

TYNDP 2022



Draft Storyline Consultation Workshop



Web Conference – 2 December 2020



What would we like to achieve in this webinar?

1. Outline the scenario building process and where we are in this process
2. Explain the scenario framework we propose for TYNDP 2022
3. Present the scenario drivers we like to explore and how we have considered these in contrasted storylines
4. Answer your questions
5. Achieve common understanding and receive feedback for the finalisation of the storylines



Your Chance to Get Involved

What to do:

1. Go to <https://www.sli.do>
2. Enter the event code "TYNDP"
3. Enter your name
4. Start asking questions

We will review questions throughout the meeting and answer all remaining questions afterwards.

The screenshot shows the Slido website interface. At the top, there is a navigation bar with the Slido logo on the left and links for Product, Solutions, Pricing, Resources, Enterprise, We are hiring! (with a notification badge), and Log In on the right. A green 'Sign Up' button is positioned in the top right corner. Below the navigation bar, a dark blue banner features the text 'Introducing Slido for Teams: Engage your colleagues without leaving your Teams meeting.' followed by a 'Learn more' link. The main content area is split into two columns. The left column has a white background and contains the text 'Joining as a participant?' in green, 'No account needed.' in black, and a white input field with a green arrow button containing the text '# Enter event code'. The right column has a blurred background image of a laptop displaying a Slido poll. Overlaid on this image is the text 'The ultimate Q&A and polling platform for virtual trainings' in white, a green 'Try it free' button, and a 'Schedule a demo' link. A downward arrow is visible at the bottom of this section.

Agenda for today

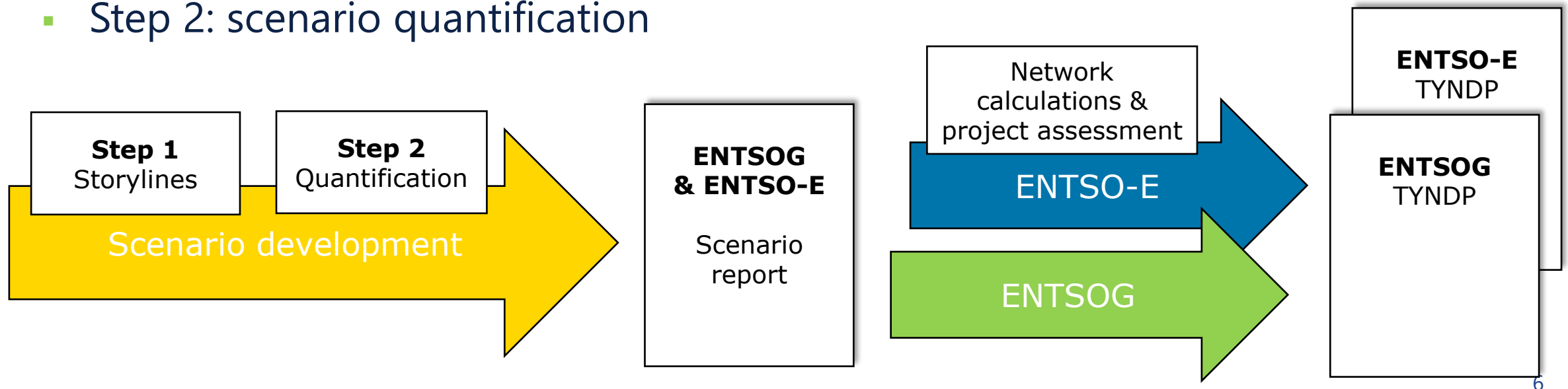
Agenda Point	Timeslot	Presenters
Welcome	10:00 – 10:10	Gideon Saunders, Lead Stakeholder Engagement
Introduction and Scenario Framework	10:10 – 10:30	Pieter Boersma, Convenor Joint Scenario Building
Scenario Drivers and Descriptions	10:30 – 11:30	Cihan Sönmez, Scenario Manager
Short coffee break	11:30 – 11:45	
Quantitative Ranges	11:45 – 12:15	Guillermo Areosa-Bäumli, Lead Supply Team
Next Steps	12:15 – 12:30	Olivier Lebois, Convenor Joint Scenario Building
Stakeholder Engagement	12:30 – 12:55	Gideon Saunders, Lead Stakeholder Engagement
Closing Remarks	12:55 – 13:00	Gideon Saunders, Lead Stakeholder Engagement



Introduction and Scenario Framework

ENTSOE and ENTSOG TYNDP perform network assessment based on scenarios

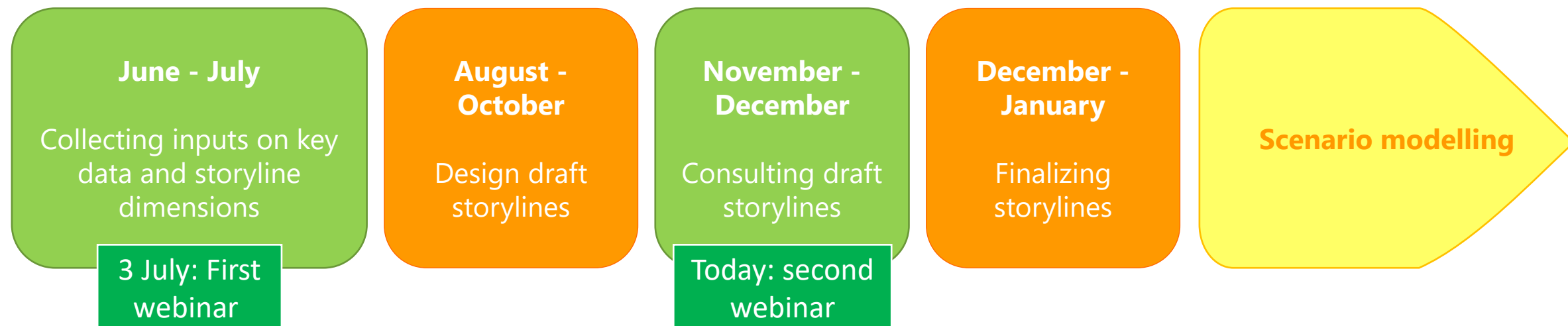
- By regulation (EU) 347/2013, ENTSO-E and ENTSOG are required to develop a Ten-Year Network development plan (TYNDP) on a bi-annual basis.
- Scenario development for TYNDP in two steps:
 - Step 1: Qualitative scenario storylines descriptions
 - Step 2: scenario quantification



