Development of

SCENARIOS

For ENTSOs TYNDPs18

Niels Franck and Stefano Astorri

TF Scenario building

WEBINAR Public Workshop Scenario Building

October 10th 2016

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Question 1

Where we started from

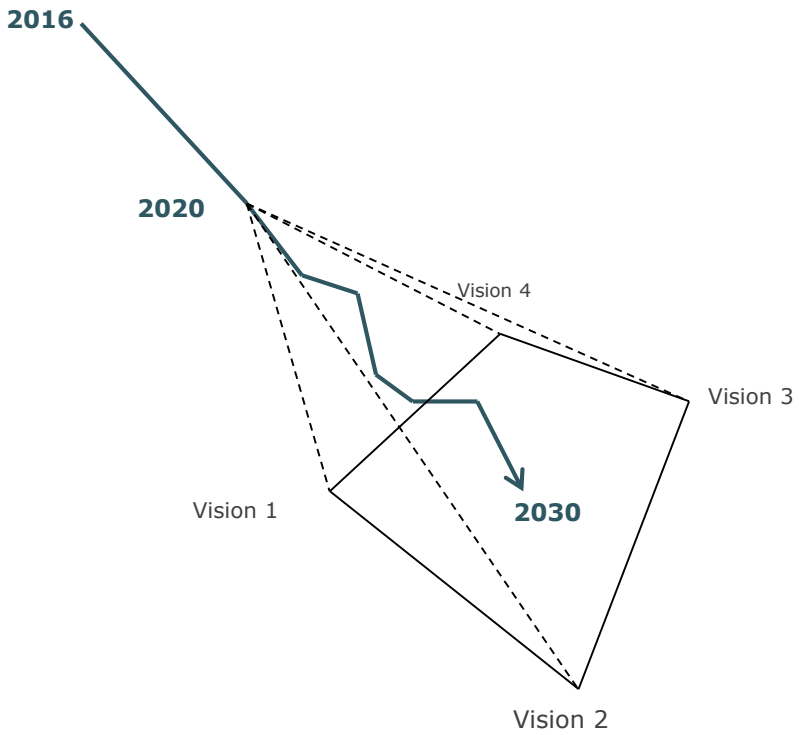
optional

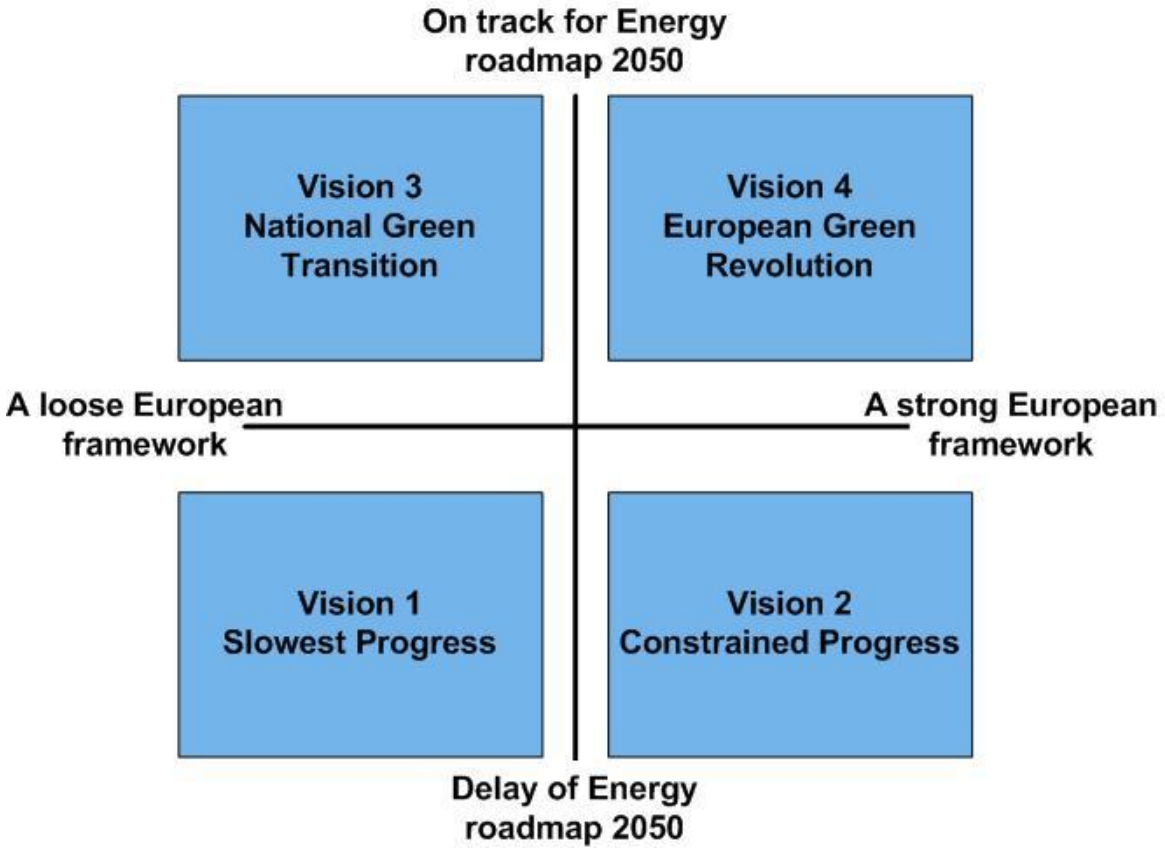
Development of scenarios for ENTSOG and ENTSO-E TYNDPs

