



TYNDP : An European approach to Security of Supply

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Enlargement and Integration Workshop, Dubrovnik -6 October 2011*



TYNDP: Content and methodology

TYNDP rationales

3rd Package requirement

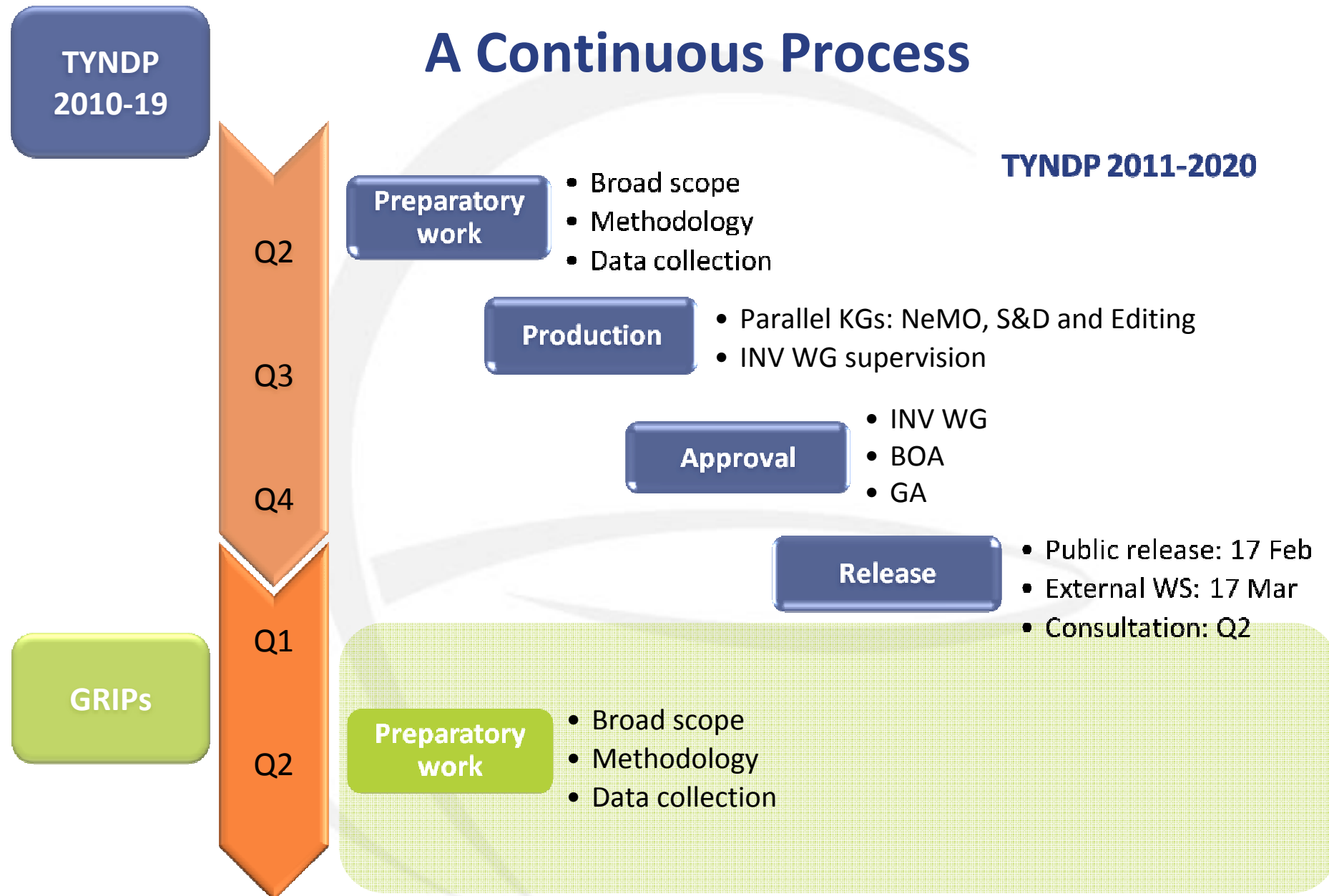
- European supply adequacy outlook
- Assessment of the resilience of the system (to be linked to the 3 EC pillars: security, sustainability and affordability)
- Consistency between Community-wide TYNDP, Regional Investment Plans and national plans