Timeline so far and the purpose of today

- 3 July workshop marked the start of the TYNDP 2022 scenario development cycle.
 - Discussion of purpose of the scenarios and on which drivers to explore
 - ENTSOG and ENTSO-E received feedback on their initial ideas (Q&A available online)
- Continuous bilateral engagement with key stakeholders
- Draft storylines for TYNDP 2022 published on 3 November 2020.

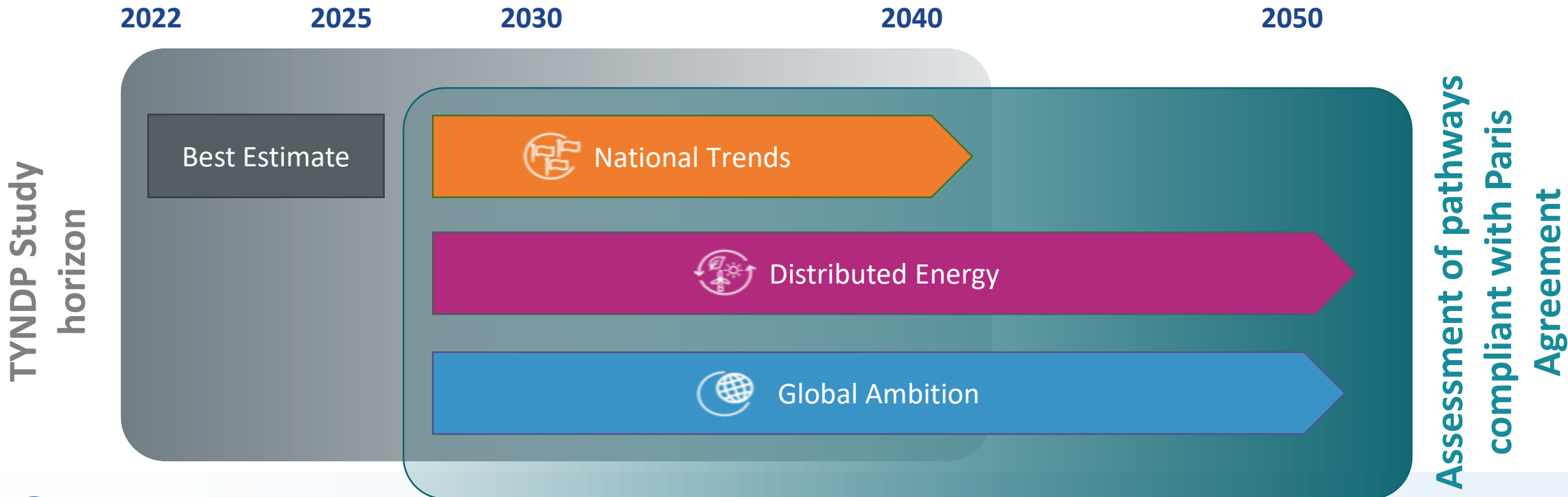
Today we will present the proposed storylines for TYNDP 2022 and welcome your feedback.



Purpose of the scenarios depend on the time horizon

TYNDP 2020 process has shown that scenarios have to combine different expectations along their time horizon trying to tackle the following challenge:

"Combining long term ambition and meaningful short term planning"



The proposed scenario development framework

- The joint ENTSO-E/ENTSOG Scenario Report will include:
 - 2 full-energy scenarios compliant with the Green Deal and Paris Agreement (1,5°C)
 - 1 scenario based on national policies and consistent between gas and electricity
- Creating more than 3 quantified storylines will sacrifice ambitious modelling enhancements, reduced output detail or quality and/or impact on the timely delivery for TYNDP and PCI processes
- The stakeholder engagement process will focus on the 2 full-energy scenario

