entsog

european network
of transmission system operators
for gas

Brussels – 23 January 2017

TYNDP 2017 Presentation

23 January 2017 - Brussels

Image Courtesy of Thyssengas

TYNDP 2017 Presentation

1. Role of TYNDP
2. Gas in the EU – today and tomorrow
3. EU gas infrastructure - further needs?
4. Achieving the internal gas market is at hand

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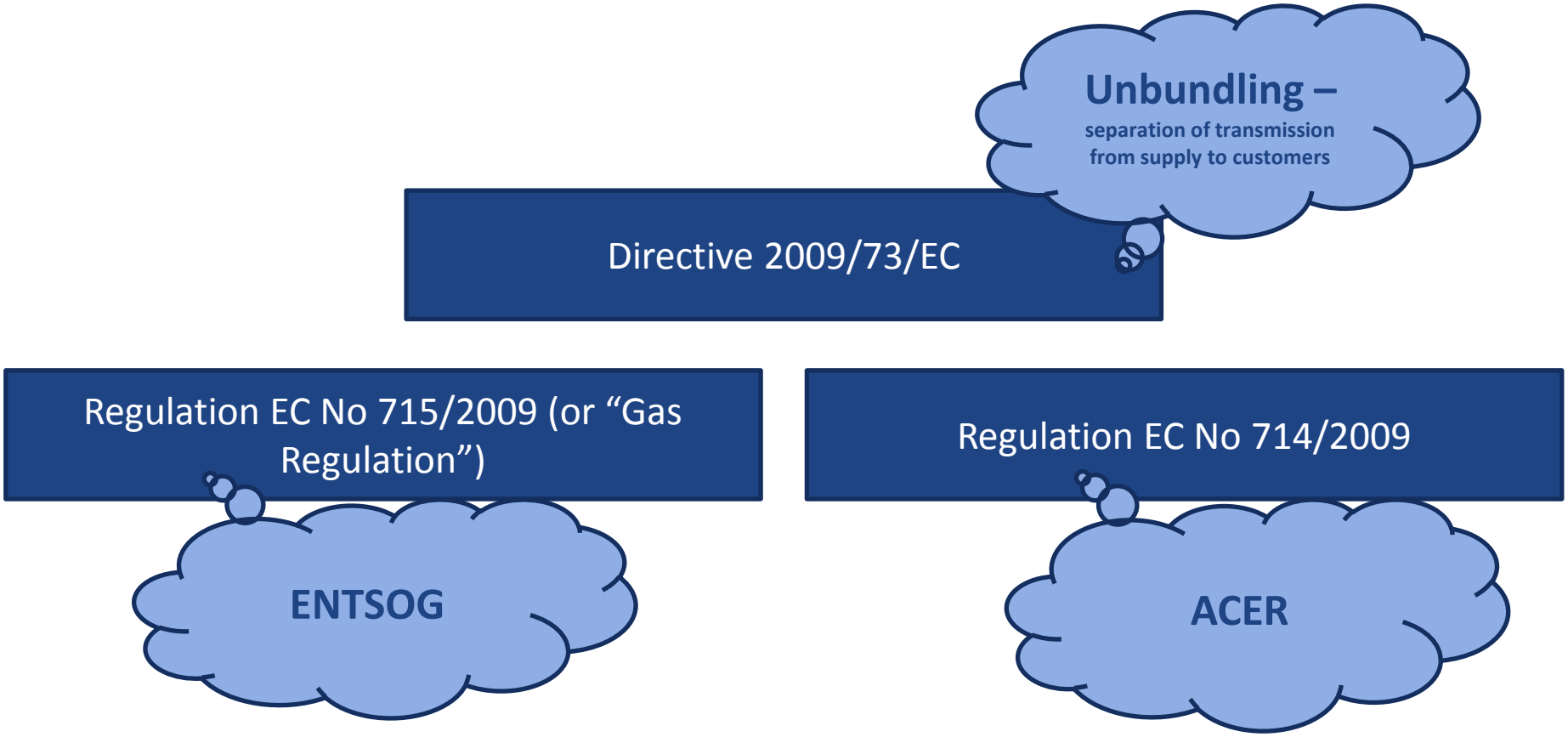
3rd Package regulatory framework for Gas



European Network of Transmission Operators for Gas

Agency for the Co-operation of European Energy Regulators

TYNDP: an ENTSOG regulatory task

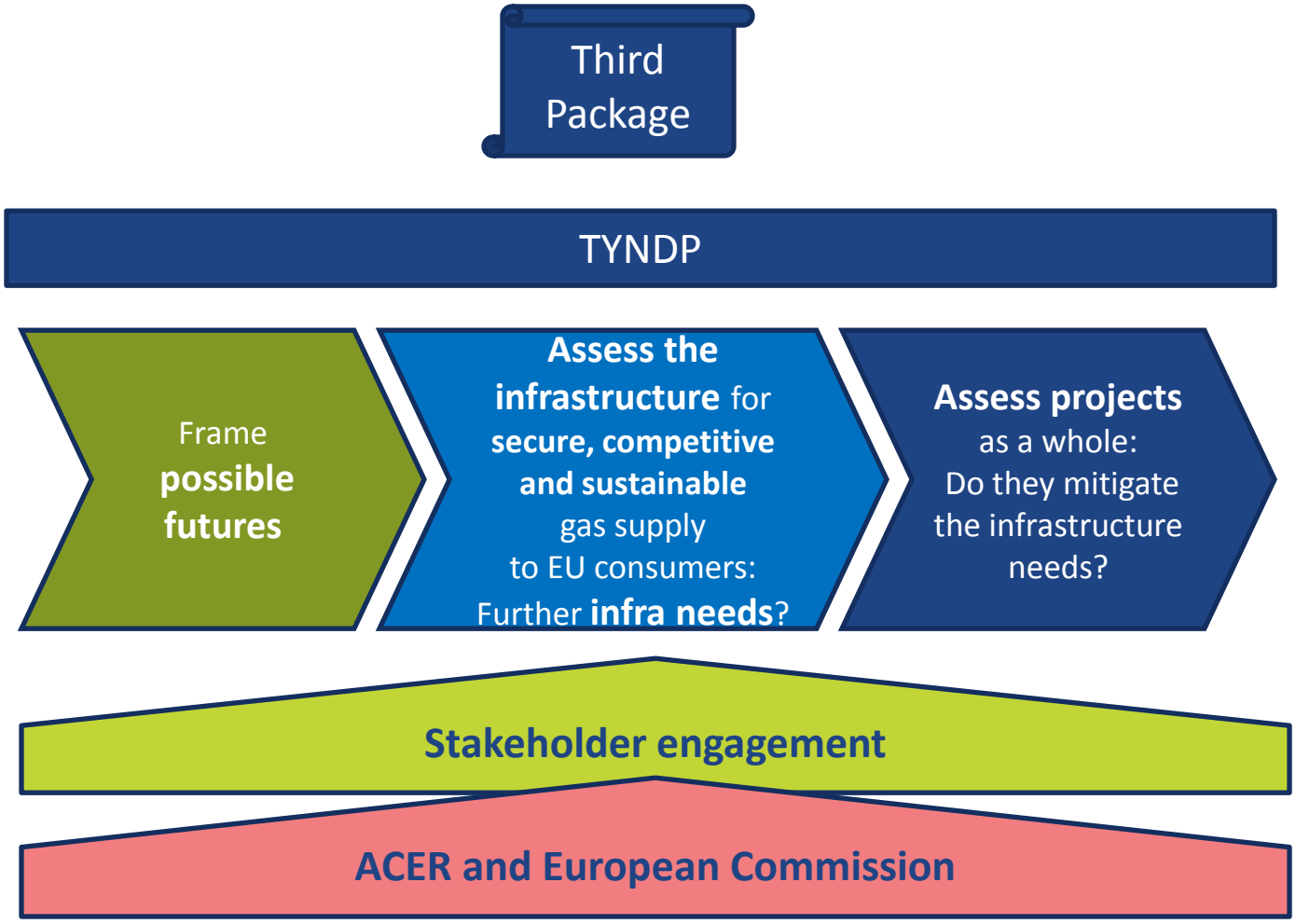
TYNDP is developed bi-annually

> The task is defined by **Reg. (EU) 715**, **Reg. (EU) 347** and **Reg. (EU) 2015/703**

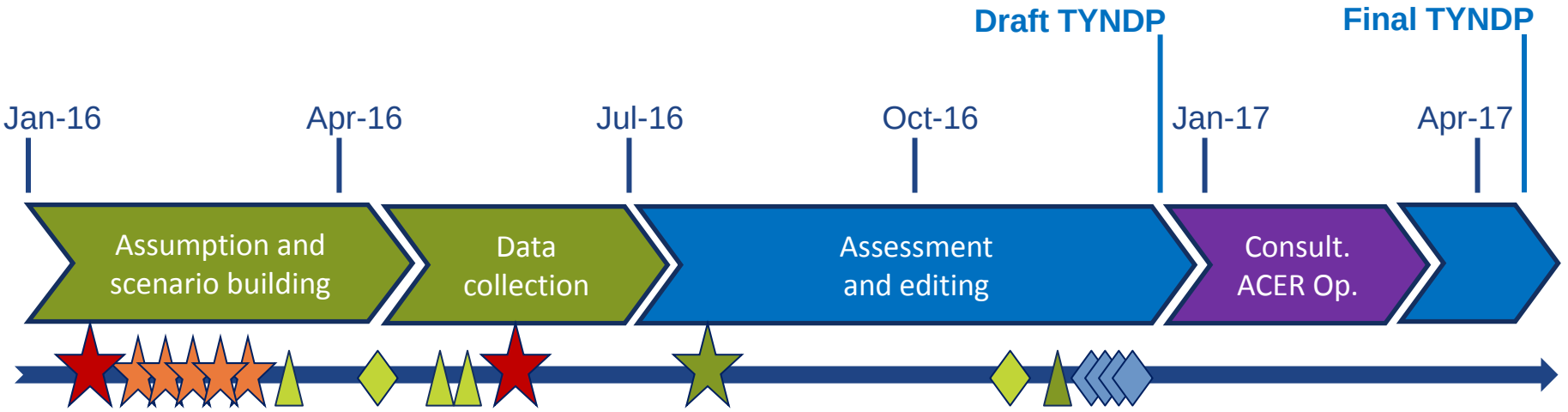
> The European Commission approved the **Cost-Benefit Analysis Methodology** applied to TYNDP