Now seen as a reference document for other regulations

- Should facilitate a consistent implementation of REG-SoS across Europe
- EIP describe TYNDP and Regional Investment Plans as the basis for European network planning and investment

TYNDP should be considered as **a living organism helping to assess network resilience and project benefits** rather than a comprehensive report cast in stone

A Continuous Process



Report content

Main report

- Projects overview
- Overall demand vs. supply balance on 10-year range
- Network resilience assessment along three axis:
 - Severe climatic conditions
 - Security of Supply (supply disruption & low storage deliverability)
 - Market integration

Annexes

- A: Infrastructure projects (Pipes, UGS & LNG) of TSOs and third parties
- B: Country profiles
- C: Supply & Demand
- D: Capacity
- E: Remaining flexibility indicators & non-FID project load factors

Methodology overview

Demand & Supply

- Demand: TSOs forecast of both 1-in-2 yearly and 1-in-20 daily level
- Supply:
 - historical data from BP Energy Review
 - forecast from public sources, TSOs analysis, consultant report

Capacity

- Firm technical capacity on a yearly basis as of 1 January of each year
- Lesser-of-rule applied on a IP basis

Network model

- Based on country boxes and cross-border capacity aggregates
- Modelling of physical net flows
- Use of “Remaining flexibility indicator” to provide easily understandable and comparable results (1-Entering flows/Entry capacity)

Infrastructure Projects Overview

Data collection process

- Efficiency and transparency concerns led to a public questionnaire
- Project sponsors willingness to provide data depends on their interest and political concerns
- It is not possible for TSOs to classify projects as mature or not within TYNDP owing to the many different factors that may influence an investment decision

Infrastructure modelling

- Simulations were carried out with 2 infrastructure settings:
 - Existing infrastructures plus all FID projects
 - Idem plus all non-FID projects
- Load factors for non-FID imports, LNG and UGS projects **under considered scenarios** picture project influence

Submitted Projects Per Category



Pipes	FID	Non-FID
Projects	62	97
10 ⁶ €	13 711	58 556

UGS	FID	Non-FID
Projects	26	22
10 ⁶ €	4 260*	2 593*

LNG	FID	Non-FID
Projects	11	20
10 ⁶ €	3 570	6 614*

(*): not all projects covered as some project sponsors did not submit any cost estimates

Demand & Supply

Supply should be here despite demand uncertainty

- Political considerations deeply influence demand forecasts
- ENTSOG's forecast is close to Eurogas' Environmental scenario (gas will support renewable development as an affordable and flexible fuel)
- In any case producers seem to have the ability to dedicate sufficient gas for European market

Demand & supply modelling

- In order to efficiently test network resilience, sensitivity study should find the right balance between everyday and exceptional situations
- Second TYNDP edition captures both yearly trends and severe climatic conditions (1-in-20 day)
- Intermediate cases will have to be considered in the future

