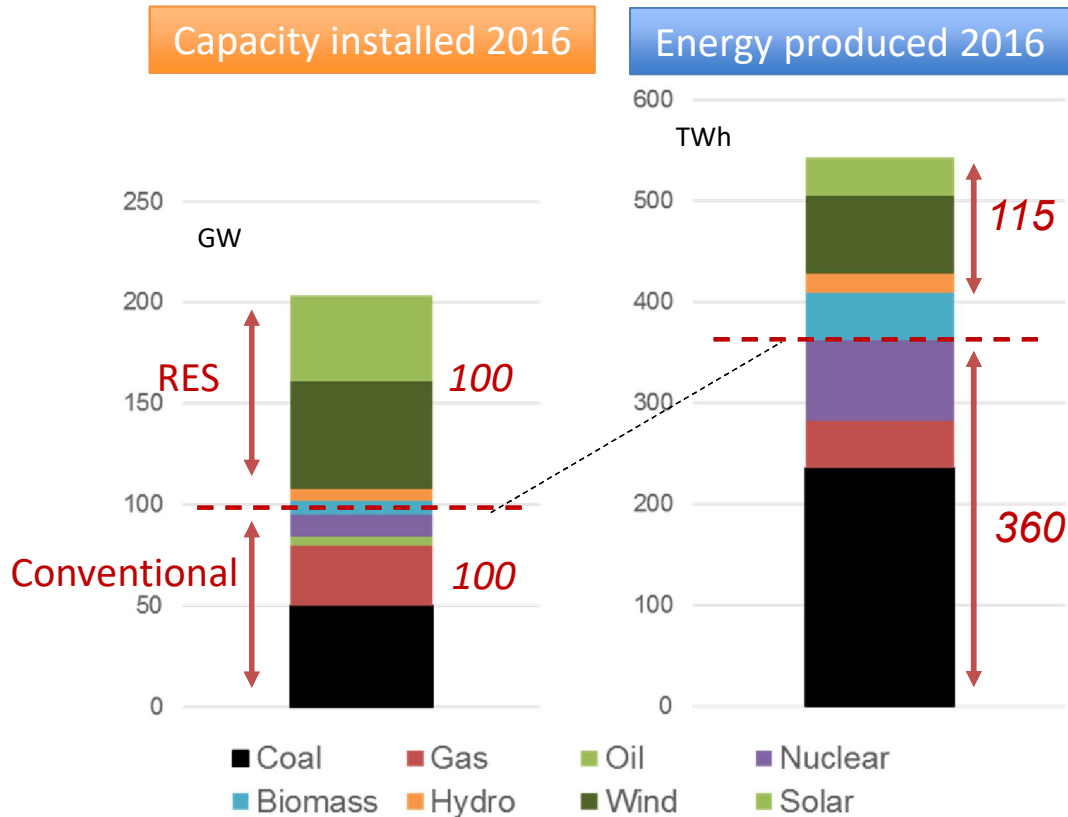


- **HUGE INTERMITTENCY BY RES PRODUCTION TO BE MANAGED**
- **RES PRODUCTION MISSING WHEN MOST NEEDED**
- **GAS AS THE ONLY SOLUTION TO FILL THE GAP & PROVIDE FLEXIBILITY AS LONG AS AND INDUSTRIAL SOLUTION FOR STORAGE (BATTERIES) IS NOT EXISTING**