> ACER monitors TYNDP and issues a formal **Opinion** on TYNDP

Role of TYNDP



Thorough stakeholder involvement



5 stakeholder working sessions

2 stakeholder workshops

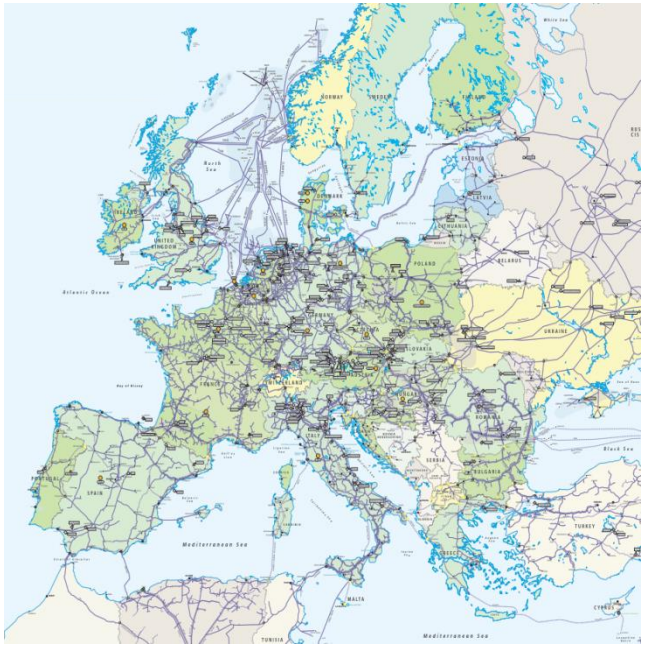
Early results fed to the PCI process

Data transparency towards stakeholders

Interaction with project promoters

TYNDP is a highly inclusive and transparent process

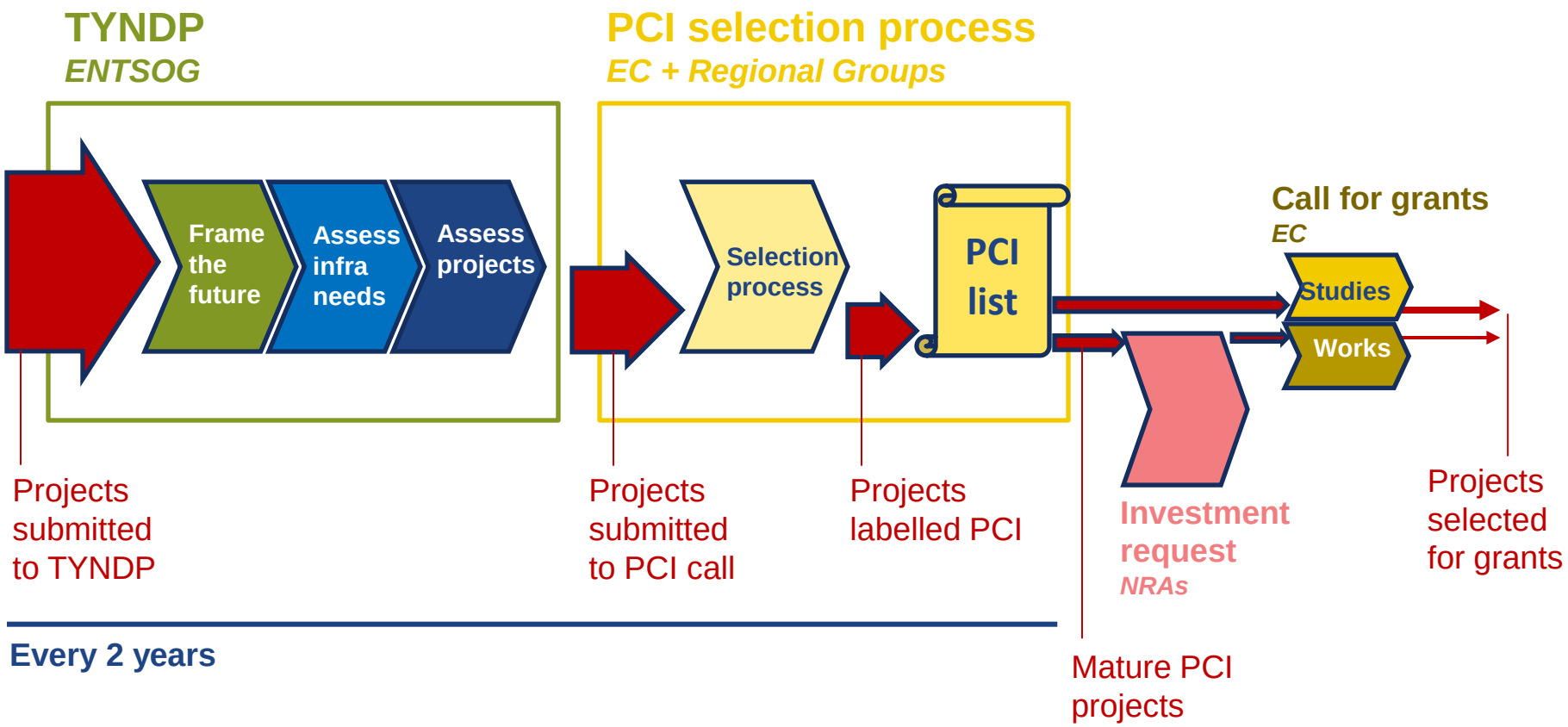
TYNDP it's…



An EU-wide perspective

An in-depth assessement of the gas infrastructure along the Union core energy policy objectives

TYNDP in the wider TEN-E framework



> TYNDP is an input to the process for selecting **Projects of Common Interest (PCI)**…

> …and just the starting point for projects

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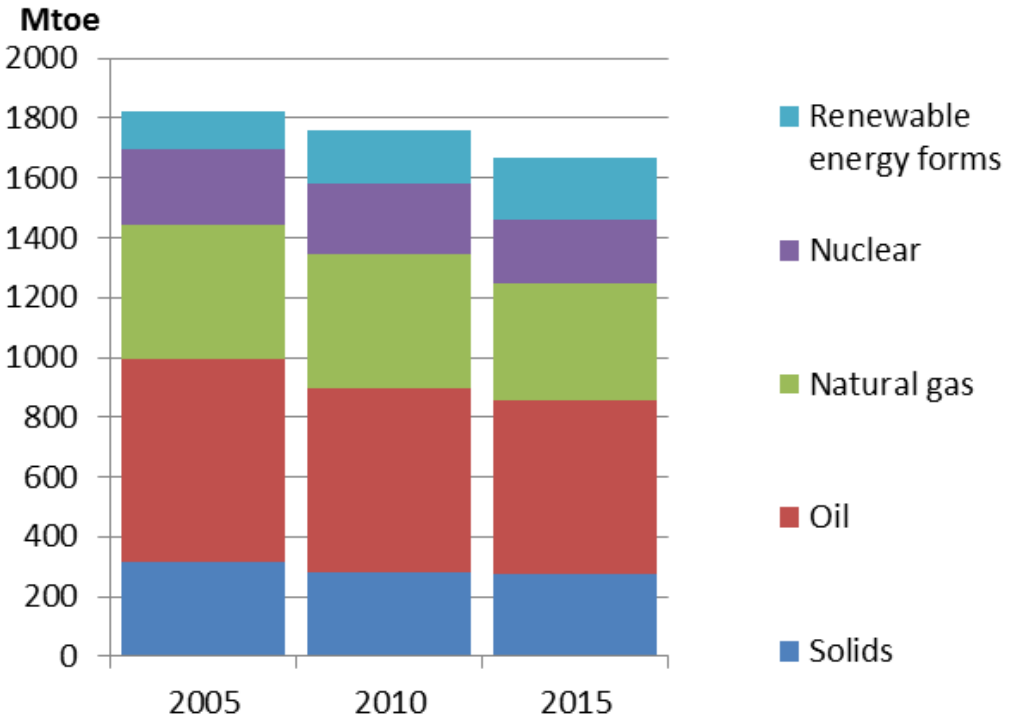
EU Energy consumption Today…

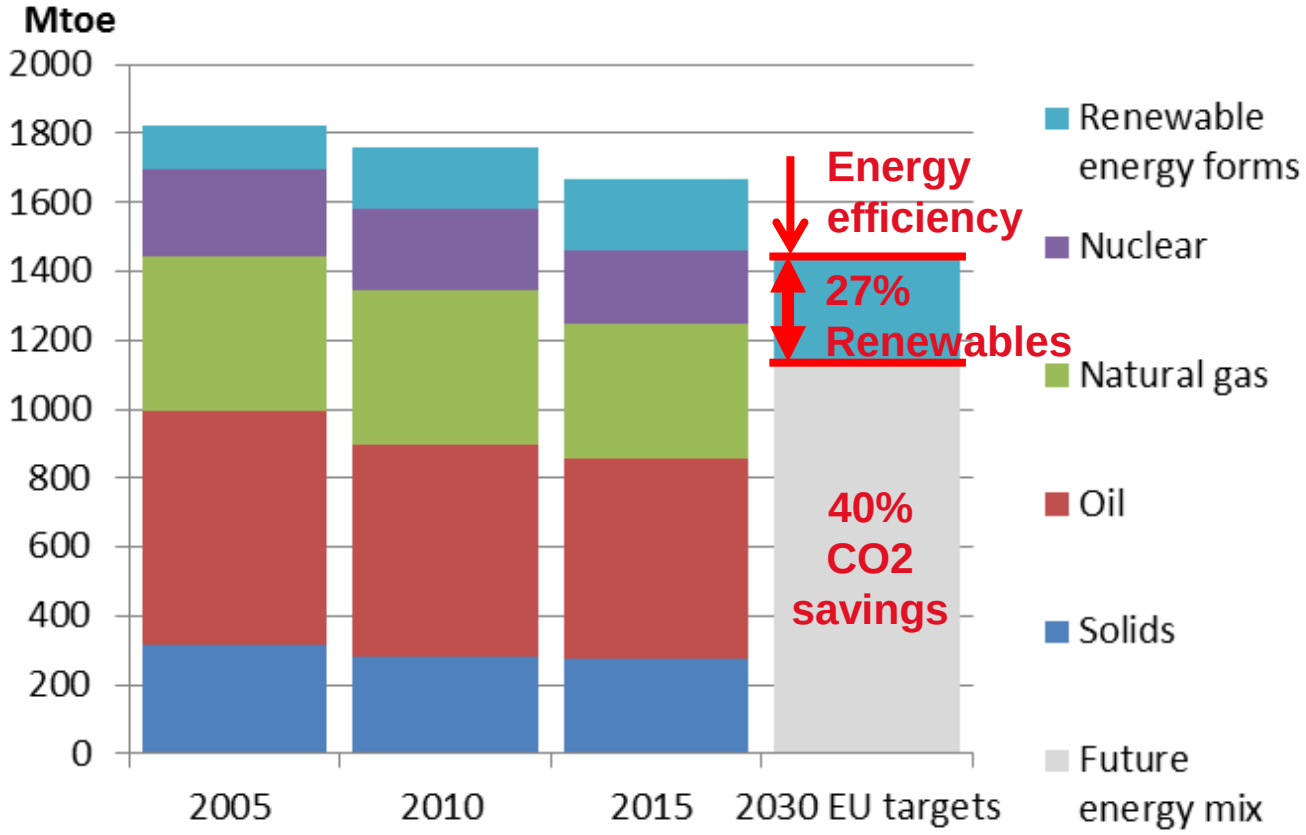


EU28 Energy Consumption – EC PRIMES data

Gas provides >20% EU Energy Consumption

Heating and cooling is **50%** EU Energy demand, significantly covered by **Gas**