Network resilience assessment

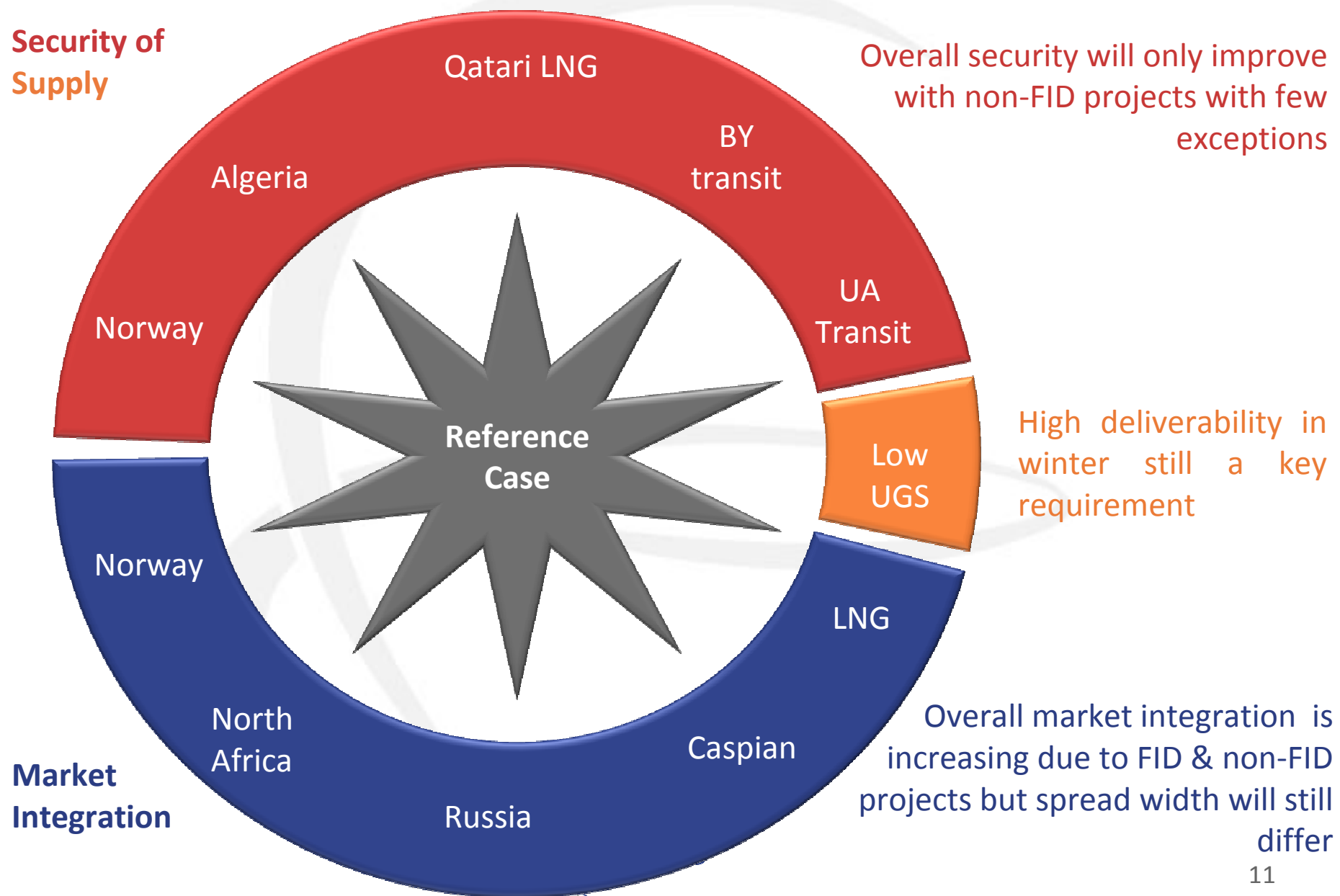
Main challenge of this second edition

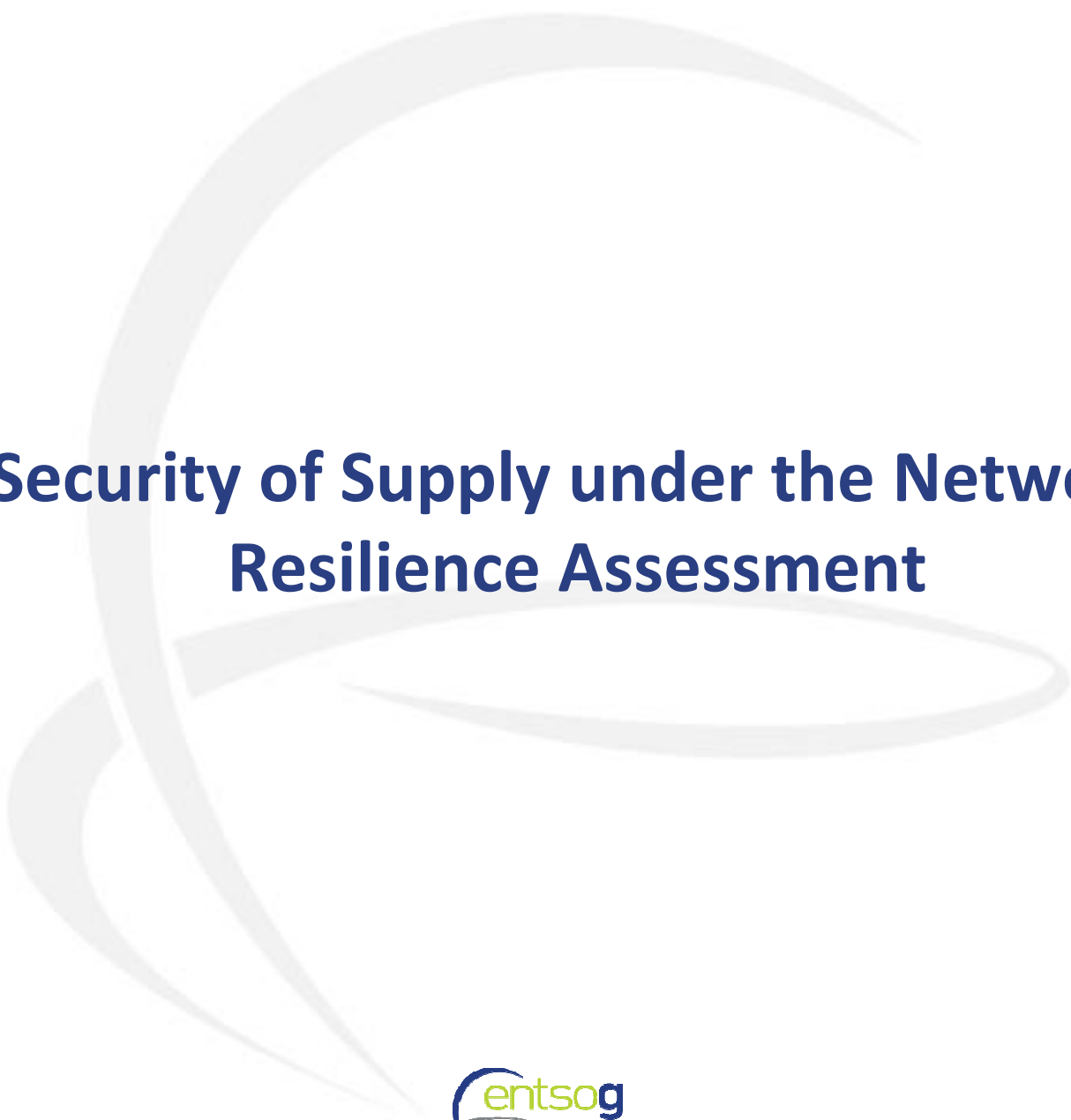
- Resilience assessment is a Regulation 715/2009 requirement emphasised by stakeholders
- Should tackle both Security of Supply and Market Integration
- But benchmark criteria are not yet clearly defined and TSOs have lost a lot of their supply knowledge since unbundling

Achieved through a sensitivity study

- Network model based on firm entry/exit cross-border capacity
- 67 simulations using 5 parameters and highlighting their influence 1 by 1
 - Infrastructure (FID / non-FID)
 - Climate (1in2 – 1in20)
 - Disruption (NO/AL/UA/BY/LNG)
 - UGS deliverability
 - Supply predominance (NO/AL/LY/RU/CA/LY)

Network resilience -- key findings





Security of Supply under the Network Resilience Assessment

Security of supply

Main outputs

- Areas having a remaining flexibility <5% (normal conditions) or <1% (disruption situations) and potential remedies
- Focus on disrupted areas defined by upstream physical congestion
- Storage deliverability minimum requirement
- Remaining flexibility for each country
- Modelled load factors of non-FID projects

Result interpretation and way forward

- Outputs are closely linked to modelled scenarios and the report insists on the fact it only provides information and does not assess project individual benefit
- Could be carried out in national or regional investment plans if requested and criteria clear
- Depending on further development (TYNDP feedback, legislative proposals such EIP) next TYNDP could provide a more consistent and comprehensive assessment

Security of Supply: Main findings

Impact of indigenous production decline

- Shall be compensated:
 - On a yearly basis by additional imports
 - On short severe climatic conditions by additional imports and/or new UGS
- In any case alternative and longer gas flows should be anticipated

European network is still not perfectly prepared to all disruptions

- Modelled Norwegian, Algerian and LNG disruption scenarios should not decrease the ability to face the whole demand with low impact on remaining flexibility
- Ukraine transit disruption impact should decrease with North Stream, OPAL and Gazelle and should be completely mitigated with Southern Corridor projects and South Stream
- Belarus transit disruption impact should decrease in Poland with LNG terminal (FID); even with the planned non-FID projects the Baltic region will nevertheless remain negatively impacted due to the limited integration with the other regions