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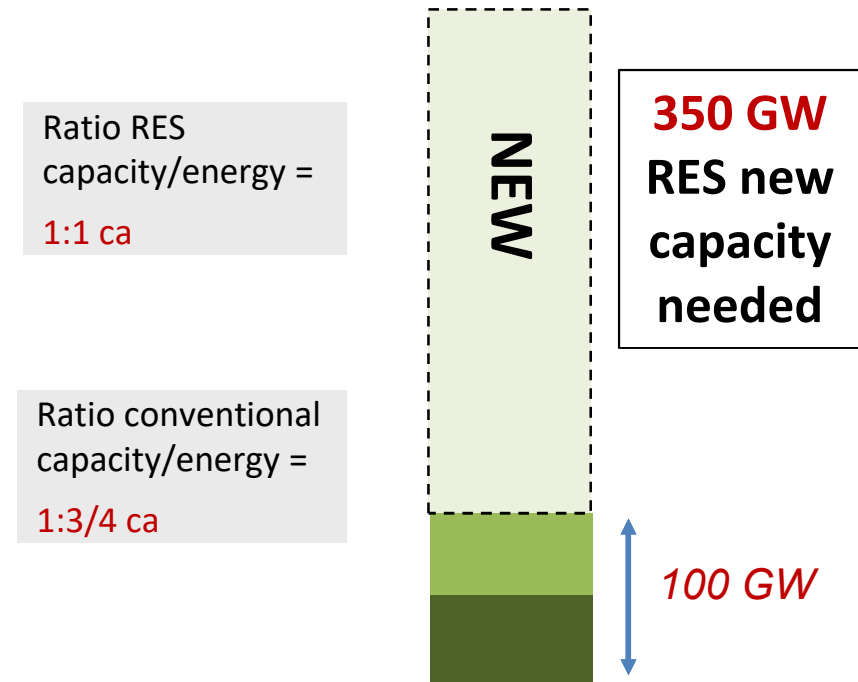
AN «ELECTRICITY ONLY» WORLD IS NOT POSSIBLE GERMAN CASE TO SHOW THE ISSUE

German case to show the issue



CAPACITY IS VERY DIFFERENT FROM SUPPLY

How much RES capacity needed to replace fossil fuels???



HUGE AMOUNT OF RES CAPACITY NEEDED TO REPLACE CONVENTIONAL GENERATION

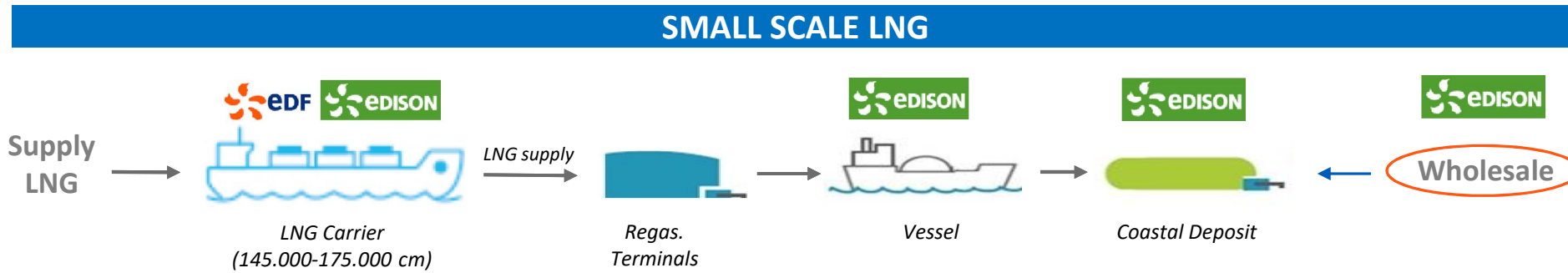
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EDISON WAY TO ENSURE GAS AVAILABILITY & AFFORDABILITY

- ❑ NEW INDUSTRIAL INITIATIVES TO ENLARGE NEW DEMAND IN A SUSTAINABLE MOBILITY FRAMEWORK
- ❑ INVESTMENT ON PIPELINE INFRASTRUCTURES FOR SECURITY & AFFORDABILITY OF SUPPLY
- ❑ NEW LNG SUPPLY (US LNG) TO ENSURE DIVERSIFICATION AND COMPETITIVENESS
- ❑ NEW FLEXIBLE GAS-FIRED CAPACITY (I.E. MARGHERA CCGT) TO BOOST ENERGY EFFICIENCY

...A DIVERSIFIED PACKAGE OF NEW INITIATIVES

7 SMALL SCALE USES: A NEW WAY FOR ENERGY TRANSITION



- ❖ Logistic chain to use LNG as a fuel in maritime and heavy transport in line with the sustainable mobility purpose of EU regulation
- ❖ 4 main streams: Reloading, Shipping, Coastal Deposit and Wholesale market
- ❖ Multiple levels of policy actions for clean energy & emission reduction to support LNG
 - I. **Global level:** G20 acknowledged the role of gas in energy transition” + IMO Sulphur limit for maritime transportation
 - II. **EU level:** Directive Alternative Fuels Infrastructure 2014/94/EU (DAFI)
 - III. **National level:** National Energy Strategy (SEN) promotes the use of LNG as replacement of other fossil fuels (2030 target: 50% maritime transport and 30% road transport)
- ❖ Emission reduction by using LNG as an alternative fuel for maritime and heavy transportation