EU energy consumption
… and tomorrow

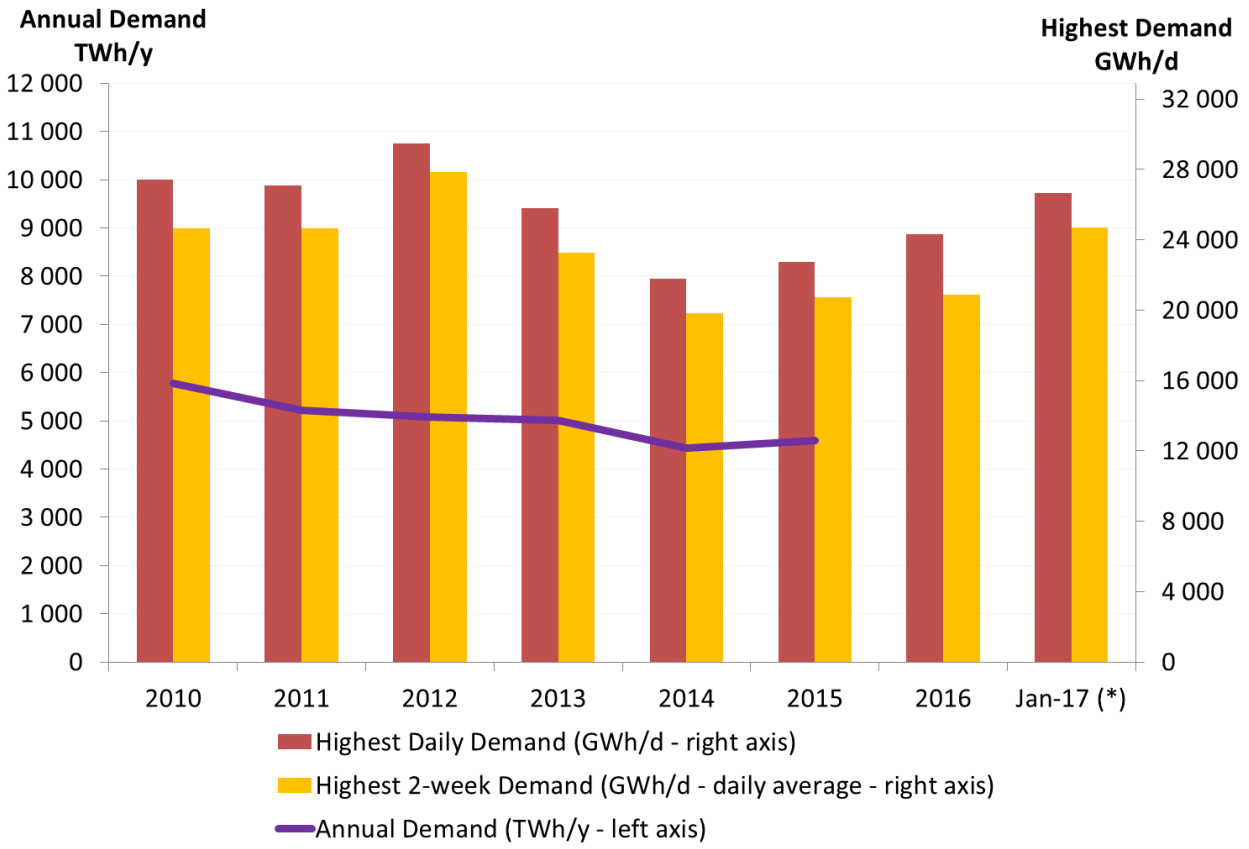


EU28 Energy consumption – EC PRIMES data

Multiple paths to EU targets 2030

Gas consumption

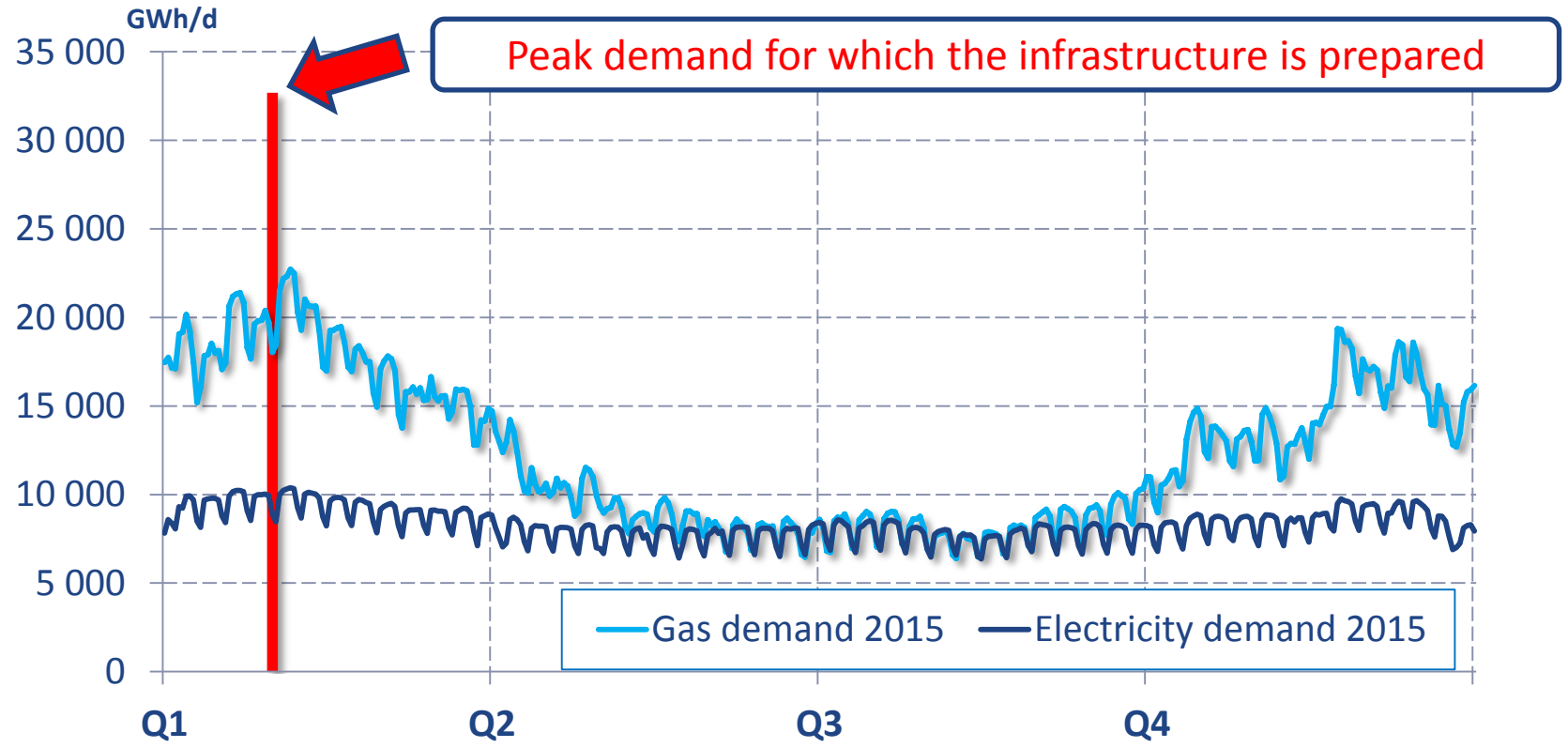
Demand during cold spells does not follow annual volume trends.
The gas infrastructure is designed to cope with peak demand situations.



** January 2017 up to 18th January*

Gas consumption

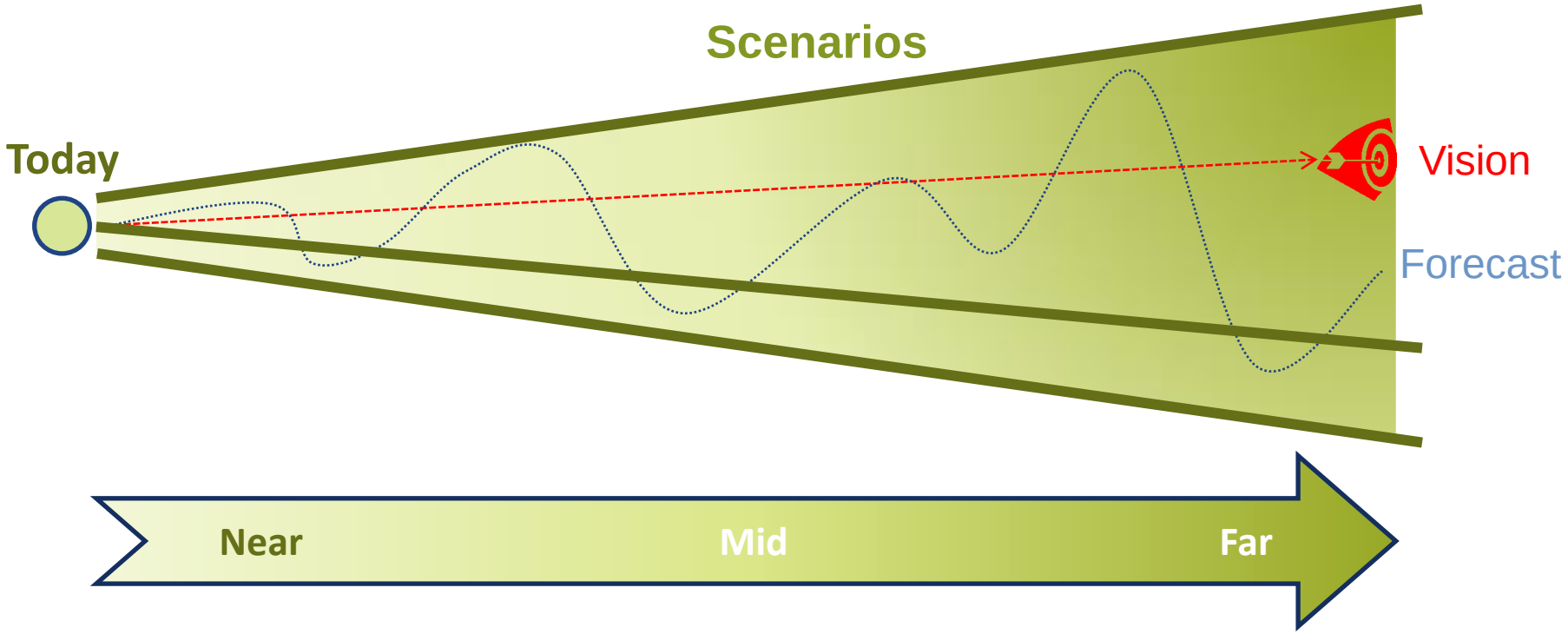
Gas covers higher and more volatile energy demand than electricity.



Peak demand is a major driver for designing the gas infrastructure.

Scenarios

Scenarios set the range of possible futures needed to test the infrastructure



…not forecasts, not visions

Frame the **future**

Scenarios frame the possible futures

Stakeholder feedback supported a range of demand scenarios

- Slow Progression
- Blue Transition
- Green Evolution
- EU Green Revolution

Scenarios Characteristics

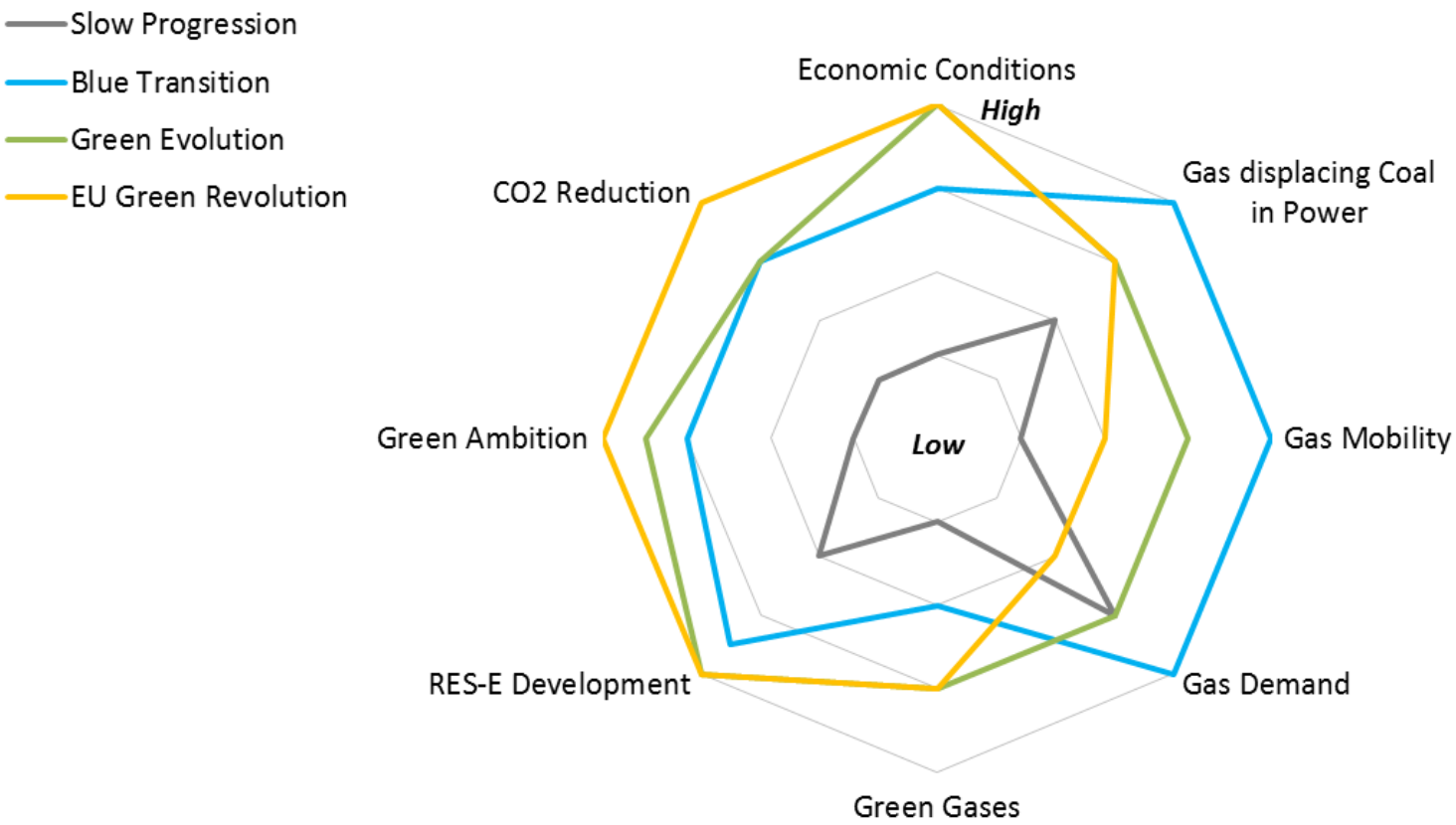
Slow Progression: Little stimulus to change the energy sector radically from what is seen today. Coal is above gas in the merit order for power generation and the economy cannot support effective decarbonisation.