Storage deliverability will depend on new project development

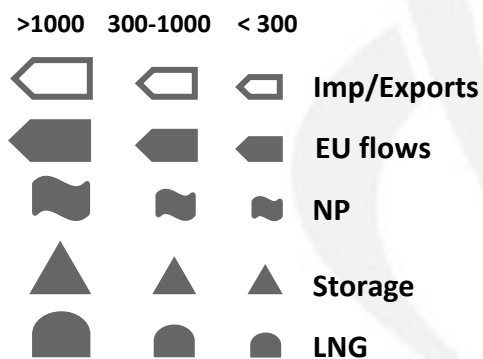
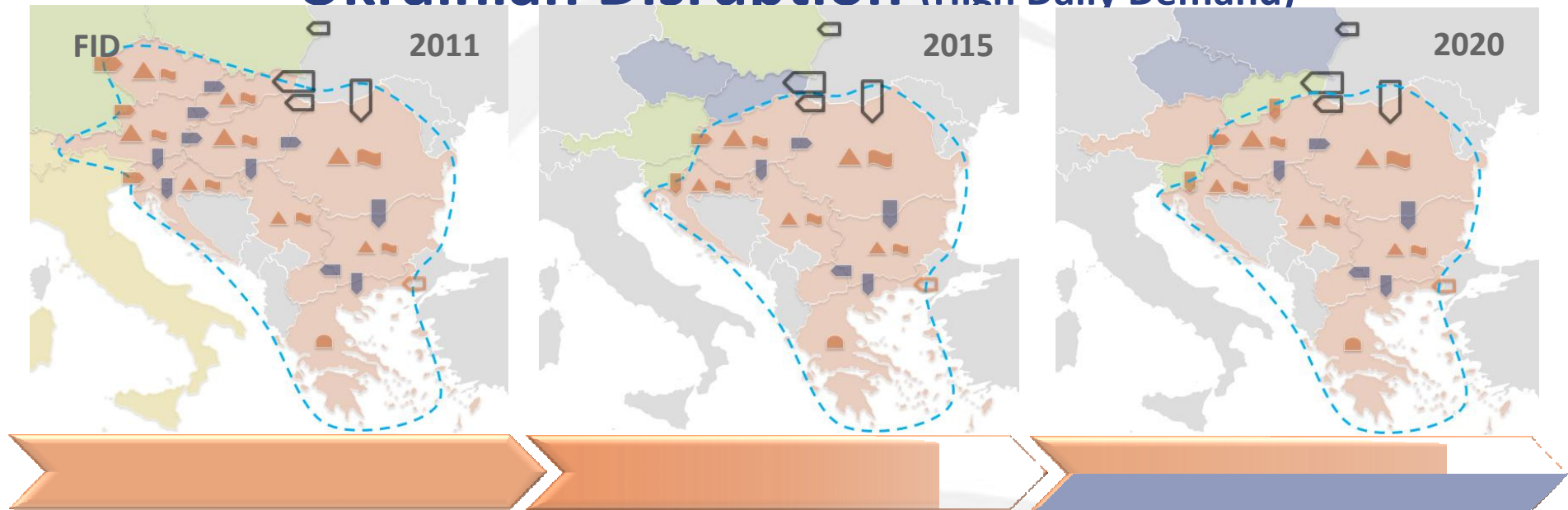
- To ensure storage use which is far more independent of climatic conditions, all non-FID storage projects will need to come on-stream by 2020