Scenarios should be relevant for the assement of development of both gas and electricity infrastructure

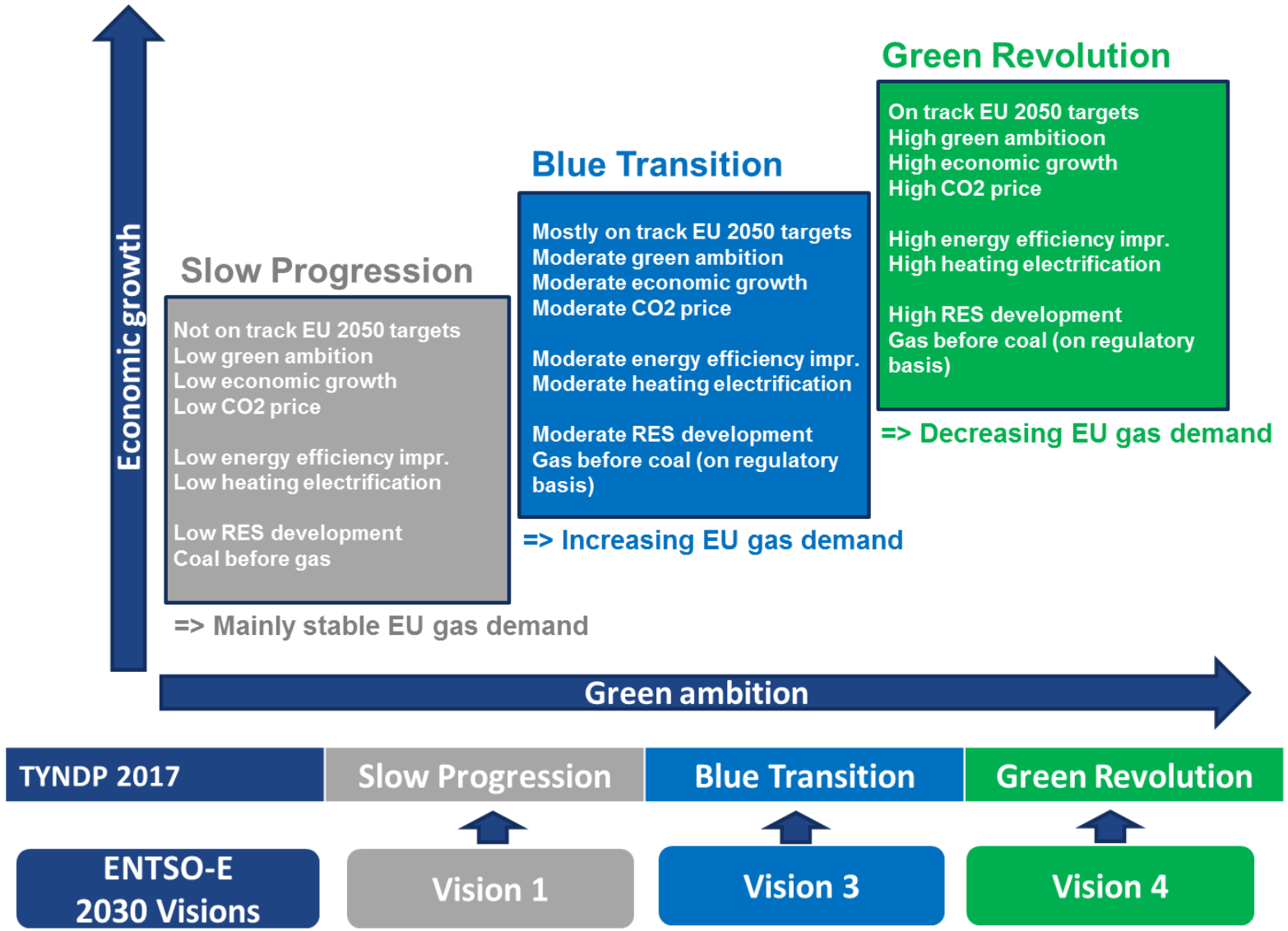
For the coming TYNDPs

ENTSO-E scenarios for TYNDP 2016





ENTSO-G scenarios for 2017



- Scenarios involved stakeholder engagement from January to March 2016
- Data collection involves bottom up process from TSO
- Data is submitted across the entire 2017 to 2037 TYNDP timeline for every scenario
- Process of alignment with ENTSO-E TYNDP 2016

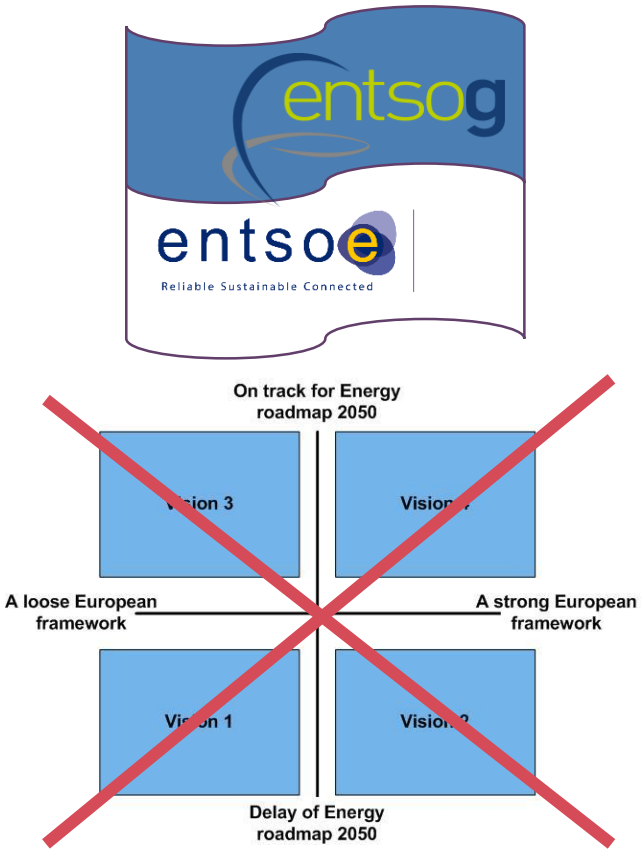
What is new?