Blue Transition: Gas focussed solutions to the EU energy transition, making use of existing infrastructure. Gas substitutes coal in the power sector, develops rapidly for mobility and continues to dominate the heating sector.

Green Evolution: Favourable economic conditions enable national decarbonisation plans to progress. Gas supports RES development, green gases contribute to the reduction of CO_2 and efficient devices reduce demand.

EU Green Revolution: Goes beyond the national plans to takes a coordinated European perspective on the energy transition, provided through global climate agreements, accelerating the characteristics seen in Green Evolution.

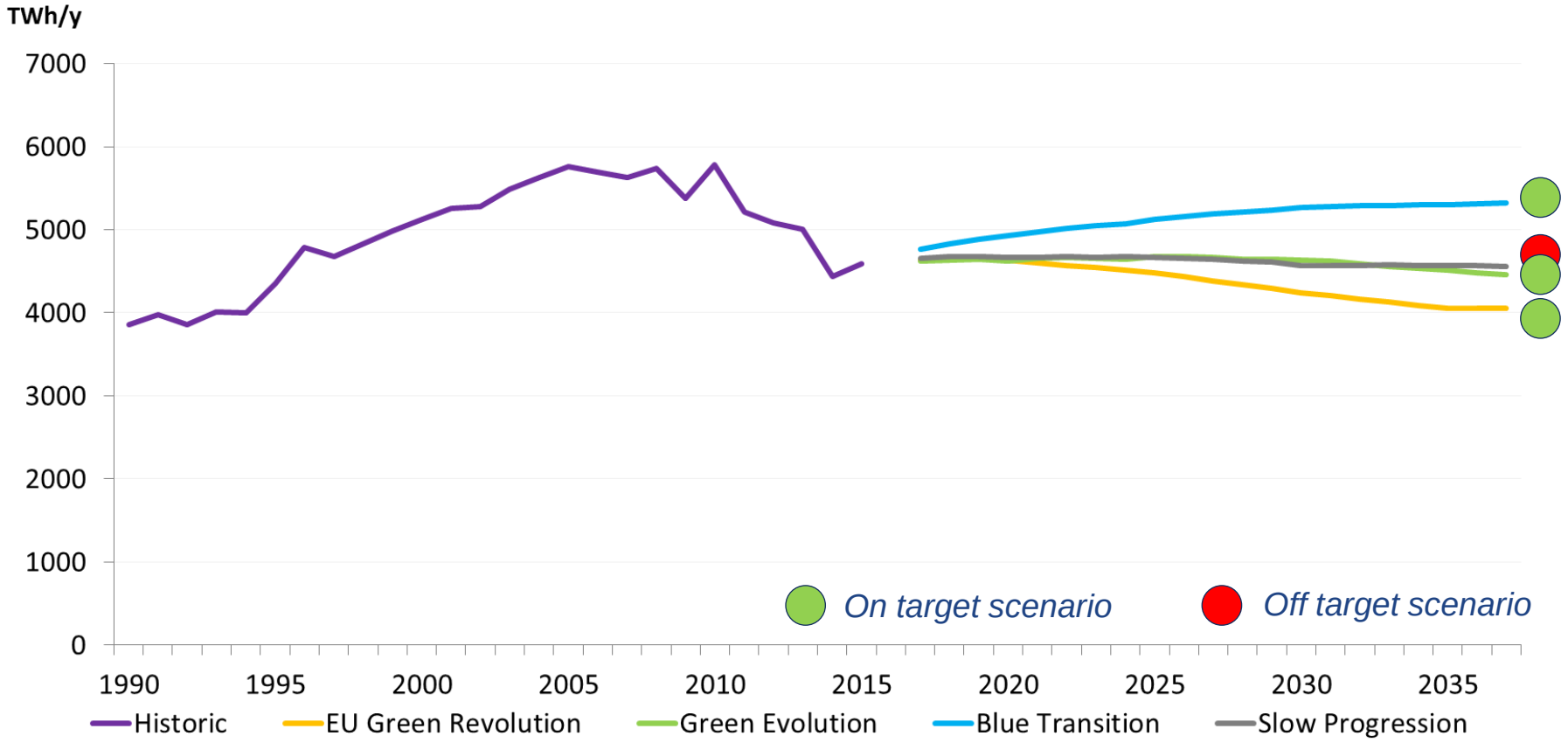
Scenario Characteristics



Frame the **future**

Gas demand – historic and scenarios

Scenarios set the range of possible futures

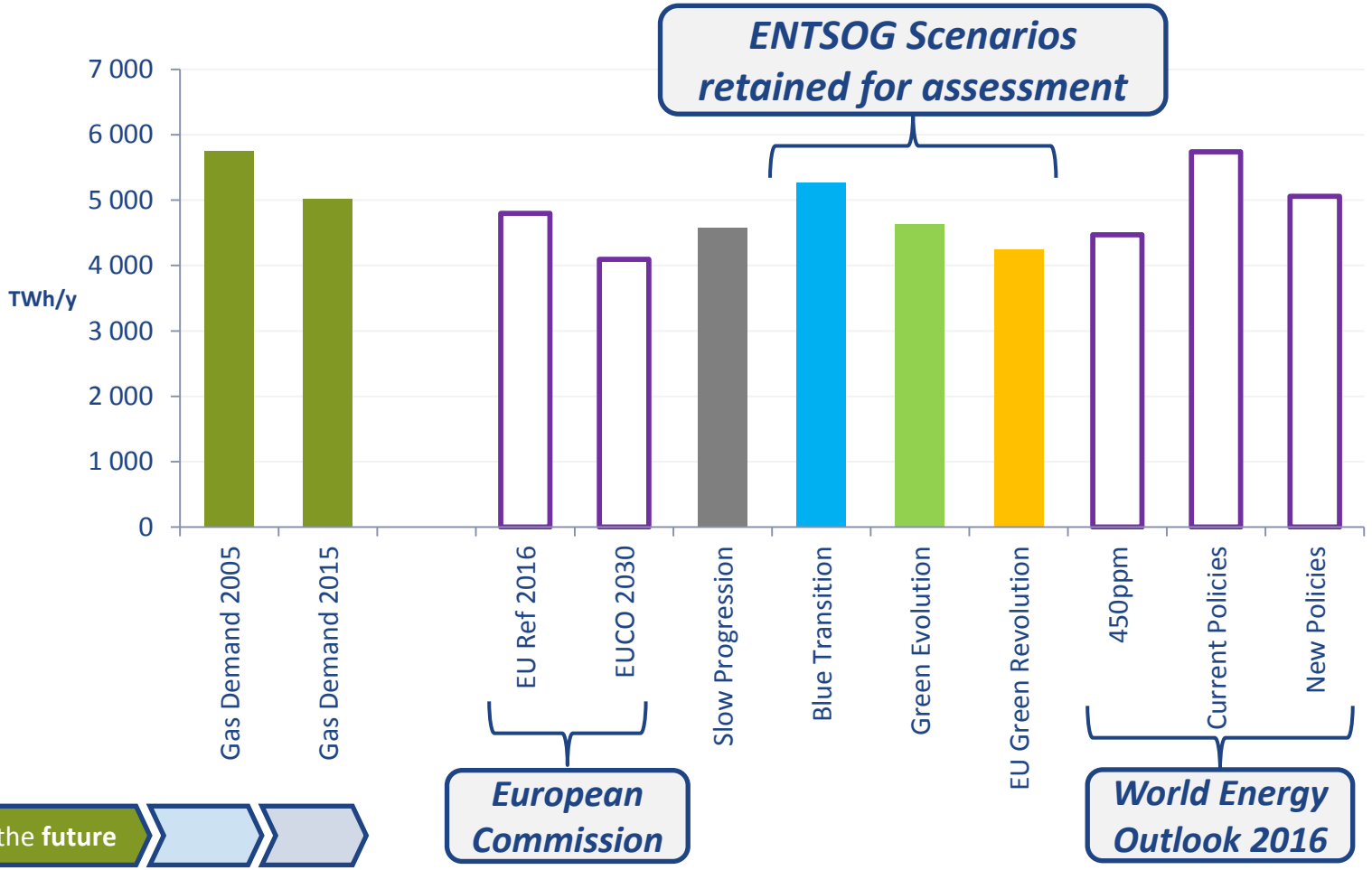


Frame the **future**

Scenario data is country specific and builds on national expertise

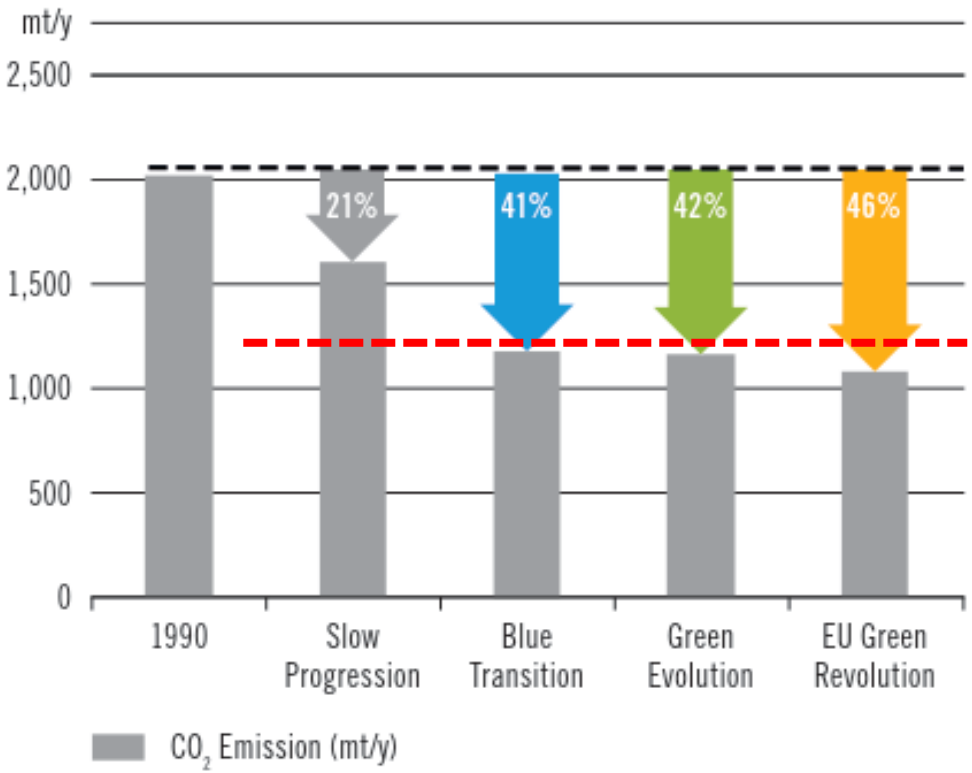
Gas demand – Scenarios 2030

ENTSOG Scenarios compare to other scenario sources



CO2 savings

Gas displacing coal for power generation strongly impacts on CO2 savings



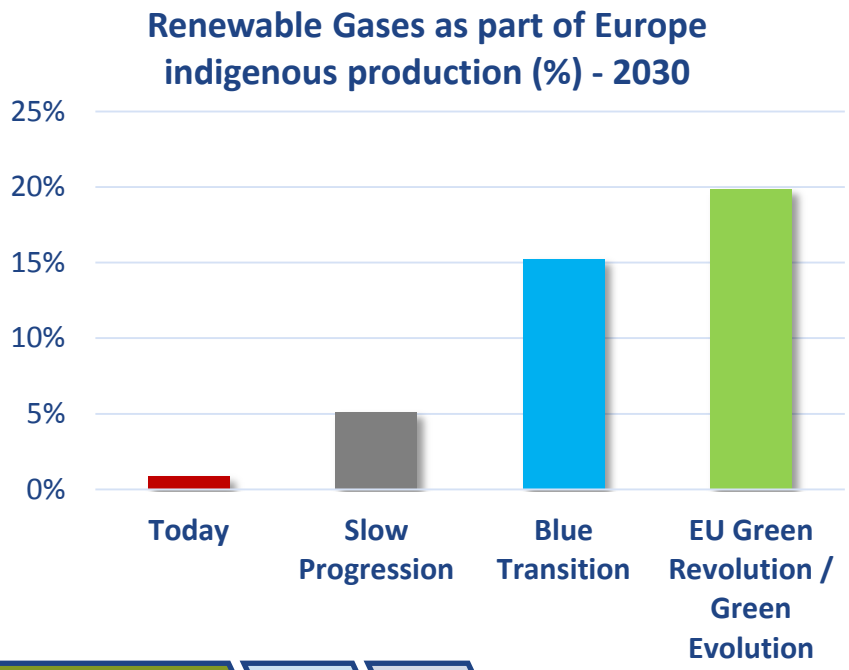
EU CO2 targets = 40% reductions

CO2 savings in 2030 – overall power sector and gas end-user demand

Renewables

Renewables gases

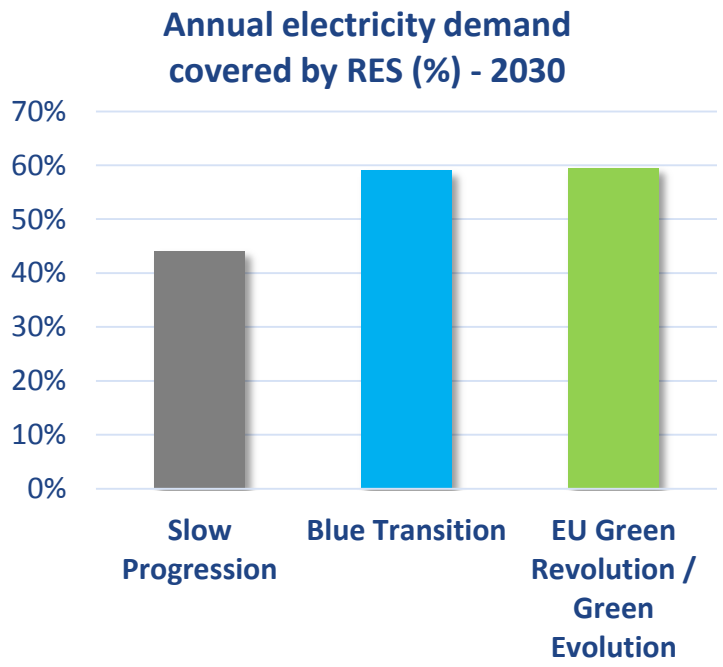
> A potential still to be explored



Renewables generation

> TYNDP scenarios align with ENTSO-E TYNDP 2016

> **45 to 60%** renewable share



Frame the **future**

Energy Efficiency

Multiple energy mixes achieve the EU Energy efficiency target