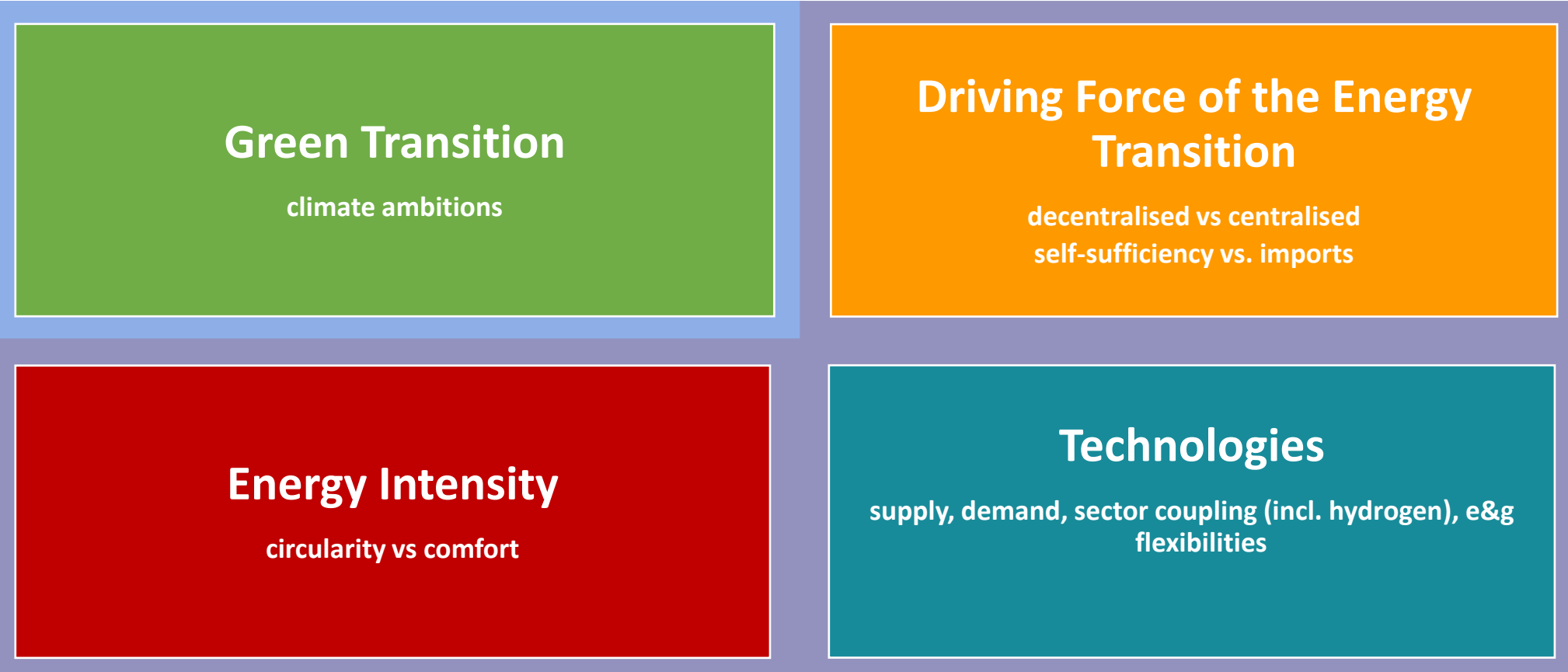




Scenario Drivers and Storyline Summaries

Scenario drivers

Same ambition



Ensure Contrast

Scenario Drivers

Green Transition

Scenarios must be compliant with the Targets of the Paris Agreement!

But what does that mean?

1.5°C or well-below 2°C temperature increase by 2100?

Consideration of a carbon budget?

EU's share of the carbon budget based on population or equity?

Possible overshoot of the carbon budget and compensation by net negative emissions?

How to consider the EU Green Deal and various strategies?

At least 55% GHG emissions reduction by 2030 or more?

Climate neutrality by 2050?

Scenario Drivers

Driving Force of the Energy Transition

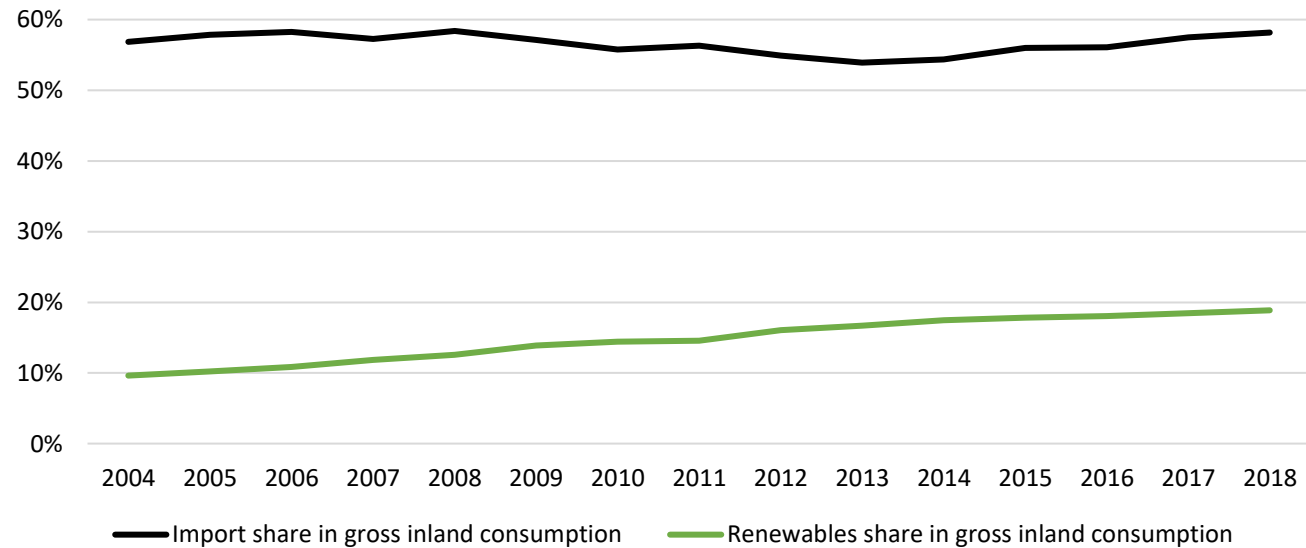
Last 15 years:

- Renewables take up but still represent less than 20% of gross inland consumption
- Imports keep playing an important role in the European energy system

Next 30 years:

- Initiative: What will be the share of renewables?
- Initiative: How will prosumer impact the build-out of renewables?
- Autonomy and Global Trade:
 - Is there still a role for fossil fuels?
 - Will the EU import its energy, and if so, which carrier will it be?