Joint process between electricity and gas sector

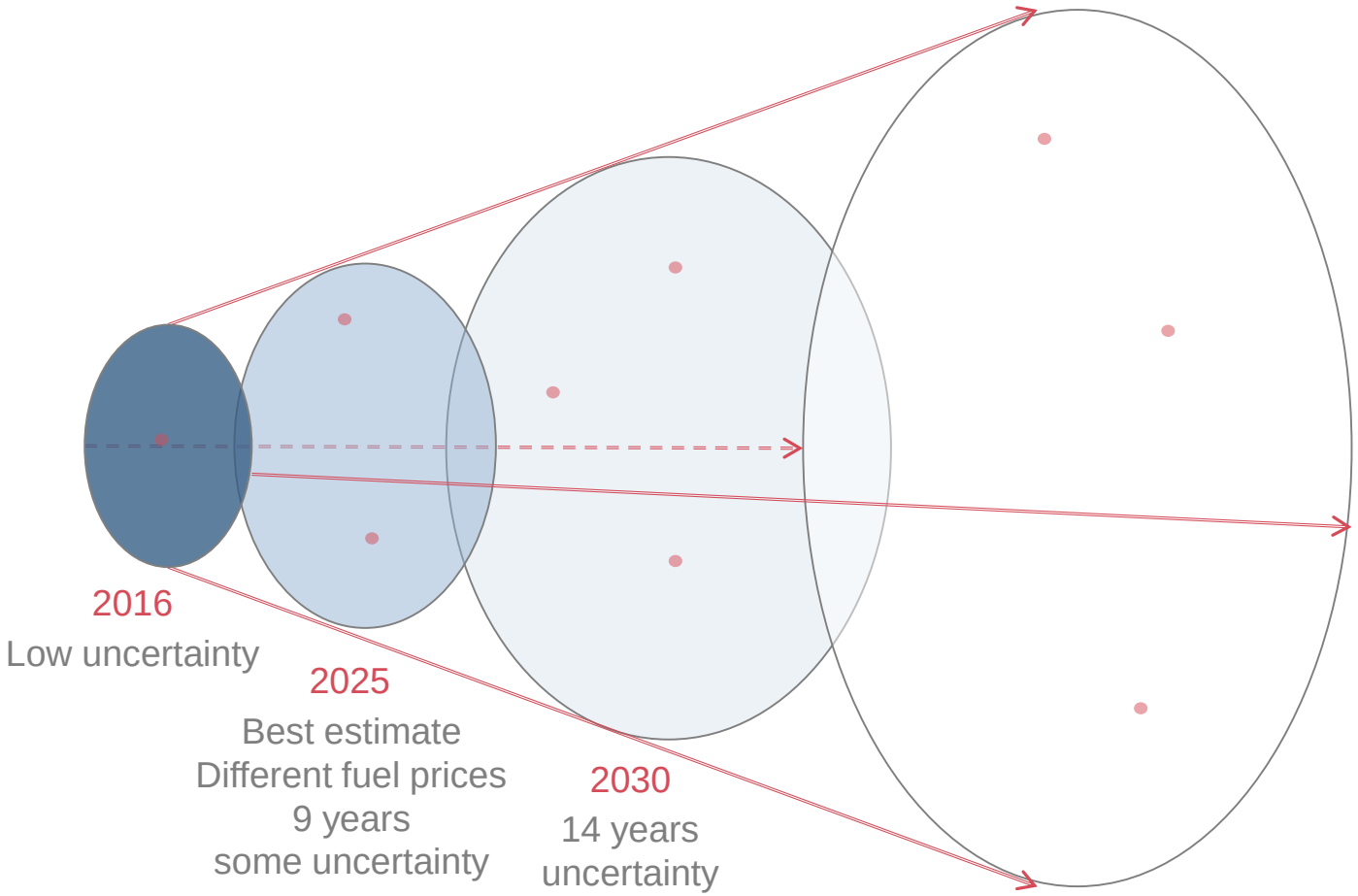
New viewpoint on how to build scenarios

Scenario framework not fixed – possibility to change and effect the scenarios

Try to look farther in the future.