Security of Supply: Ukrainian disruption

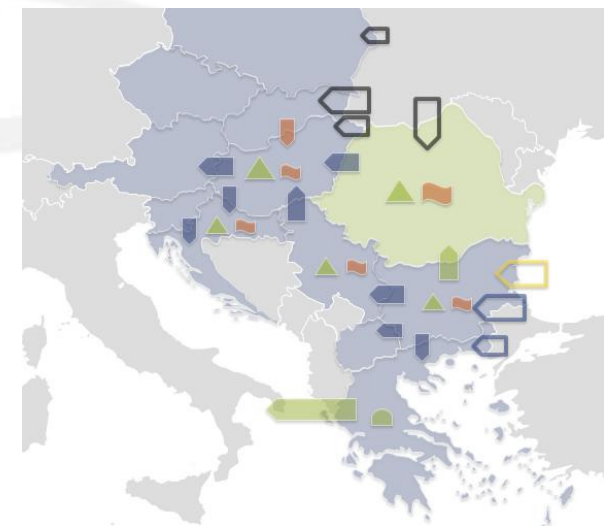
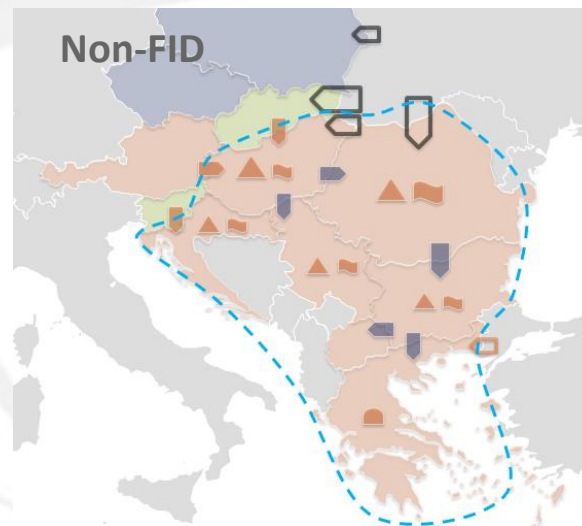
Security of Supply (High Daily Demand)

- 2011: Ukrainian disruption
 - Regional congestion (AT, BG, HR, CZ, FY, GR, HU, RO, RS, SK, SI)
 - Total demand of the region can be covered by 81%
- 2015: Ukrainian disruption
 - Regional congestion (BG, HR, FY, GR, HU, RO, RS)
 - Total demand of the region can be covered only by 70% with FID projects and by 75% with the addition of non-FID projects
- 2020: Ukrainian disruption
 - Regional congestion (BG, HR, FY, GR, HU, RO, RS)
 - Total demand of the region can be covered only by 68% with FID projects; with the addition of non-FID projects, High Daily Demand would be covered completely

Ukrainian Disruption (High Daily Demand)



Remaining Flexibility





Way forward: TYNDP 2013-2022

Way forward

Through TYNDP development process and public consultation ENTSOG has identified improvements to be achieved

- Shift from stakeholders' involvement into stakeholders' engagement through a dedicated process
- Demand scenarios will have to be developed under both a qualitative perspective (e.g. more transparency on underlying assumptions) and a quantitative one (e.g. influence of different power production mixes)

Consistency with other reports and new regulation

- New reports will be available (GRIPs, more national TYNDPs...) requiring both consistency between each other and complementarity (focus on different levels)
- EIP proposals are likely to impact the role and contents of TYNDP, the link is however still unclear

Development process of ENTSOG TYNDP 2013-2022 has started the 29 September 2011 through a public workshop

Way forward

Supply & demand

- Analysis of demand breakdown and different sensibility to temperature...
- Analysis of European gas market as part of a global one
- Impact of renewable intermittence on gas network infrastructures

What could be a better resilience assessment ?

- Longer crisis (15 or 30 days) occurring at different points during winter
- Simultaneous predominance of two supply sources
- Modelling of balancing zones and not only countries
- Sensitivity to yearly and peak demand
- Project clustering analysis

Market feedback is a key element to prioritize such investigations

TYNDP 2013-2022 – General timeline

TYNDP 2013-2022 Process	2011			2012												2013		
External process	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
Stakeholder's engagement process																		
Introductory WS																		
Network modeling tool presentation																		
Infrastructure projet clustering SJWS																		
Demand SJWS																		
Supply SJWS																		
SoS resilience test SJWS																		
Market integration test SJWS																		
Conclusion WS																		
Informal bilateral talks																		
Data collection																		
Infrastructure projects																		
Gas demand																		
Gas supply																		
Methodology definition																		
SoS resilience																		
Market integration resilience																		
Internal process	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
Edition																		
Data treatment																		
Simulations																		
Analysis and edition																		
Approval process	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
ENTSOG approval process																		
Data & methodologies intermediate approval																		
Report final approval																		

Thank You for Your Attention

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