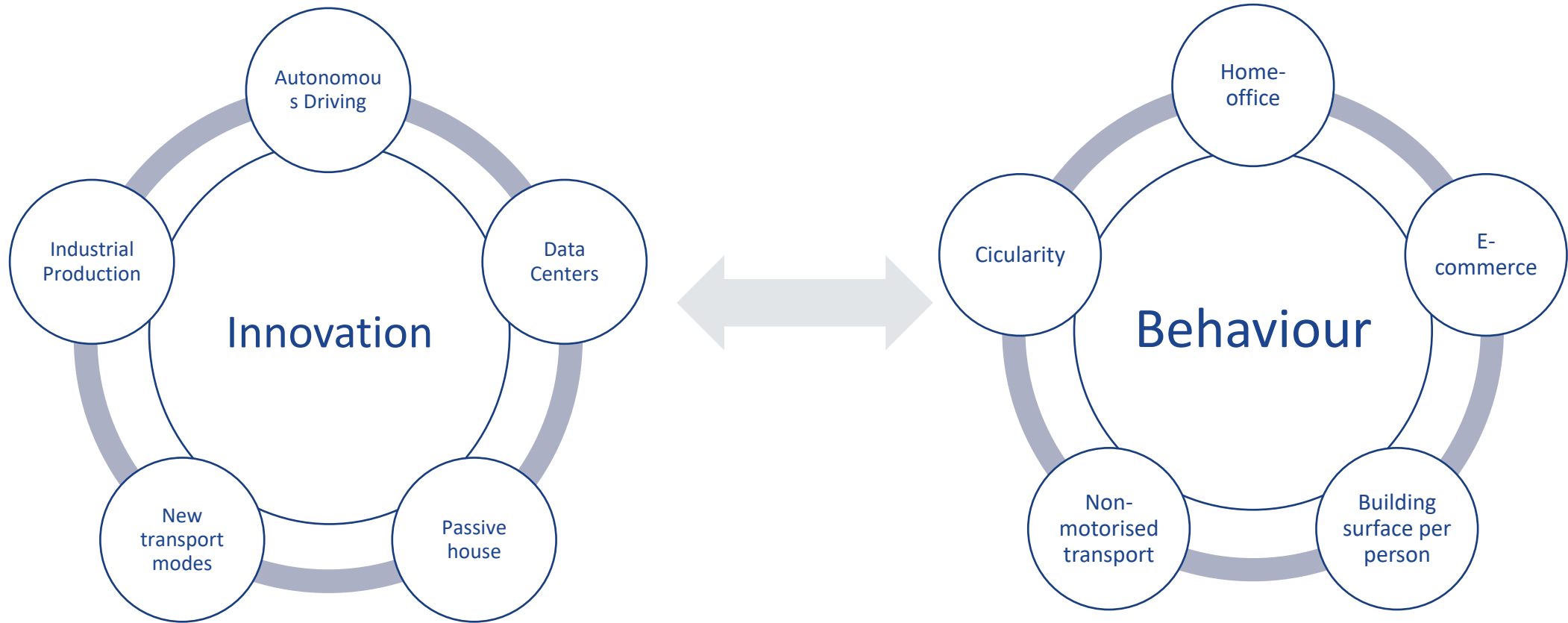
Imports and Renewables as part of (De)Centralisation in EU27



Scenario Drivers

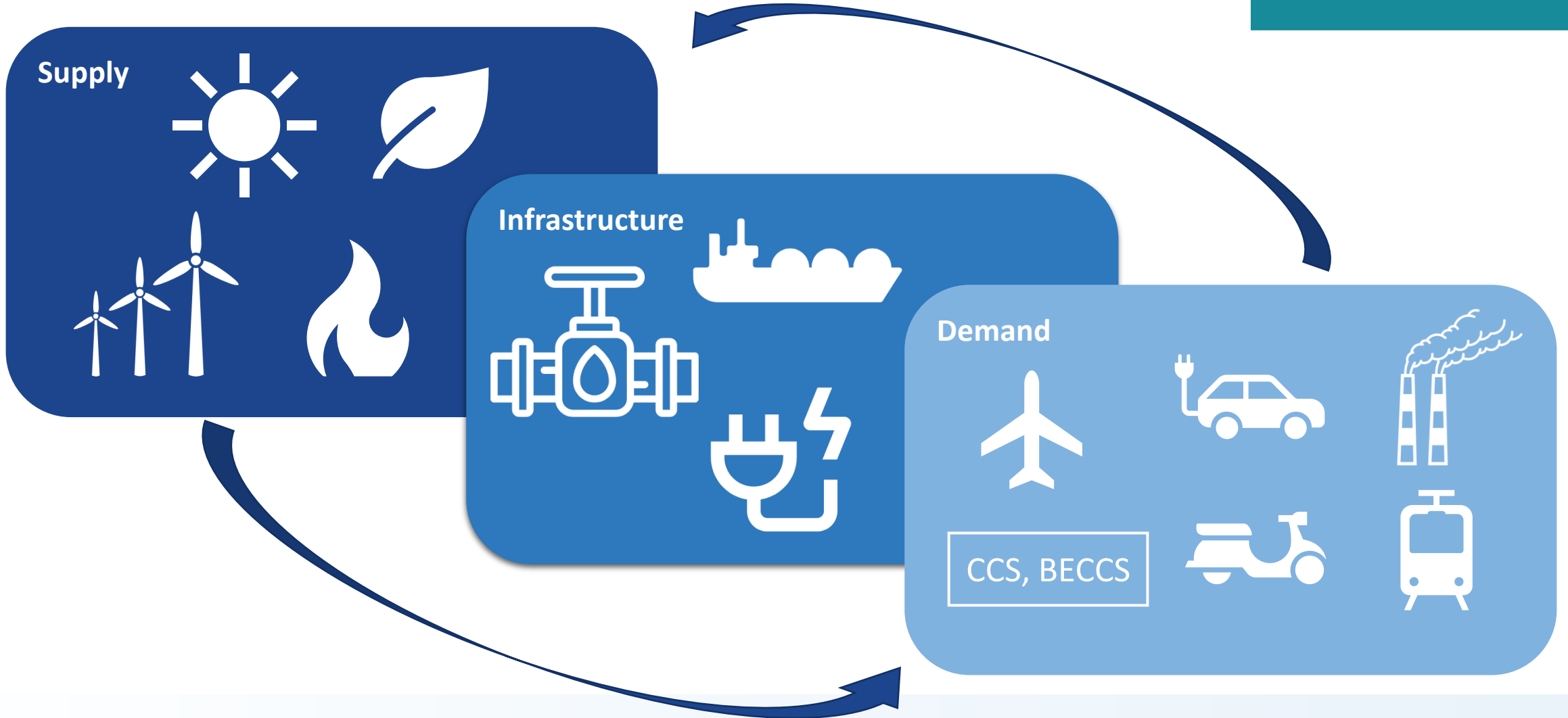
Energy Intensity

What is the impact of innovation and consumer behaviour on energy systems?