Uncertainty of the future – time horizons



1. Scenario development process until today
2. How we have used stakeholder input
3. The chosen TYNDPs `18 scenarios
4. Additional feedback directly in the webinar
5. The next steps in the scenario development

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Development of scenarios for ENTSOG and ENTSO-E TYNDP

Scenarios should be relevant for the assement of development of both gas and electricity infrastructure

For the coming TYNDPs

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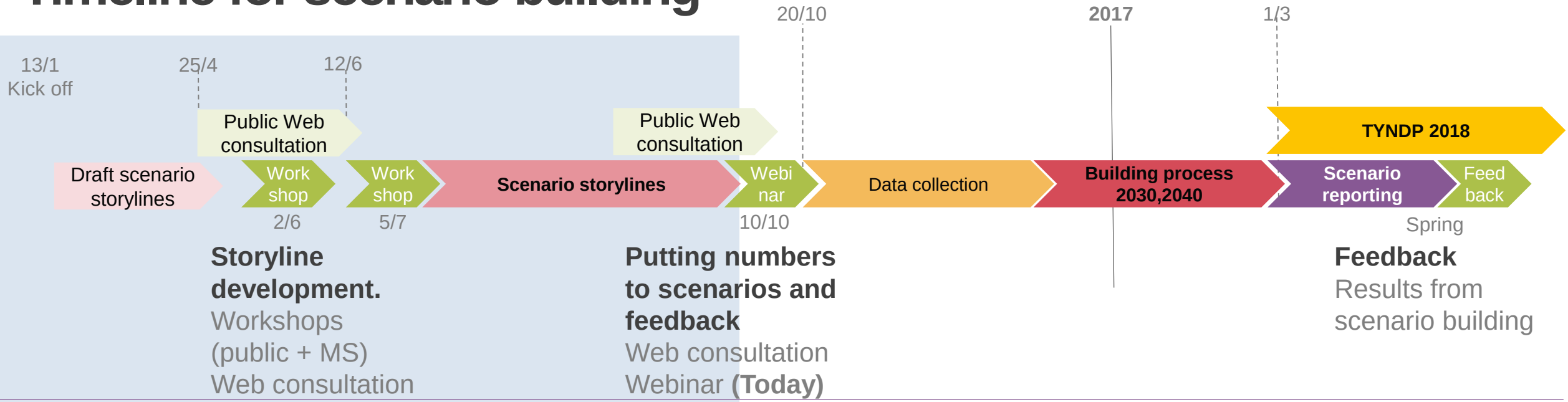
Timeline for scenario building



Storyline development.

Develop new framework

Cooperation between ENTSOs

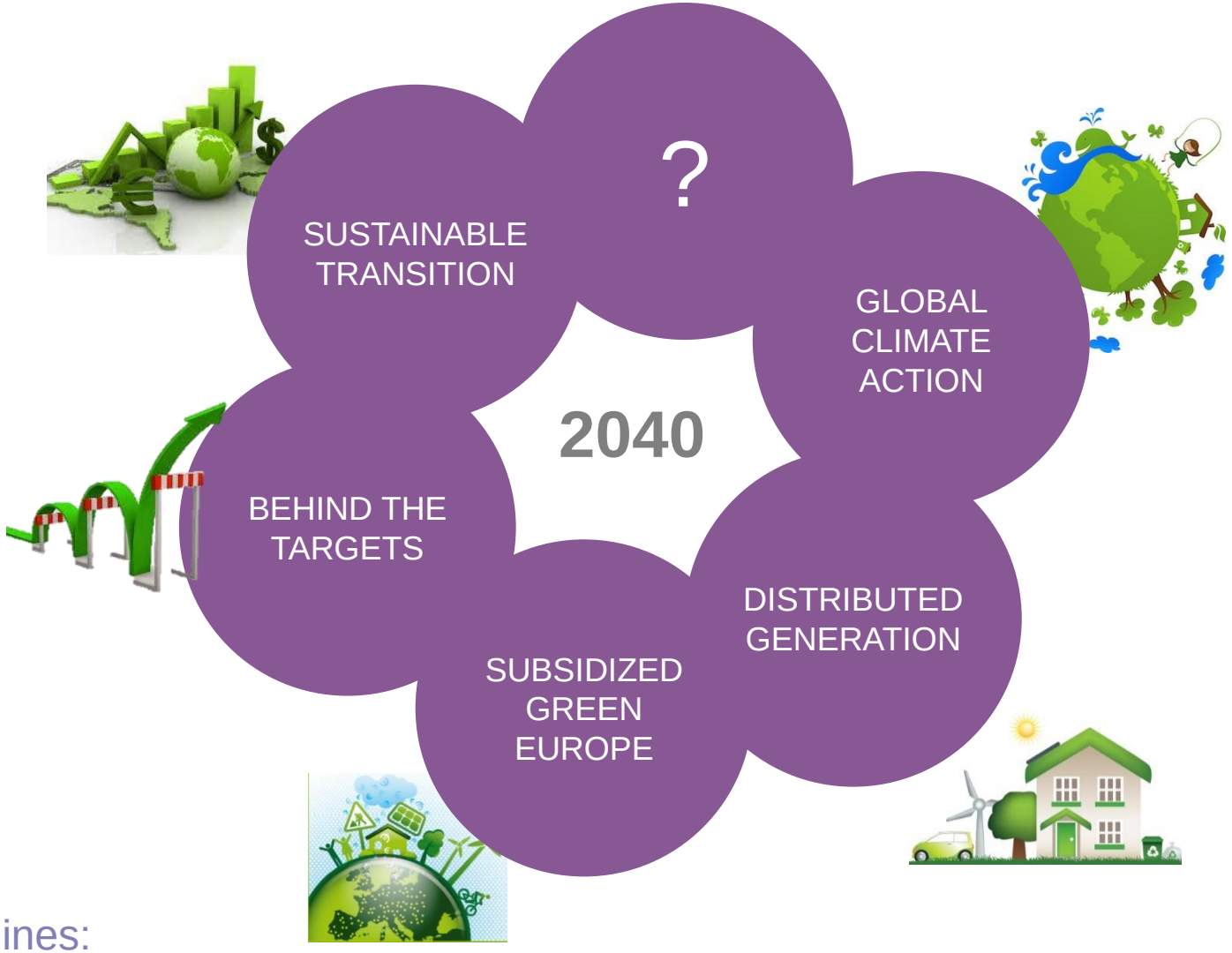
Improvements to the whole process

How to develop scenarios for TYNDPs `18

Preparing for and working with input from consultations

Discussing and writing storylines

2040 Draft storylines – the beginning of the scenarios



The original draft storylines:
https://consultations.entsoe.eu/system-development/joint-electricity-and-gas-consultation-build-the-e/user_uploads/160509_energy-scenarios-2040.pdf