The target can be met with both…

…decreasing gas demand

> Better efficiency of gas heating

> Electrification of heating

…increasing gas demand

> More efficient gas-fired generation replacing coal generation

> Gas mobility displacing oil demand

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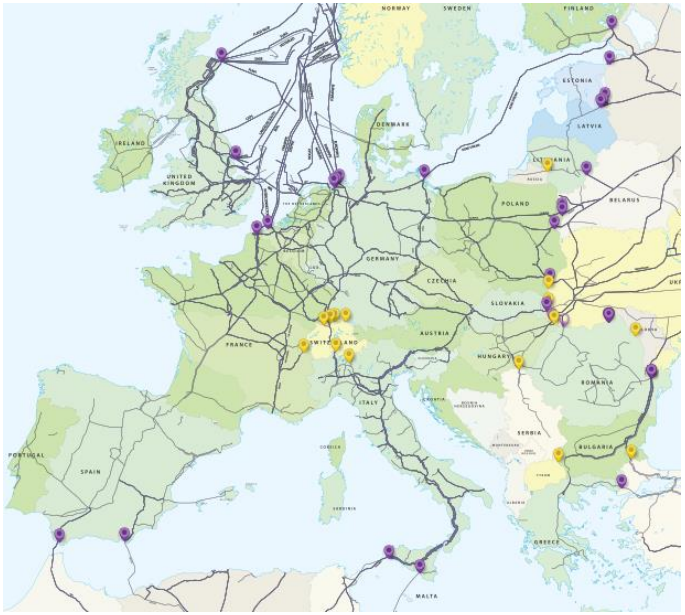
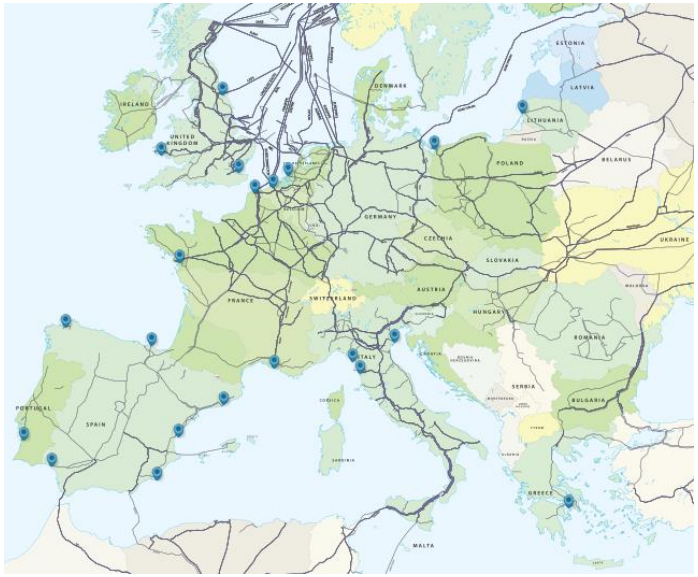
The existing infrastructure

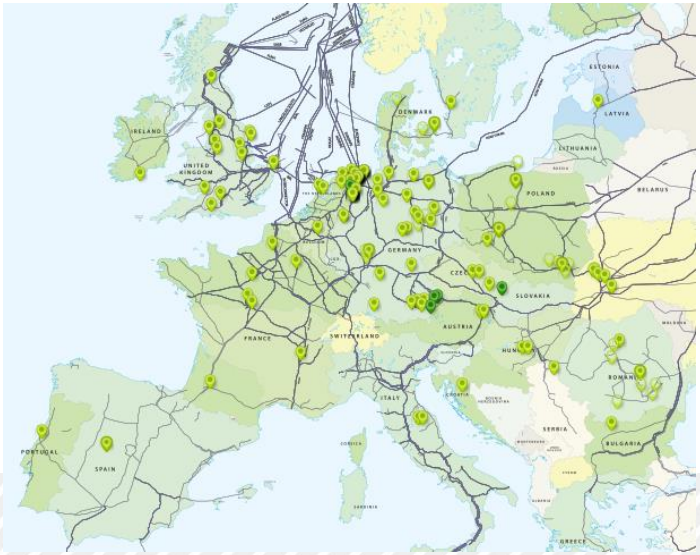


> *Diversified pipeline imports*

> *A well-developed transmission network*



> *LNG terminals*



> *Underground storages in most EU countries*

Highly resilient existing gas infrastructure

850 GW

High import capacities

1 000 GW

High cross-border capacities

>100% of EU demand

1 100 TWh

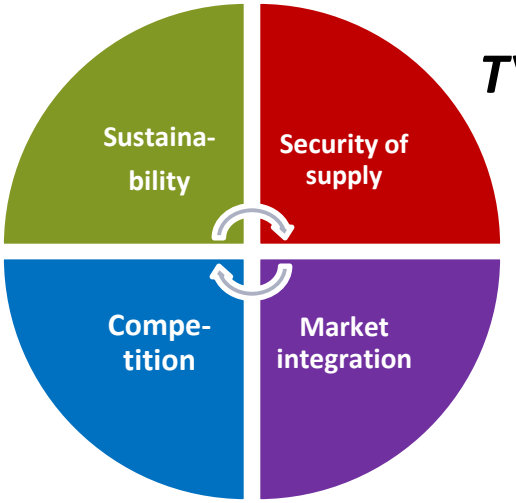
High storage capacity

20% of the annual demand

High deliverability

Key asset to cover winter demand and to provide flexibility

Is further infrastructure needed?

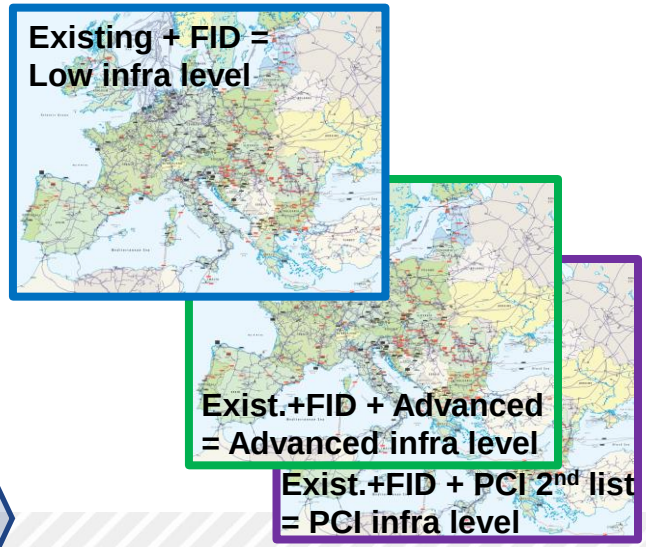


TYNDP assesses the gas infrastructure against the Union energy policies

Are they achieved with the existing infrastructure and FID projects?

Yes

No further infrastructure needs



No

TYNDP assesses further infrastructure development

> FID projects + advanced projects

> FID projects + 2nd PCI list projects

Assess needs

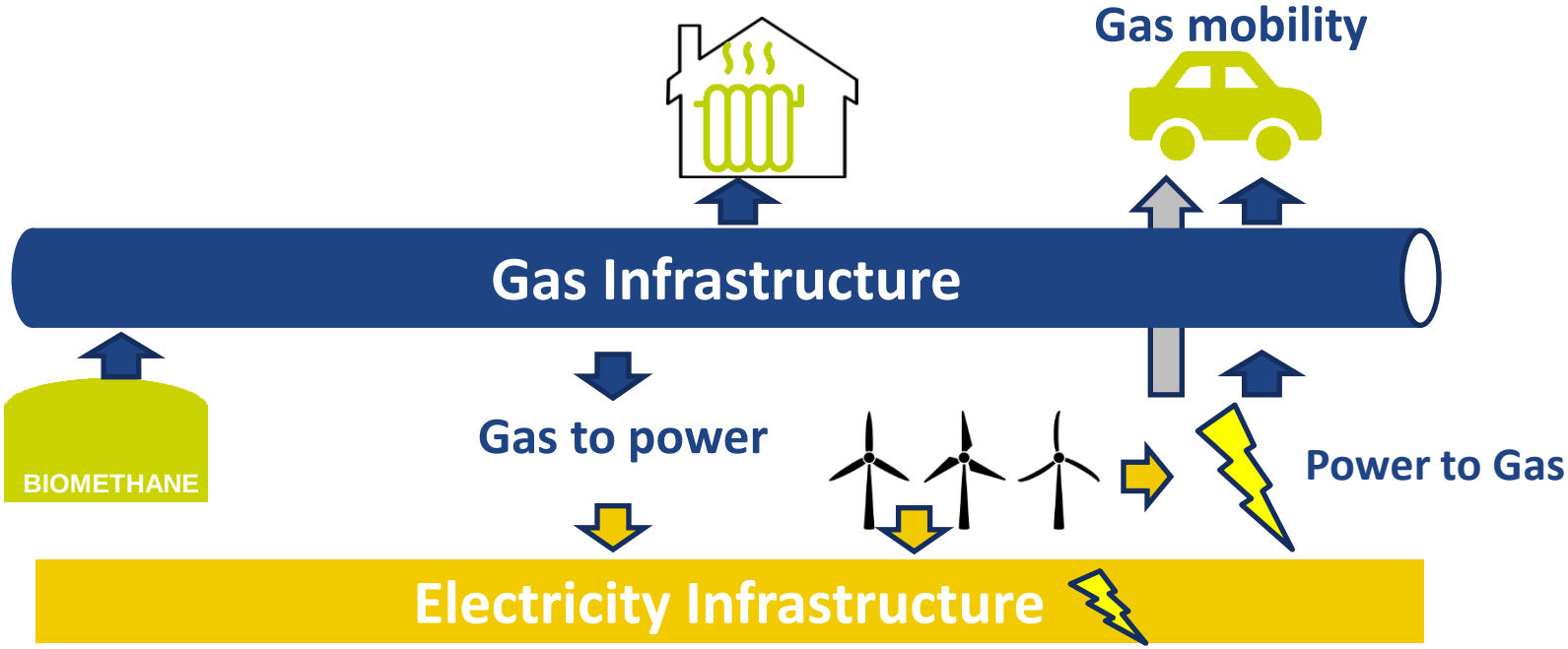
Sustainability

Developing and integrating renewable sources of energy is key for a low-carbon future

> It will challenge the power system

> Today's EU gas infrastructure - with existing power plants - is already able to **complement renewable generation and integrate renewable gases**.