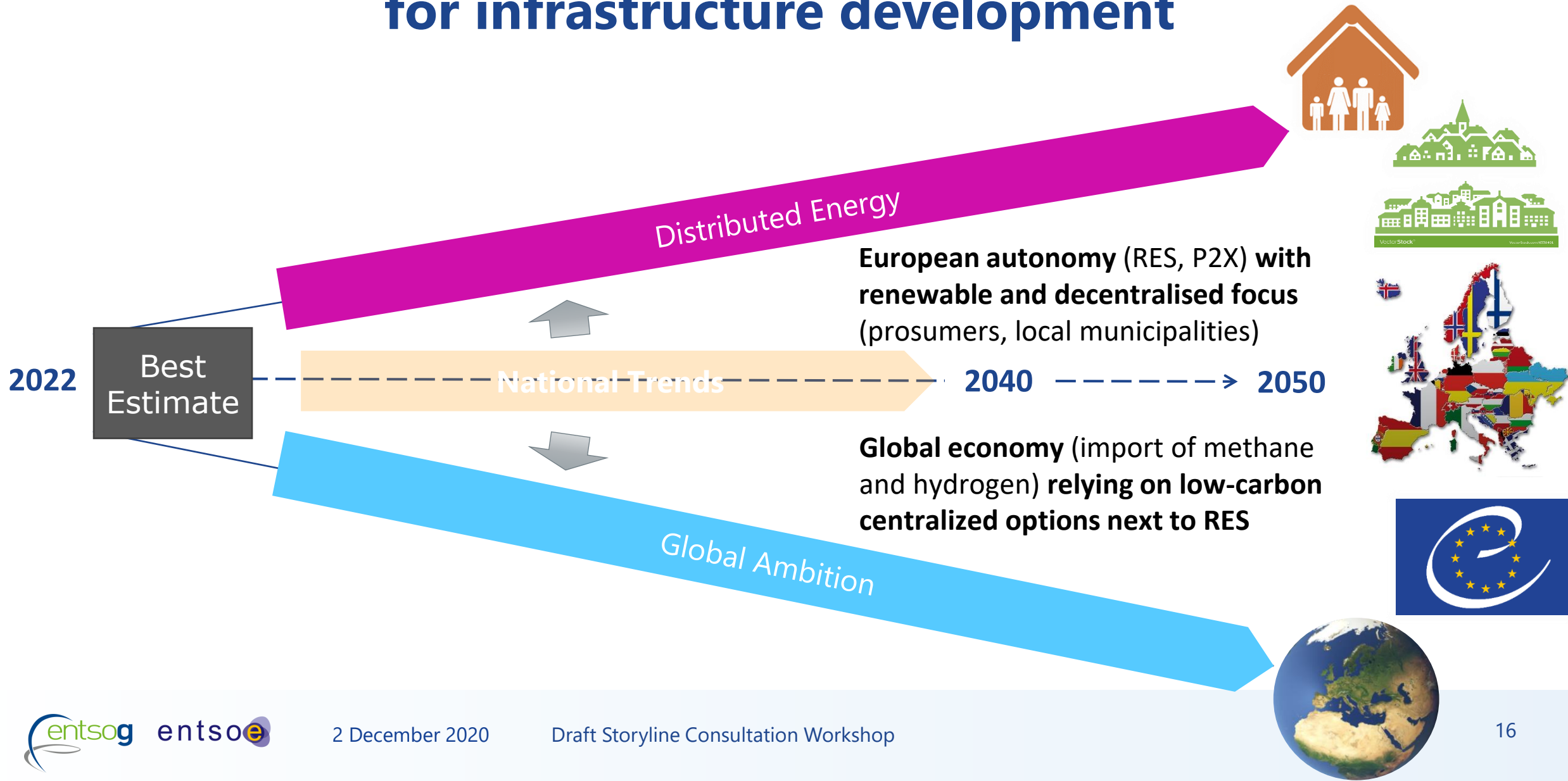


Scenario Drivers

Technologies



Scenarios aim to explore the different pathways relevant for infrastructure development



Draft storylines for Global Ambition and Distributed Energy

	Distributed Energy	Global Ambition
	European autonomy with renewable and decentralised focus	Global economy with centralised low carbon and RES options
Green Transition	Compliant with the 1.5°C target of the Paris Agreement At least -55% reduction in 2030, climate neutral in 2050	
Driving force of the energy transition	Transition initiated on local/national level (prosumers)	Transition initiated on a European/international level
	Aims for EU energy autonomy through maximisation of RES and smart sector integration (P2G/L)	High EU RES development supplemented with low carbon energy and imports
Energy intensity	Reduced energy demand through circularity and better energy consumption behaviour	Priority is given to decarbonisation of energy supply. Increased economic activity offsets some of the energy savings.
	Digitalisation driven by prosumer and variable RES management	Digitalisation and automation reinforce competitiveness of EU business and industry, leading to increase export of goods.
Technologies	Focus of decentralised technologies (PV, batteries, etc) and smart charging	Focus on large scale technologies (offshore wind, large storage)
	Focus on electric heat pumps and district heating	Focus on hybrid heating technology
	Higher share of EV, with e-liquids and biofuels supplementing for heavy transport	Wide range of technologies across mobility sectors (electricity, hydrogen and biofuels)
	Minimal CCS and nuclear	Integration of nuclear and CCS

¹⁷ This figure stems from the EC proposal for the Green Deal. If this target would change as voted by the European Parliament the scenario assumptions will be adapted accordingly.