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Scenario building: an interactive process with stakeholders

12 May – 12 June → 2nd June → 5th July

12 May – 12 June	2nd June	5th July
Web-based consultation for both gas and electricity stakeholders	**Interactive public workshop** for both gas and electricity stakeholders	**Interactive public workshop** only for MS and NRAs

- 32 stakeholders answering the consultation (providing 67 alternative but similar scenarios)
- More than **100** people attending to the interactive workshops

- Participants have been asked to:
  - provide glimpses on the relevant criteria to be taken into account in the scenario definition process
  - comment and express their preference on three scenario storylines among the five ones proposed by the ENTSOs
  - propose their own scenarios storylines

General feedback from stakeholder consultation & workshops

- **At least 2025, 2030 and 2040 should be considered for TYNDP 2018 time horizon**
- **Preference for connected years among the same storylines**
- **Each year should consider at least 2 scenarios**
- **2025 and 2030 both bottom-up and top-down while 2040 only top-down**
- **All scenarios has be on track with 2030 targets**
- **Uncertainty on the gas vs coal merit order needs to be taken into account**
- **Other factors affecting uncertainty (e.g. economic growth, prices, etc.) have to be reflecting in the scenario storylines**

More specific feedback:

- shale gas not credible
- nuclear seen as national issue or decreasing
- CCS not significant for the considered time horizon. Except – perhaps – for industry.

Outcome of the workshops on scenario storylines

What did the stakeholders say
2 June 2016 workshop

1. Global Climate Action - 19
2. Sustainable transition - 14
3. Distributed Generation -14
4. Subsidised green Europe - 6
5. Behind targets - 4

What did the MSs&NRAs say
5 July 2016 workshop

1. Sustainable transition - 17
2. Distributed generation - 17
3. Behind targets - 12
4. Subsidised green Europe - 8
5. Global Climate Action - 5

- No new relevant scenarios proposed by stakeholders

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Scenario Storylines after stakeholder consultation

SUSTAINABLE TRANSITION

?