It is fundamental to take a holistic approach to the energy system

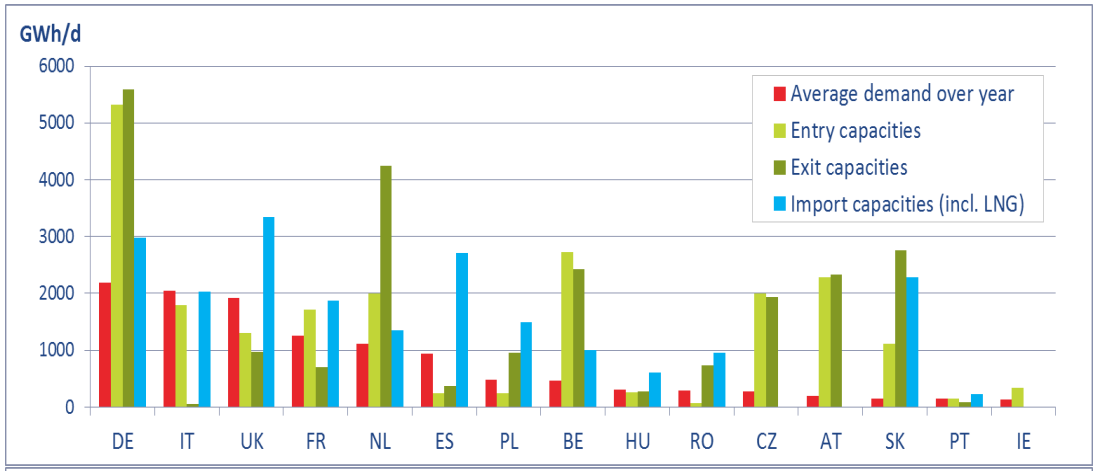


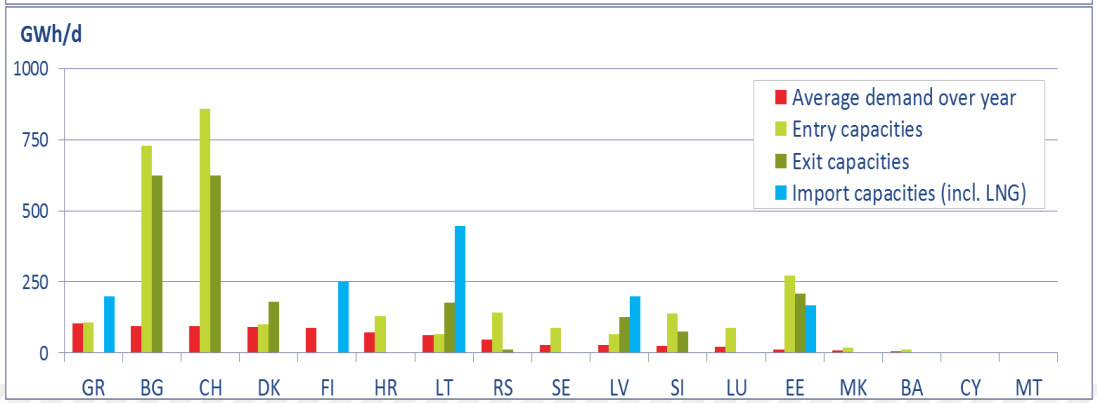
Market integration

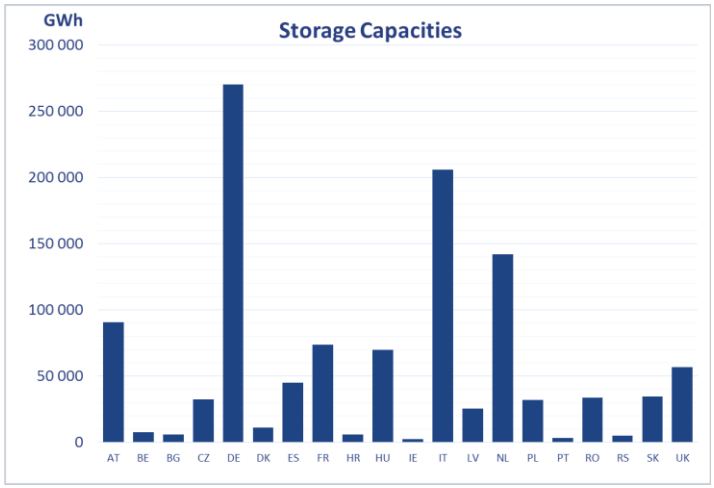
While the overall infrastructure is well developed…

pipe and LNG import capacities, transits, interconnections

…the situation remains very contrasted from one country to the next







Assess needs

Security of supply

Already achieved:

Resilience to extreme temperature

Resilience to disruption of Algerian, Libyan and Norwegian supply sources

Further infrastructure needs:

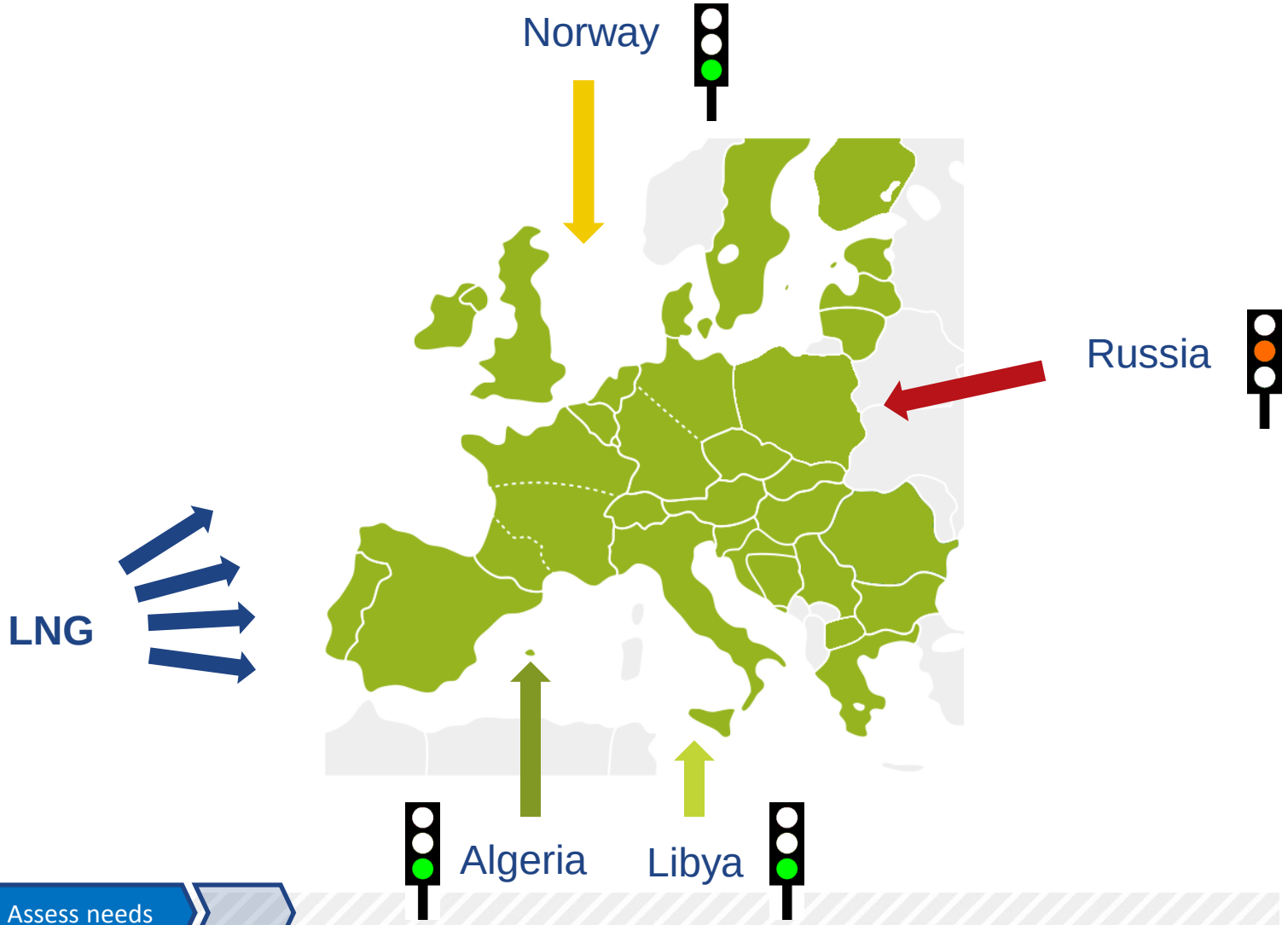
To mitigate Belarus route disruption risk in North-East Europe

To mitigate Ukrainian route disruption in South-East Europe

To mitigate largest national infrastructure unavailability (N-1 risk) in specific countries