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Quantitative ranges

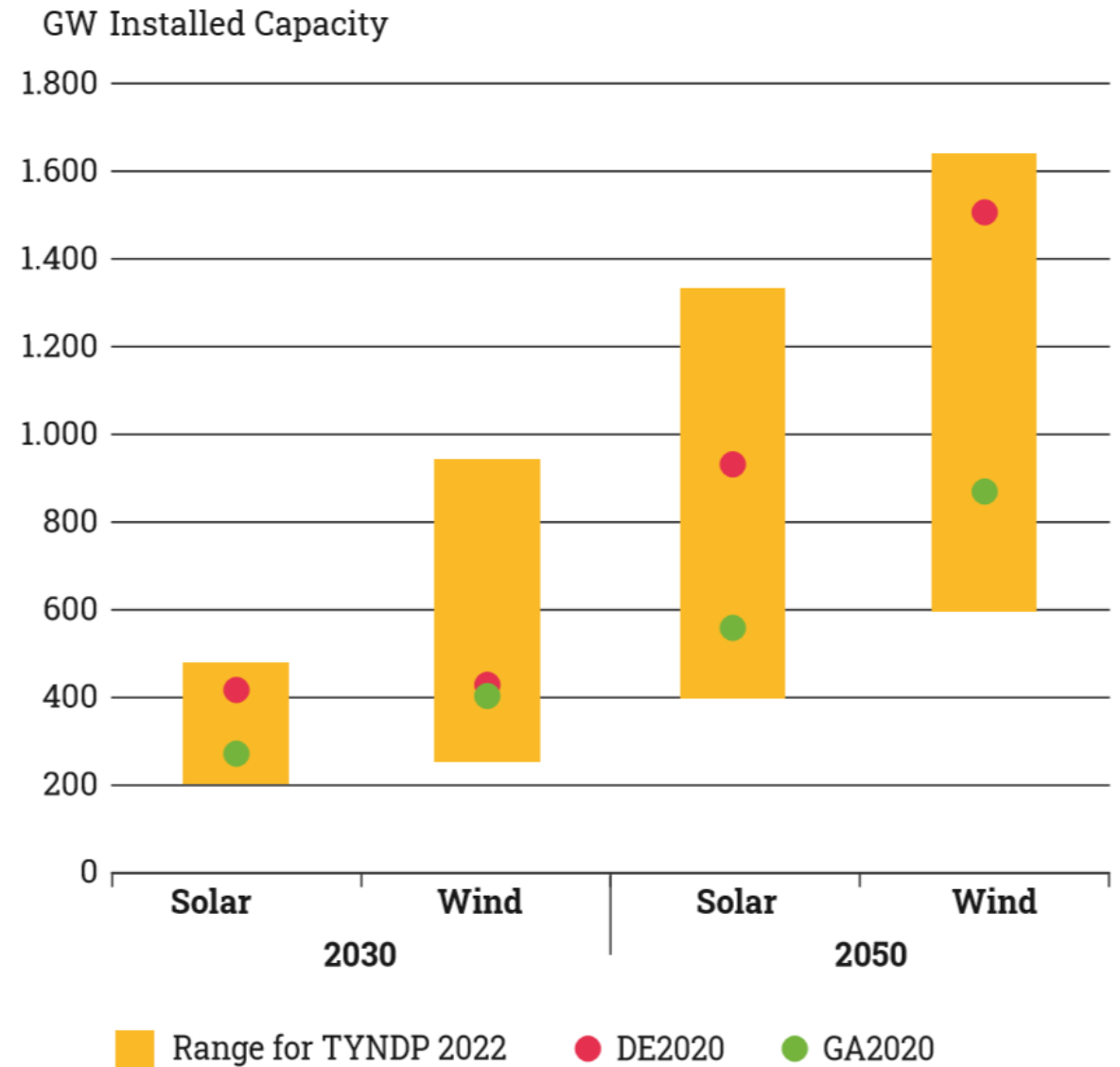
Quantitative ranges: the spectrum for solar and wind deployment

What flows into the investment decision?

- Annualized cost assumptions
- Technology and country specific climate data
- Storyline specific assumptions

Scenario DE: solar PV and onshore wind with highest development. Significant flexibility at network and demand level

Scenario GA: Offshore wind and large scale solar farms will be dominant. Higher imports result in lower deployment of wind and solar.