GLOBAL CLIMATE ACTION

2040

2030

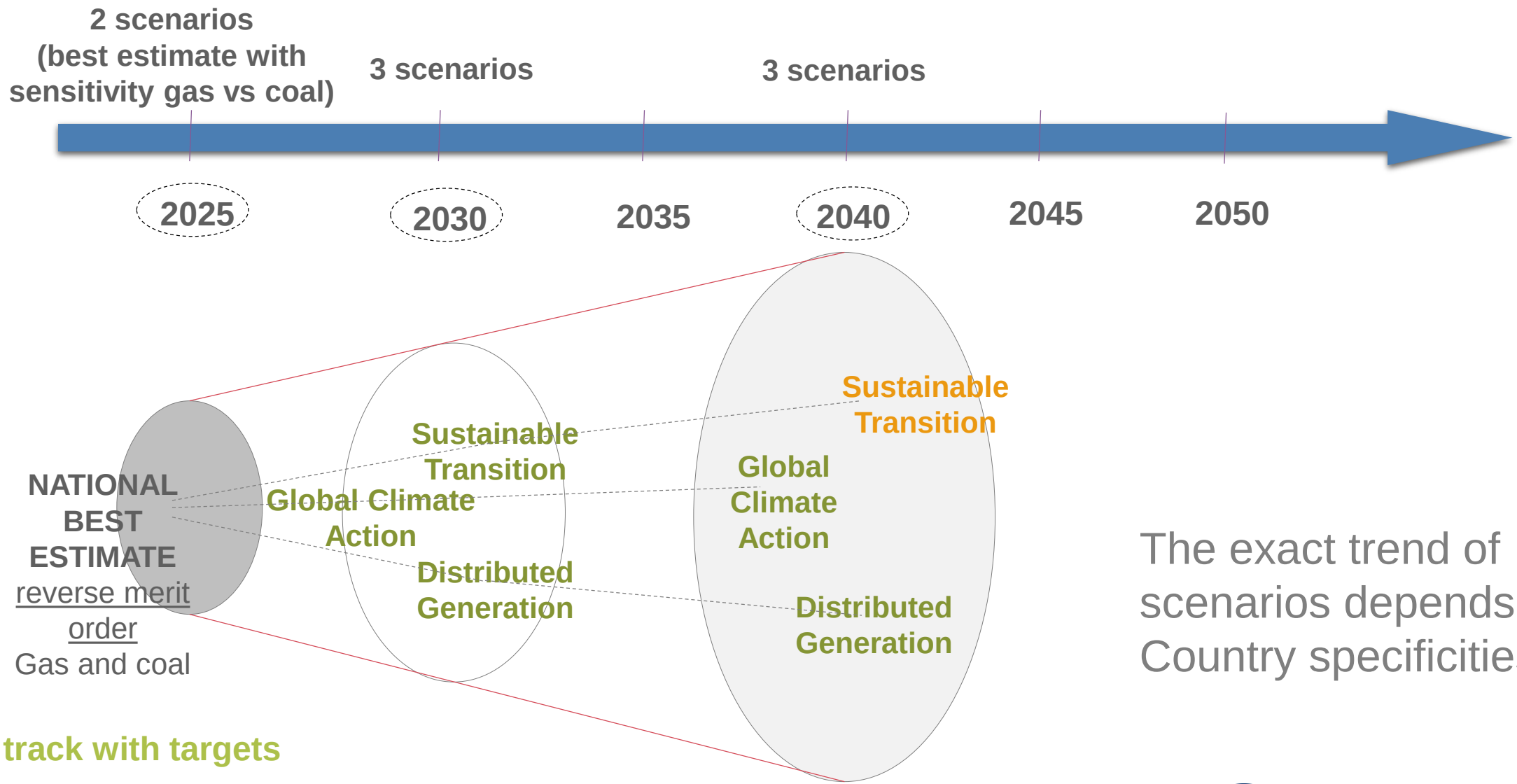
BEHIND THE TARGETS

SUBSIDIZED GREEN EUROPE

DISTRIBUTED GENERATION

The selected three storylines represent reasonable extremes for the grid assessment

Selected scenario framework



The exact trend of scenarios depends on Country specificities

On track with targets

Sligthly behind towards 2050 targets

Global Climate Action

- High economic growth
- Beyond 2030 targets and on track with 2050s
- Global ETS system. CO2 prices makes gas cheaper than coal for power
- High growth of RES
- High efficiency improvements
- Nuclear depends on national policies
- Gas significant in the shipping and heavy goods transport
- Electrification occurs in residential and commercial transport
- Reduction in gas demand for heating. Growth in electric and hybrid heat pump solutions.
- Power to gas commercially viable technology
- Biomethane development

Overall gas demand decreasing in R&C, stable in industry. Gas increasing in transport, especially in long-haul and shipping.
Increasing electricity consumption due to usage in transport and heating

Distributed Generation

- Prosumer lead climate action
- Slightly beyond 2030 targets and on track with 2050s
- High/very high growth of RES. Especially solar.
- Innovation on small-scale generation and storage
- Supports for peaking capacity
- Nuclear decreasing at European level
- Strong development of electrification of transport sector
- Hybrid heat pumps in new dwellings & existing dwellings giving consumer choice of Electric or Gas
- Power to gas commercially viable technology
- Biomethane development

Overall gas demand decreasing but important for peak situations. Low growth of gas consumption in transport. Electricity demand is increasing due to usage in transport and heating.

https://consultations.entsoe.eu/system-development/tyndp-2018-scenarios-figures/user_uploads/160919_tyndp-2018_-proposed-scenarios.pdf-1

Sustainable Transition

- Moderate economic growth
- In line with 2030 targets but behind 2050s
- National focus on climate change driven by ETS and national subsidies
- Moderate RES deployment
- Moderate efficiency improvements
- Nuclear decreasing at European level
- Coal out of merit order due to CO2 prices and governmental policies
- Gas significant in the shipping and heavy good transport sectors
- Slow development of electrification in residential and commercial transport
- Continued use of natural gas for heating. Moderate growth in electric heat pumps.
- Biomethane development

Overall gas demand decreasing in R&C, stable in industry. Gas consumption increasing in transport. Increasing in power generation. Electricity demand stable.

https://consultations.entsoe.eu/system-development/tyndp-2018-scenarios-figures/user_uploads/160919_tyndp-2018_-proposed-scenarios.pdf-1

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Questions

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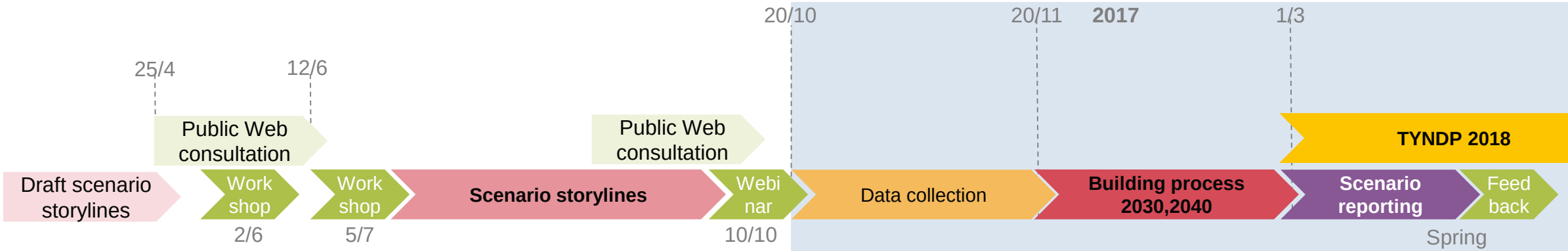
Process ahead