Security of supply

Resilience to supply disruption

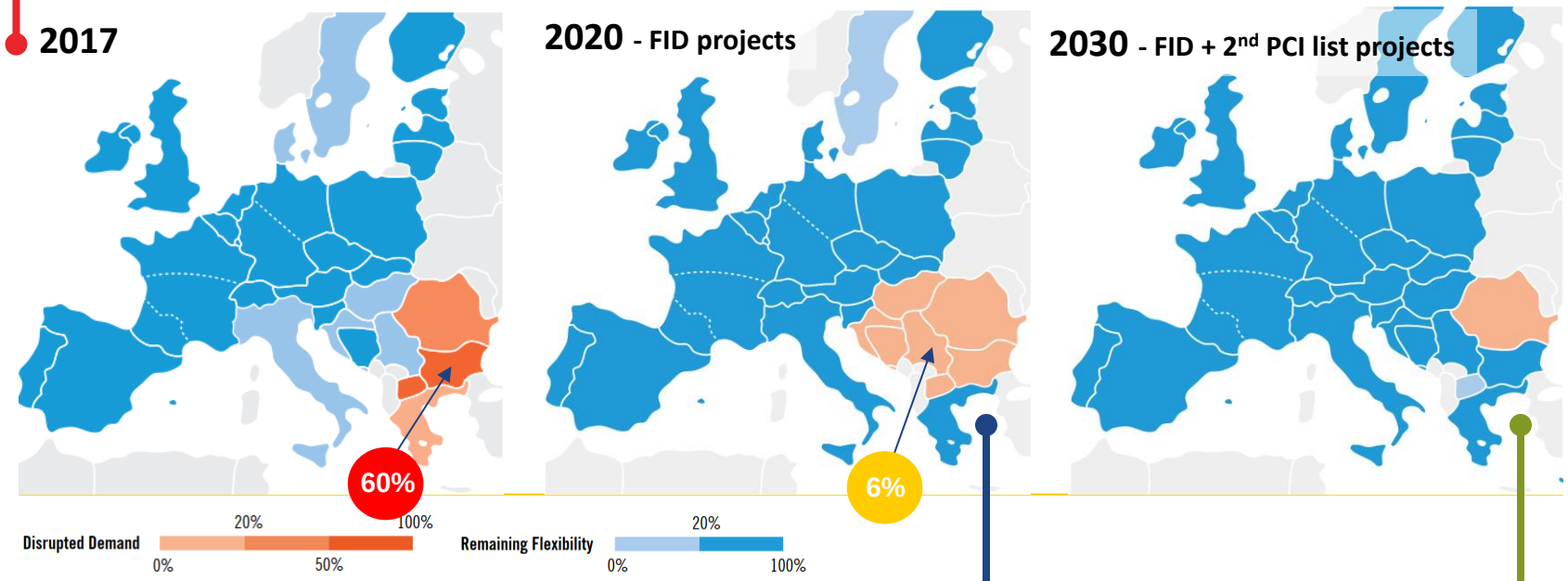


Security of supply

Case of Ukraine route disruption

Peak demand situation

South-East Europe would face demand curtailment



FID projects significantly mitigate the situation by 2020

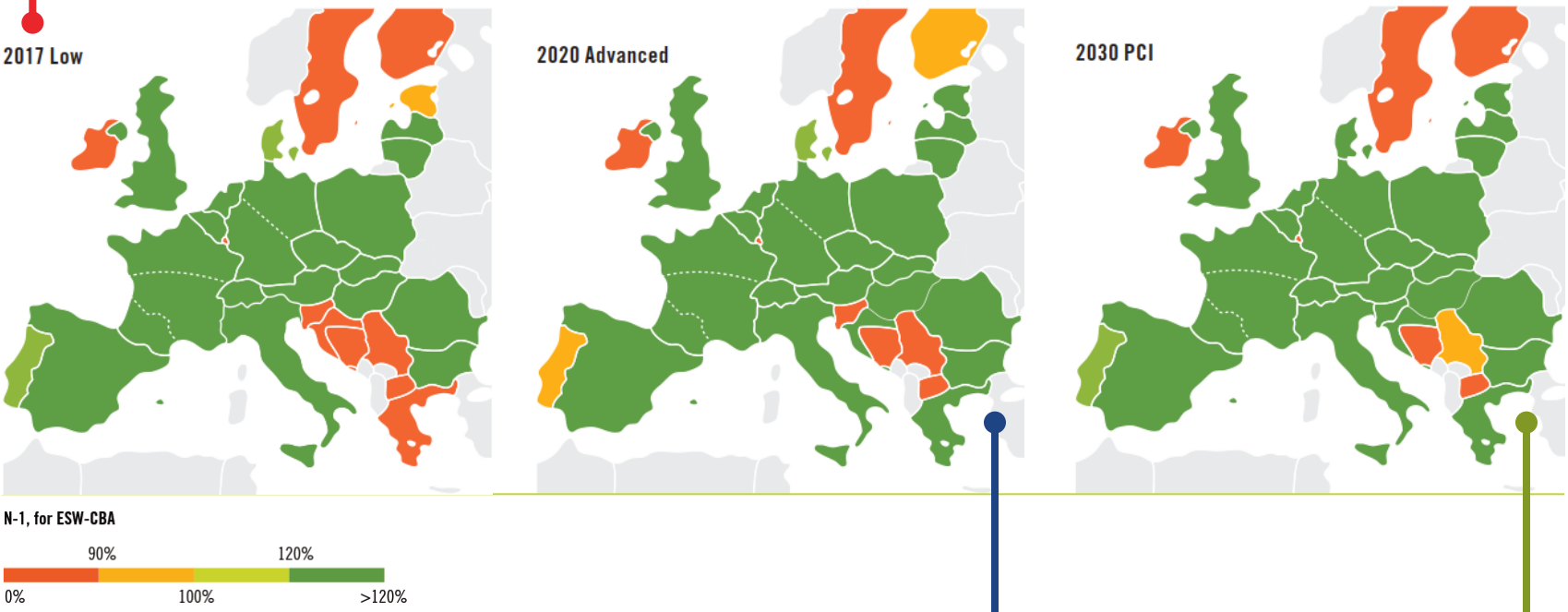
Further mitigation requires projects from the 2nd PCI list

Security of supply

N-1 case: unavaibility of largest national infra

Peak demand situation

Countries with N-1 < 100% would face demand curtailment



FID and Advanced projects partly mitigate the situation by 2020

Further mitigation requires projects from the 2nd PCI list

Competition

Already achieved

Most of Europe can access diversified supply sources
Hub price convergence actually observed most of the time, especially in Western Europe

Further infrastructure needs

To ensure more diversified access to supply sources – in the Baltics, South-East Europe and Iberian Peninsula

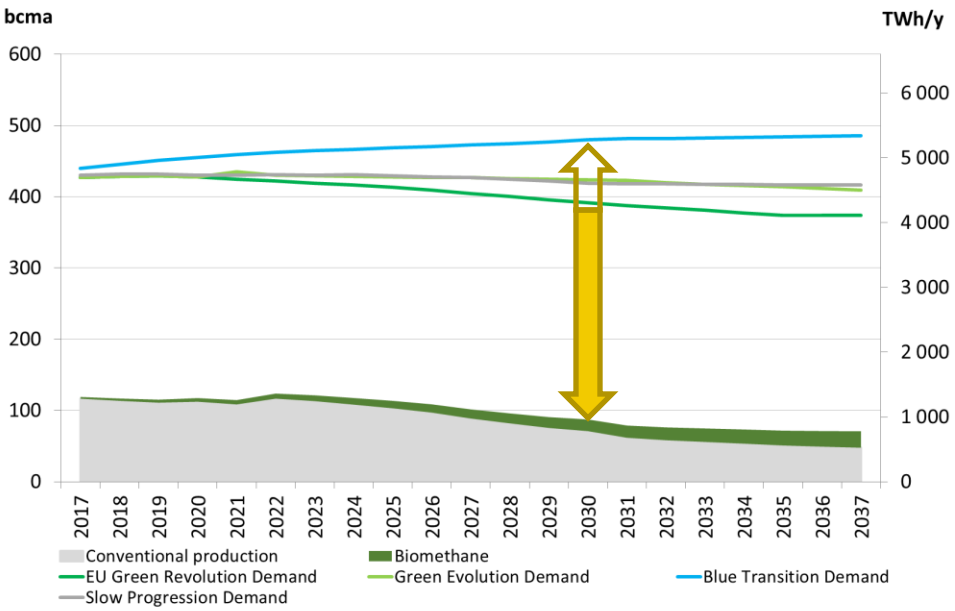
To lift high dependence to a specific supply source

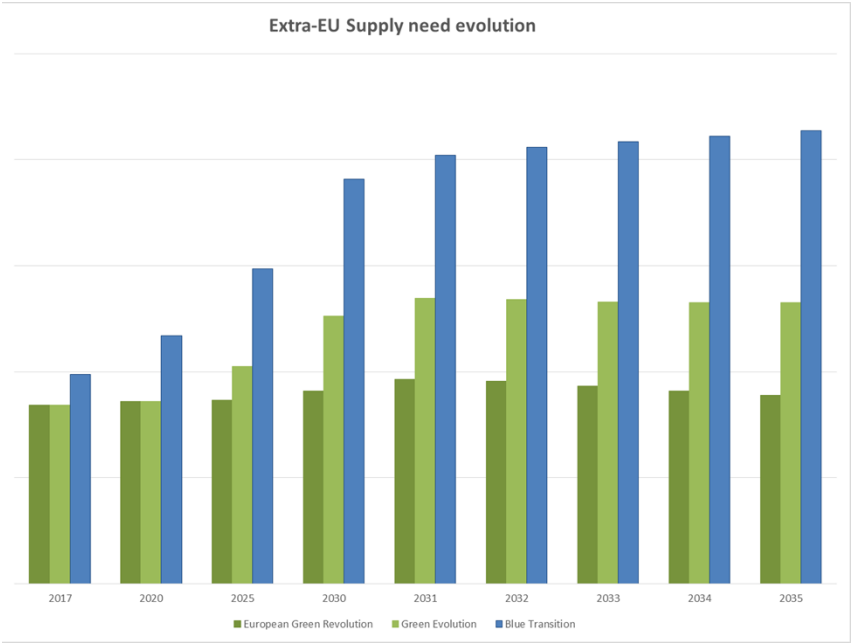
Competition

EU supply needs

Whole year

EU current indigenous production is declining, leading to increased supply needs for 2 out of the 3 scenarios





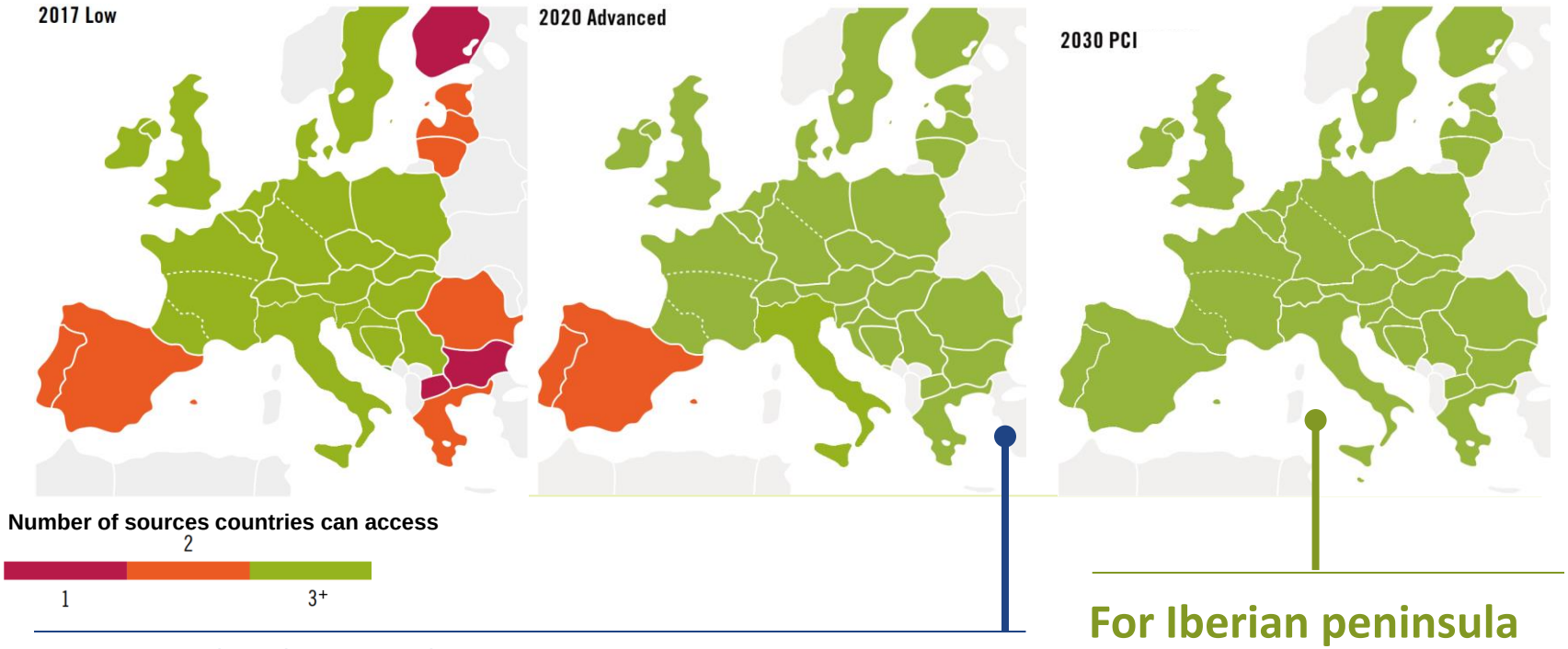
Access to new supply sources would contribute to maintain supply diversification