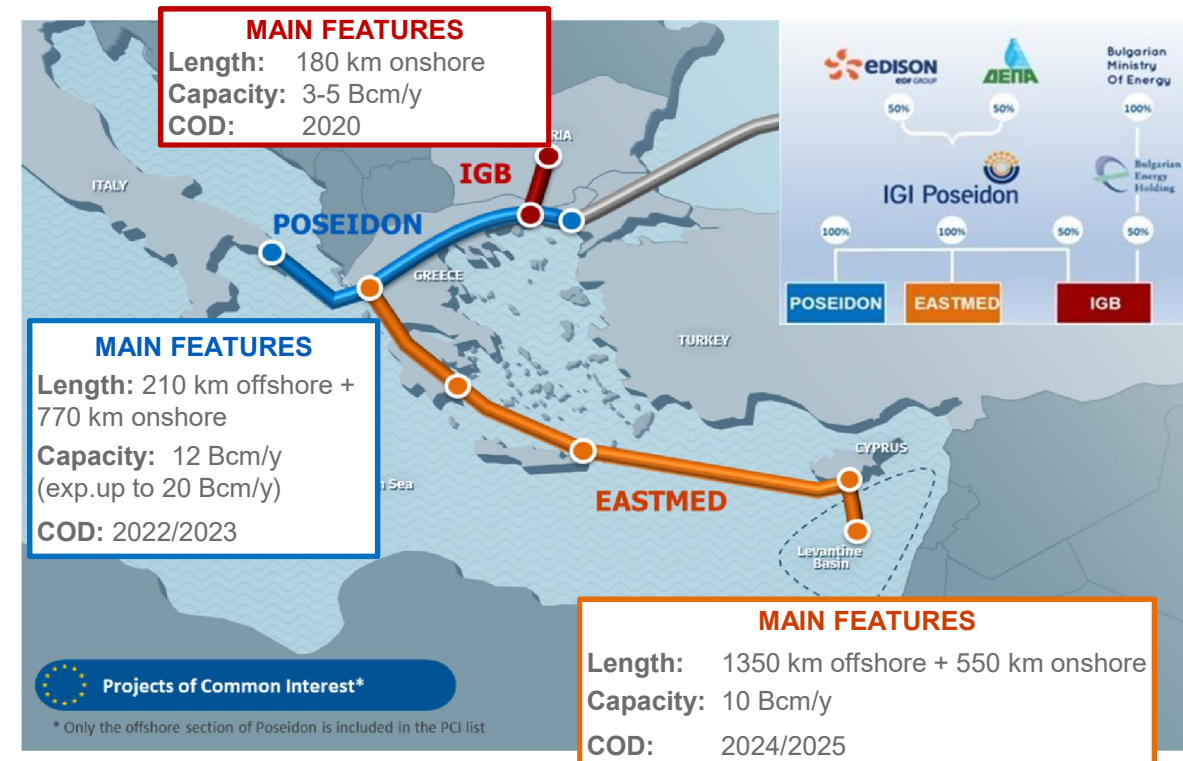
	CO2	NOx	SOx	PM
Maritime transport *	25%	90%	~100%	~100%
Road transport **	20%	60%	~100%	~100%

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NEW PIPELINE PROJECTS: AN INTEGRATED INFRASTRUCTURE / SUPPLY APPROACH TO SUPPORT SECURITY & LOW CARBON MIX

Edison gas pipeline initiatives are fully in line with the pillars the European Energy Security Strategy supporting a low carbon mix via:

- **Diversification of routes** : POSEIDON Project ensuring access to traditional sources (“option for strategic sources at competitive price conditions”)
- **Diversification of sources** : EASTMED Project creating access to new EU indigenous sources supported by local Institutions
- **Security of supply**: IGB Project increasing flexibility and integration of markets



Gas pipeline infrastructure together with LT imports contract will remain the backbone of Italian energy mix in the long run