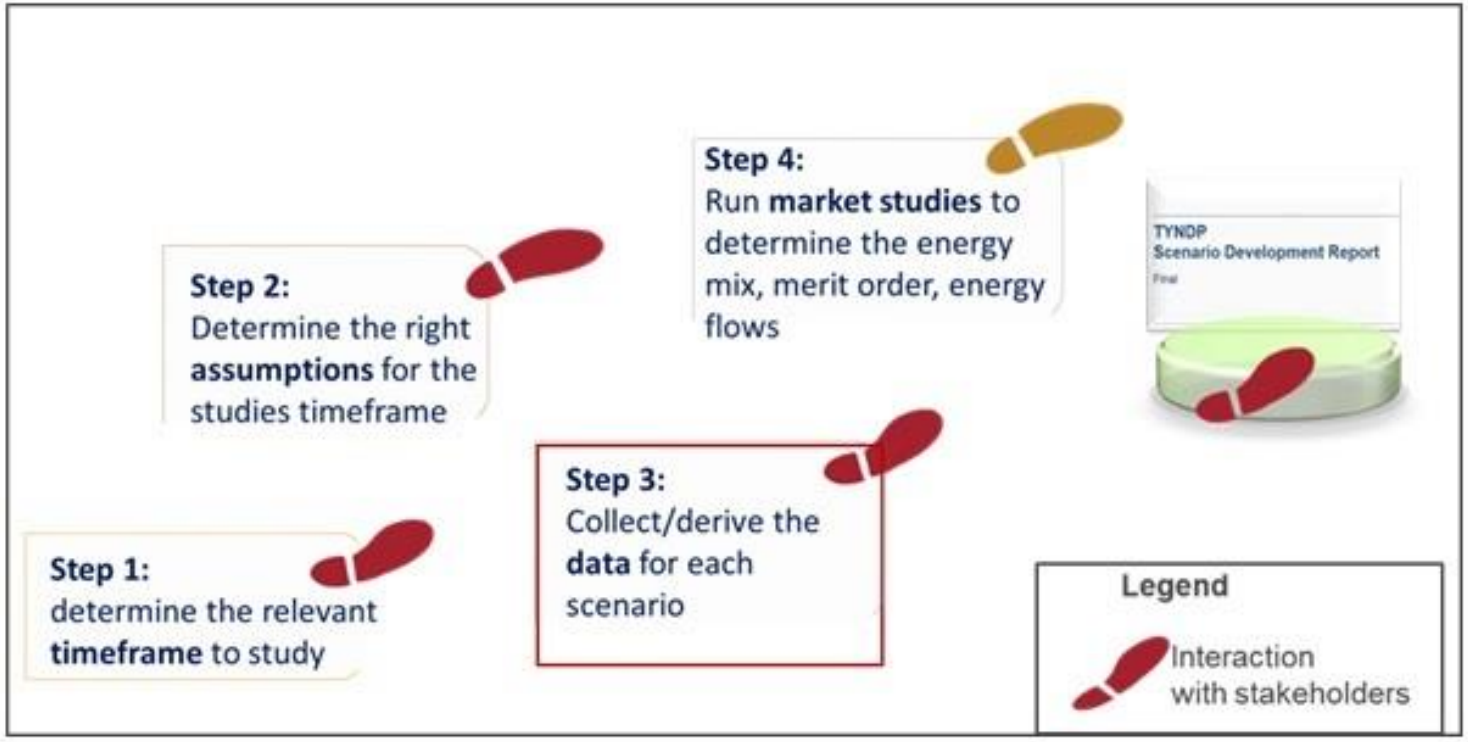
Storyline development.
Workshops (public + MS)
Web consultation

Putting numbers to scenarios and feedback
Web consultation
Webinar **(Today)**

Feedback
Results from scenario building

Building scenarios
Collect data from TSO's (2020, 2025, 2030)
Coordination between ENTSOs
Construction of top-down scenario models 2030 and 2040
Test and implement models
Write scenario report – **give feedback to stakeholders**