Competition

Supply diversification

Whole year

Several areas have a significant access to only 1 or 2 supply sources



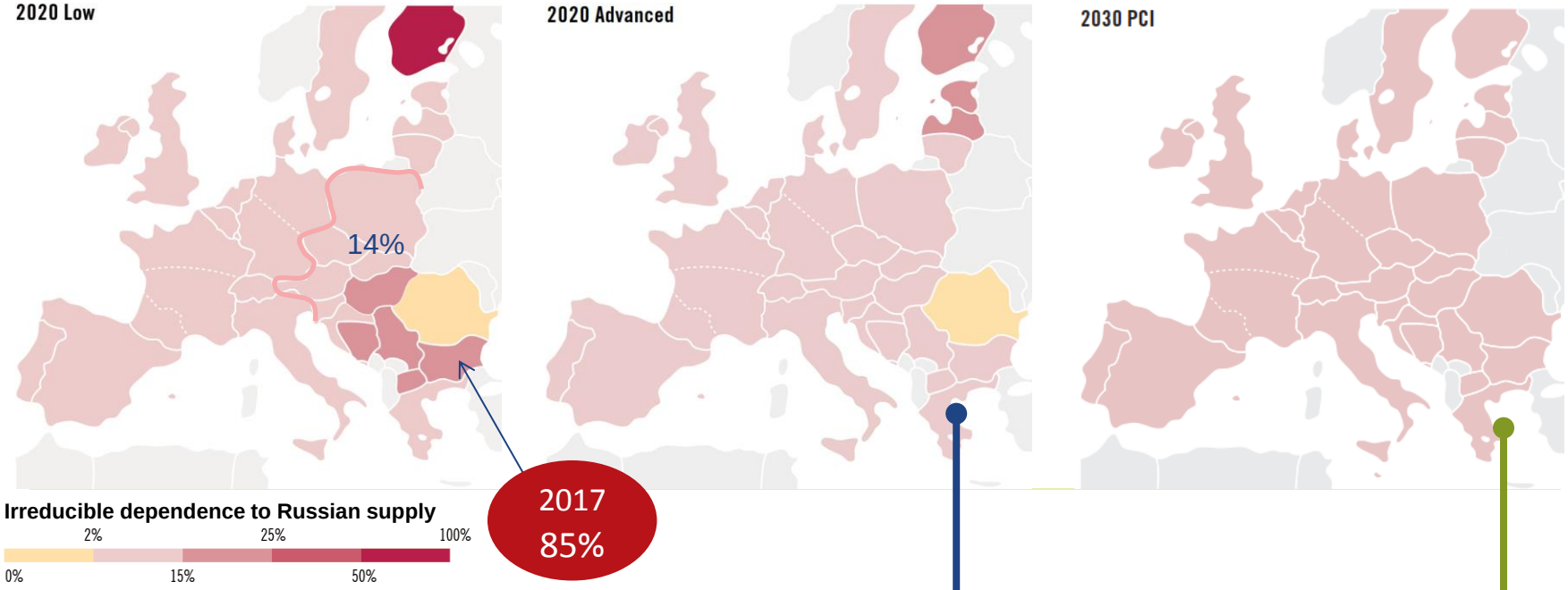
FID and Advanced projects ensure access to at least 3 supply sources in Baltics and South-East EU

For Iberian peninsula 2nd PCI list projects allow further diversification

Supply diversification

Irreducible dependence to Russian supply

Finland and Eastern Europe have limited alternatives to Russian supply



Advanced projects improve access to other sources by 2020

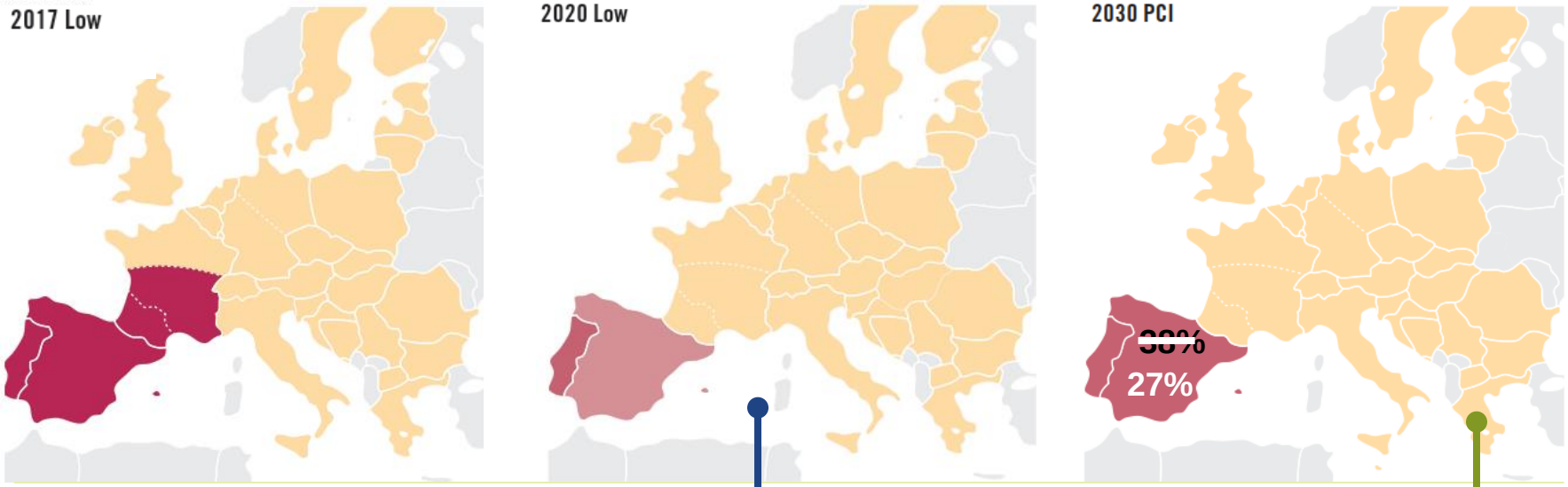
Situation could deteriorate post-2020 if Lithuania Klaipeda LNG terminal would cease operating

2nd PCI list projects ensure homogenous situation across EU countries

Supply diversification

Irreducible dependence to LNG supply

Iberian peninsula and south of France have limited alternatives to LNG supply



FID projects improve the situation by 2020

2nd PCI list projects would further improve the situation post-2020

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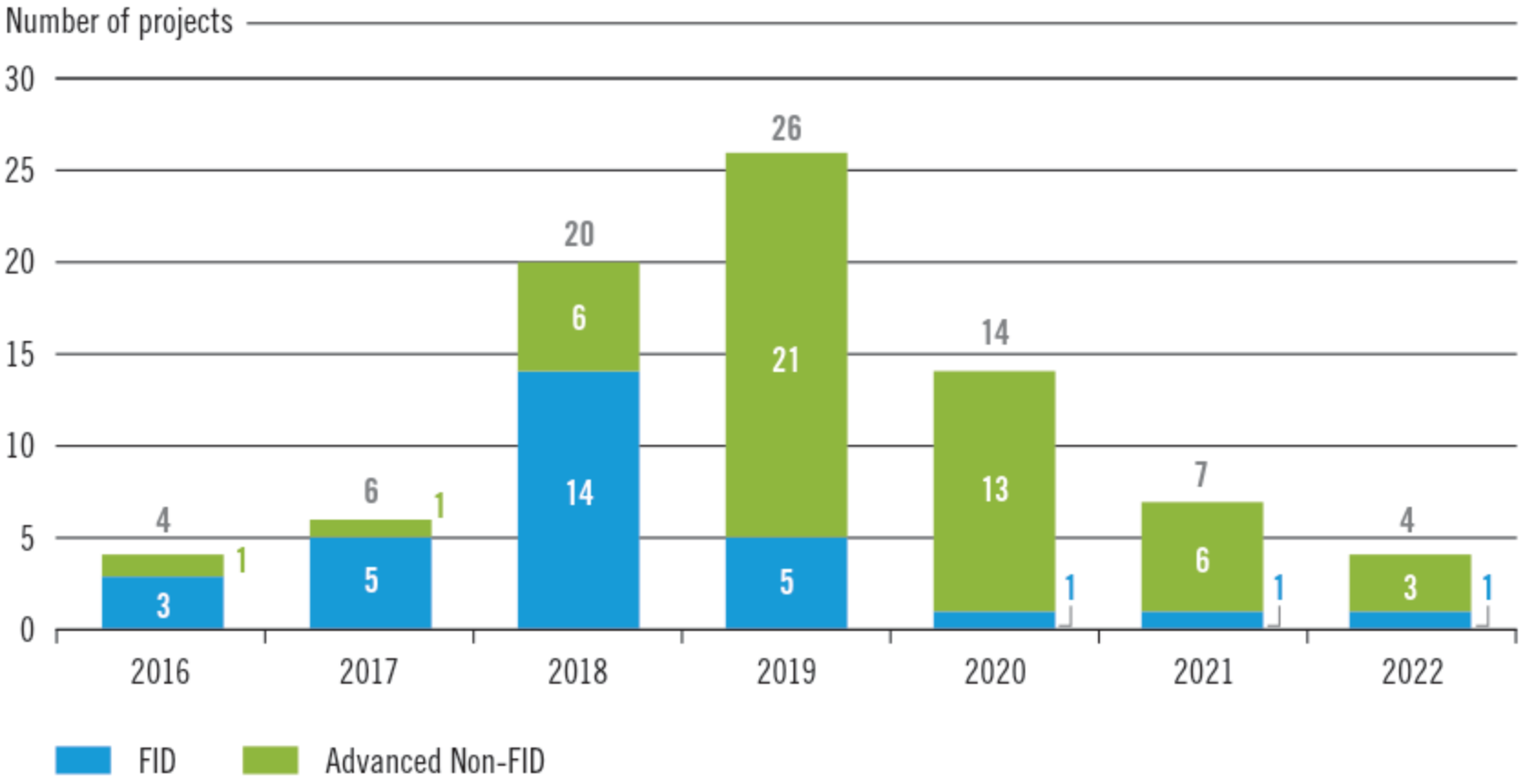
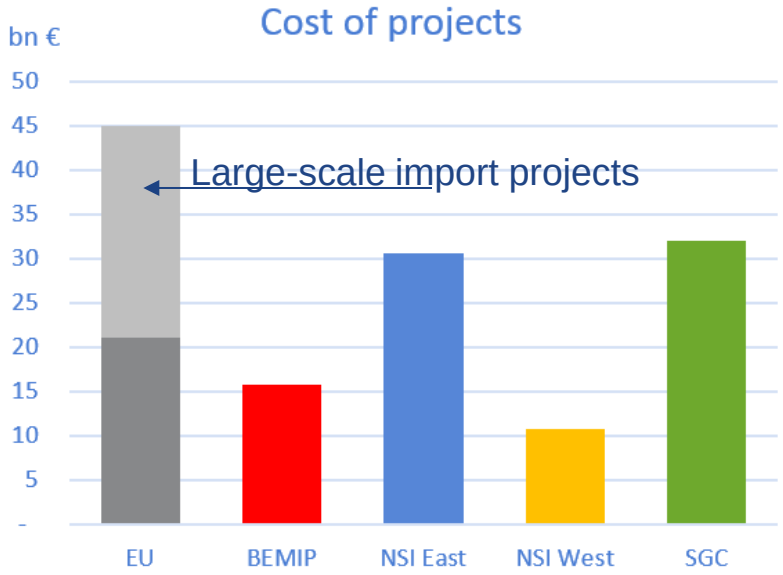
When will projects materialise?



The necessary projects are to be commissioned in the coming years

At which costs?

BEMIP



Southern Gas Corridor (SGC)

NSI West

NSI East

Total cost: 45 bn€ (FID and Advanced)

Including large-scale import projects (TANAP, TAP and Nord Stream 2): 24 bn€, based on publicly available data.

BEMIP: Baltic Energy Market Interconnection Plan

NSI West / East: North South interconnections West / East

Conclusion

The gas infrastructure is already well developed

- ***It is close to achieve the EU internal gas market***
- ***It is ready to support a low-carbon future***

Assessing if further infrastructure is needed requires energy scenarios covering a range of possible futures

The energy situation is not the same all over Europe

- ***In specific areas, further infrastructure is still needed***
- ***The necessary projects are to be commissioned in the coming years***

And still:

- ***Stakeholder are welcome to take part to the TYNDP public consultation (until 3 February):***

http://www.entsog.eu/events/entsog-tyndp-2017-public-consultation#welcome

- ***More on TYNDP:***

http://www.entsog.eu/publications/tyndp#ENTSOG-TEN-YEAR-NETWORK-DEVELOPMENT-PLAN-2017

Thank You for Your Attention

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