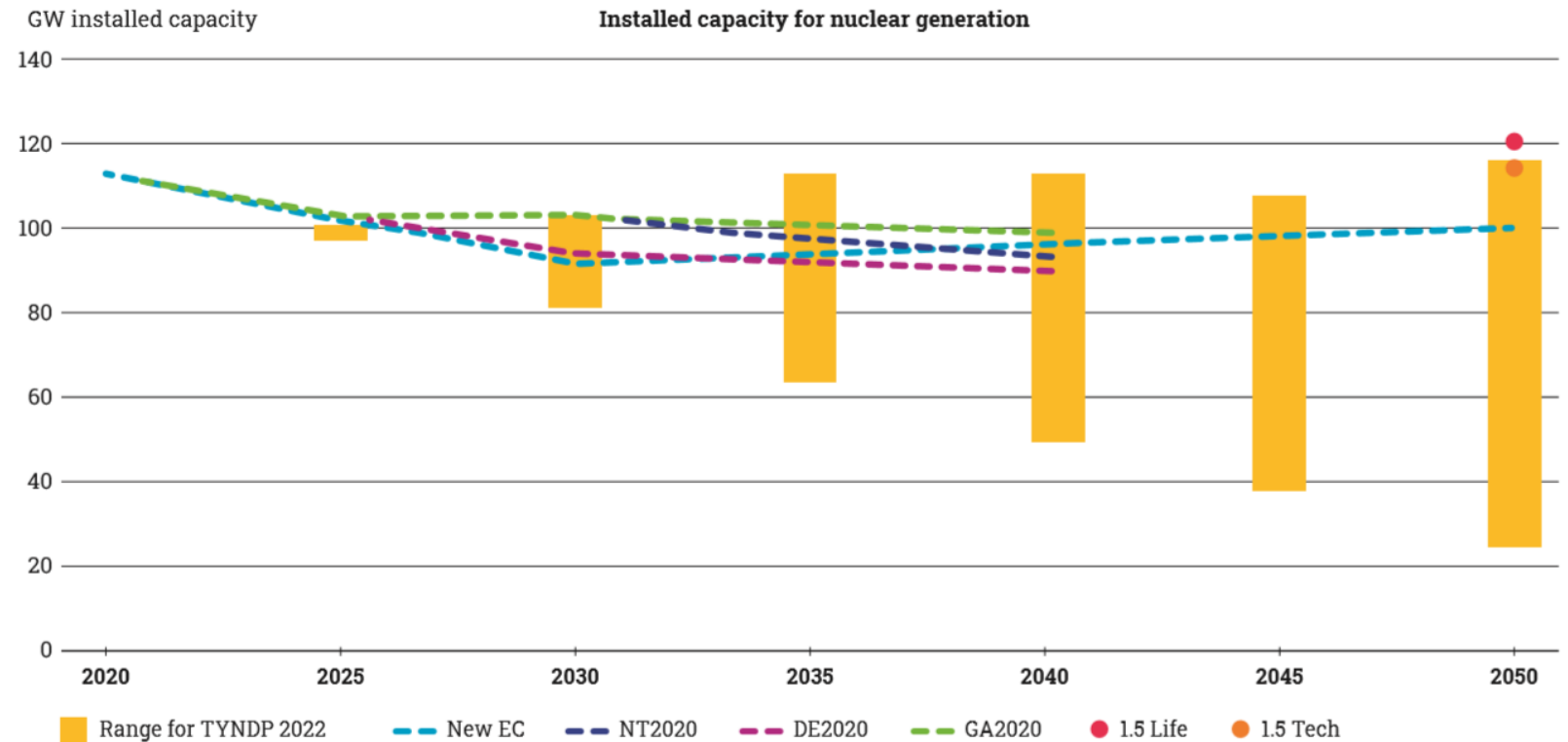


Quantitative ranges: governmental policies in the nuclear strategy

How do the scenarios capture nuclear energy?

Scenario DE: no new reactors and phase out of existing ones according to national policies

Scenario GA: Some EU countries extend the use of nuclear as a complement of RES development

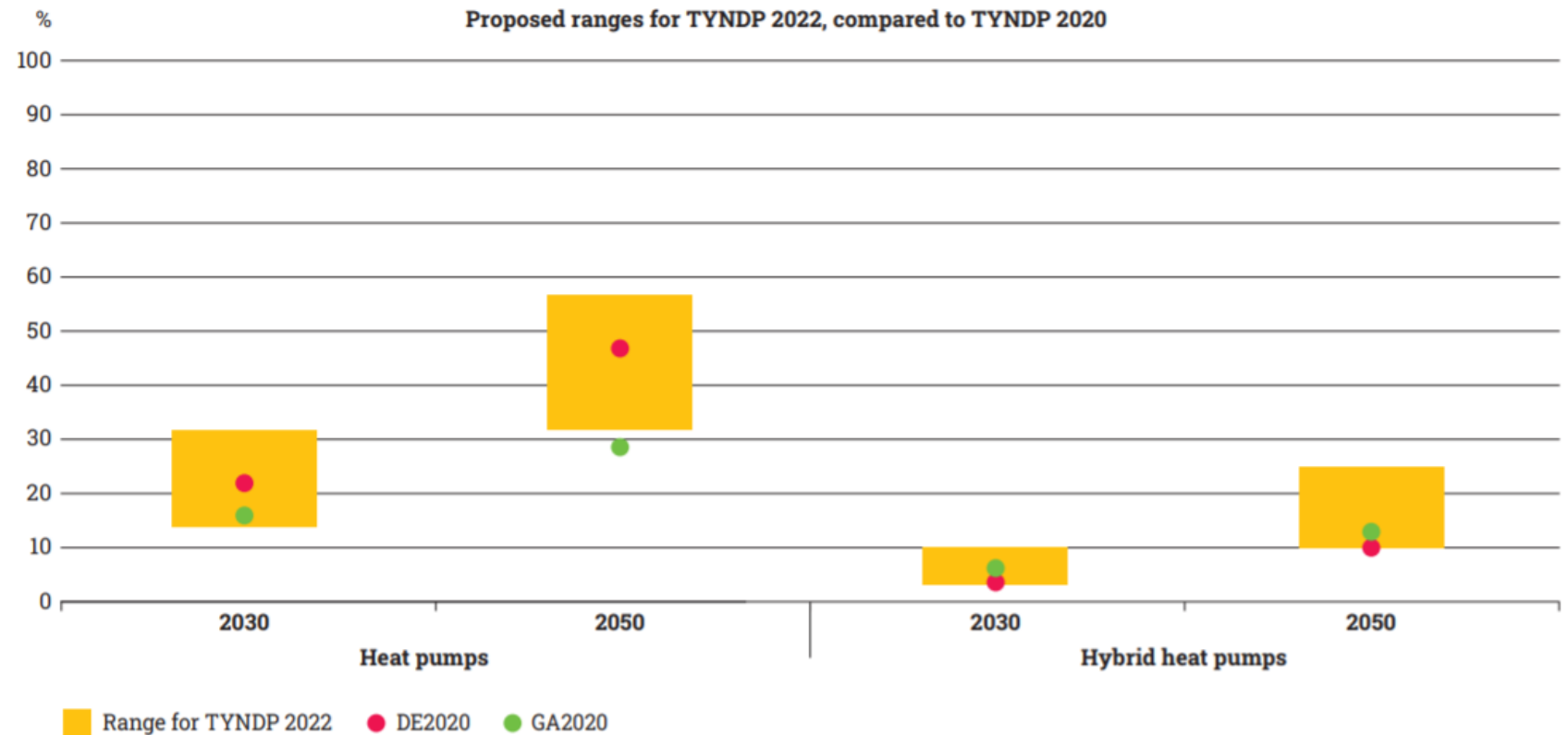


Quantitative ranges: domestic heating technologies

How to decarbonise and increase efficiency of domestic heating?