Questions – additional feedback is still possible



Thank you for your attention

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back-up

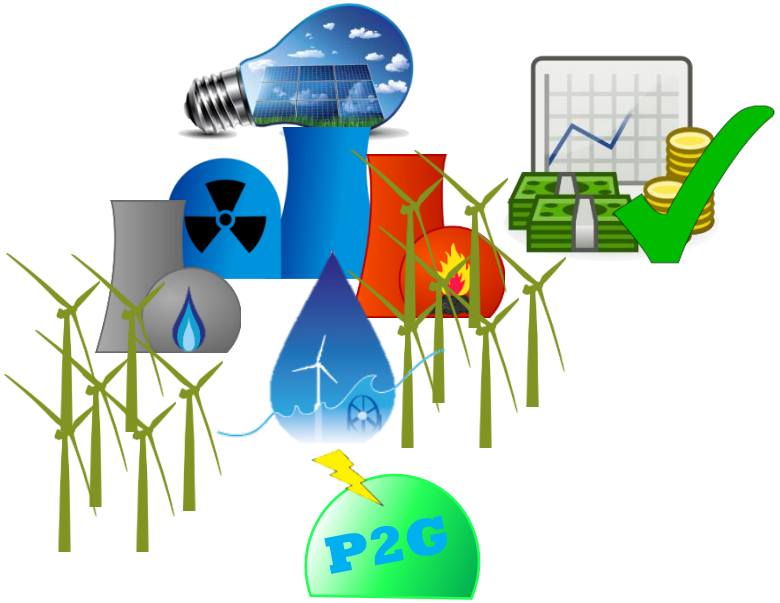
Global Climate Action

IN TRACK WITH 2050 TARGETS

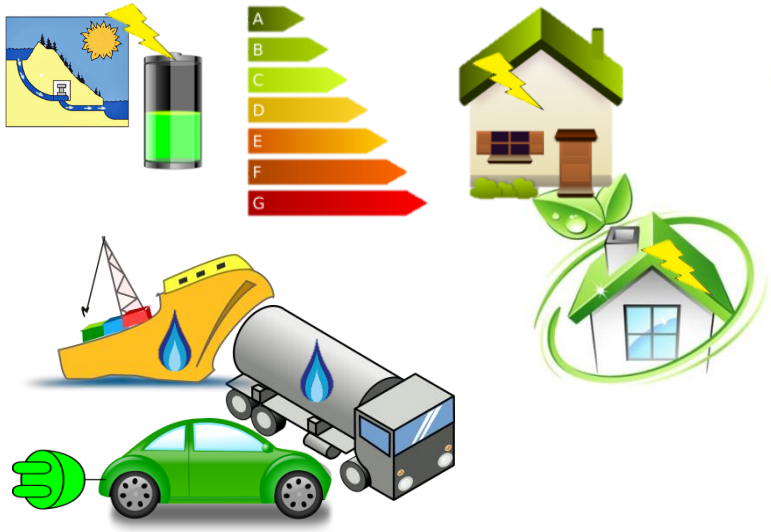
- Global emissions trading scheme
- Efficient use of renewable resources
- Smart cities and demand response very active
- P2G storage commercially available
- Gas significant in the shipping and heavy good transport sectors
- Electrification occurs in residential and commercial transport
- Gas and Electric are on a par for the residential heating sector. Hybrid heat pumps provide gas peaking capacity to electric heating

Subsidized Green Europe

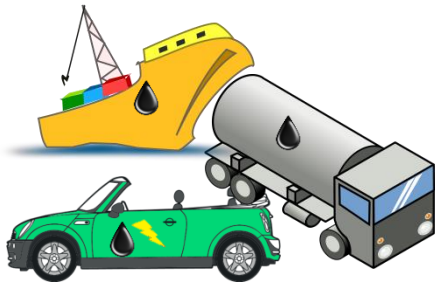
IN TRACK WITH 2050 TARGETS



- Support Mechanisms available for renewable technologies
- Inefficient use of renewable resources
- Supports for peaking capacity required
- P2G storage commercially available
- Gas significant in the shipping and heavy good transport sectors
- Electrification occurs in residential and commercial transport
- High energy efficiency in homes support installation of all-electric heat pumps in new and existing dwellings



Behind the Targets

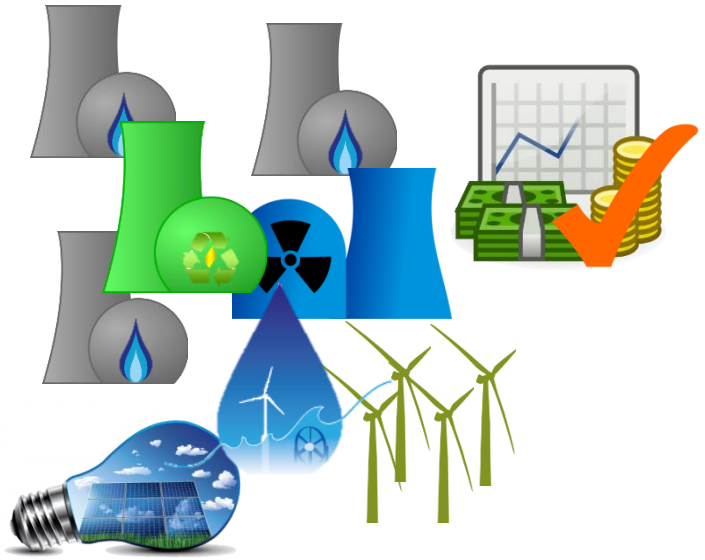


BEHIND 2050 TARGET

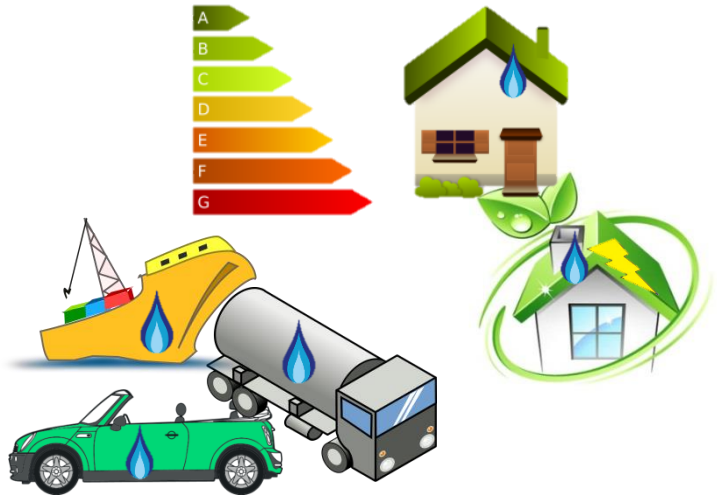
- Low global ambition for climate change.
- Low economic growth.
- Low ETS price and low subsidies reduces
- Low potential for growth of renewable technologies.
- Coal and Lignite are significant in the electricity sector, supports for peaking capacity required.
- Transport sector remains reliant on oil and hybrid technologies.
- Gas heating is the dominant technology for new and existing dwellings.

Sustainable Transition

SLIGHTLY BEHIND 2050 TARGETS



- National Focus on Climate Change, driven by ETS and National Subsidies
- Inefficient use of renewable resources
- Market signals support peaking capacity requirements
- Gas significant in the shipping and heavy good transport sectors
- Electrification occurs in residential and commercial transport
- Hybrid heat pumps in new dwellings, existing dwellings use Gas Heating



Distributed Generation

IN TRACK WITH 2050 TARGETS

- ‘Prosumer’ lead climate action, helped by strong EU Policies and an efficient ETS
- Efficient use of renewable resources at an EU Level
- Supports for peaking capacity required
- Gas significant in the shipping and heavy good transport sectors
- Electrification occurs in residential and commercial transport
- Hybrid heat pumps in new dwellings & existing dwellings giving consumer choice of Electric or Gas.
- District heating is possible