Scenario DE: Primary focus on all-electric heat pumps and connection to collective heating networks

Scenario GA: Through availability of renewable gas imports, hybrid heat pumps are a meaningful alternative to all-electric in certain countries



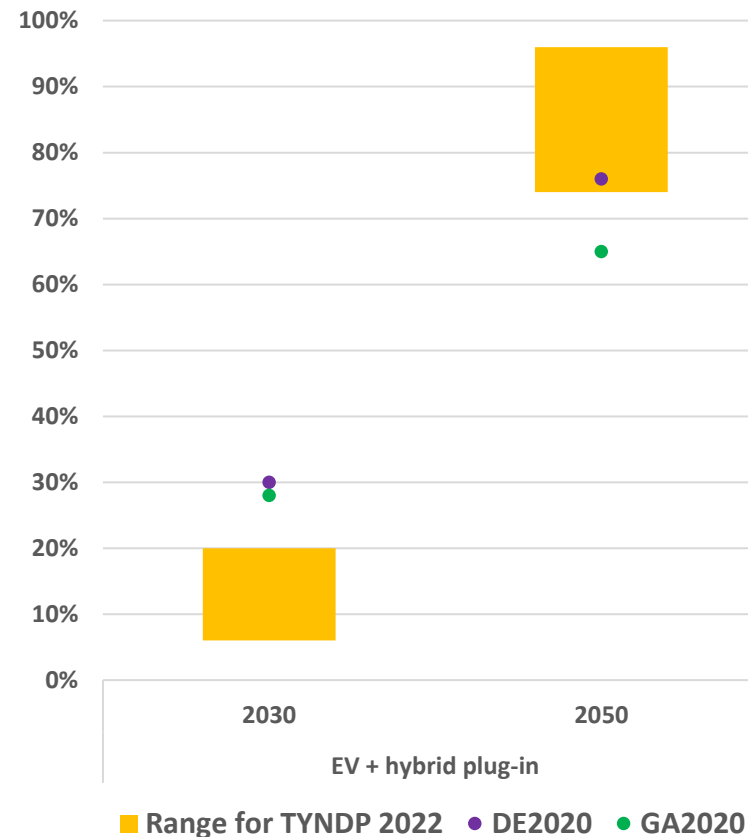
Quantitative ranges: Renewable mobility

How to reduce emissions in the transport sector ?

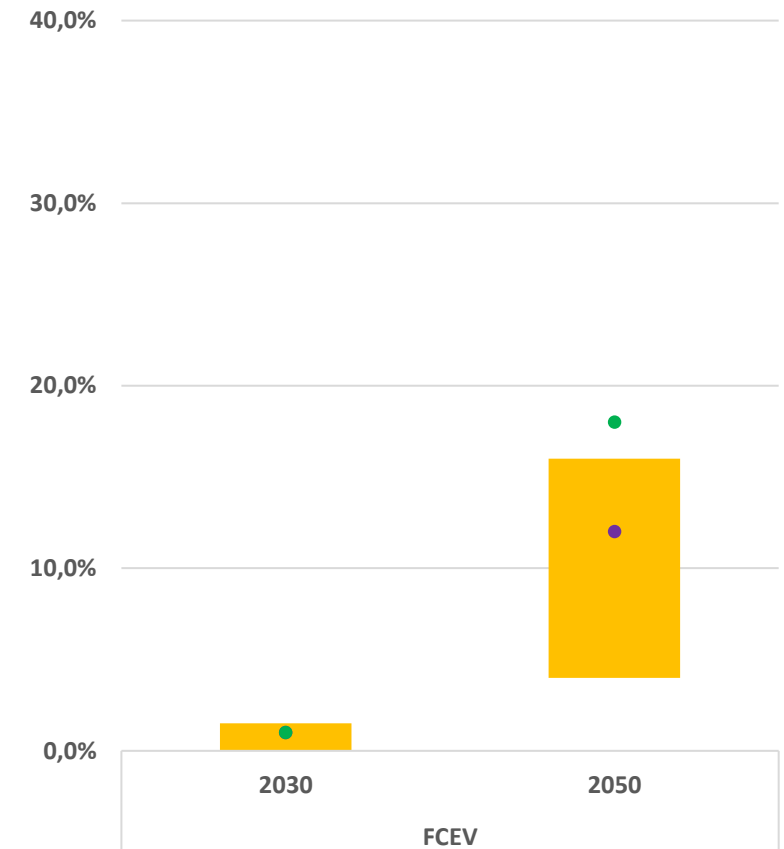
Scenario DE: electric vehicles provides efficiency gains to enhance energy autonomy, And will provide needed flexibility to the electricity infrastructures

Scenario GA: wider range of clean mobility technologies with fuel cells as a meaningful option.

Proposed ranges for TYNDP 2022, compared to TYNDP 2020



Proposed ranges for TYNDP 2022, compared to TYNDP 2020



The role of flexibilities towards a decarbonised system

Flexibility is slightly different to other key parameters in that the development of each flexibility technology is dependent from a wide range of other parameters **still to be quantified** since they are an **output of the electricity market models**

Batteries

→ Higher residential batteries in DE due to higher decentralized RES and prosumer behaviour.

Demand Side Response

→ Market DSR will reflect TSO trajectories, regression analysis and external studies

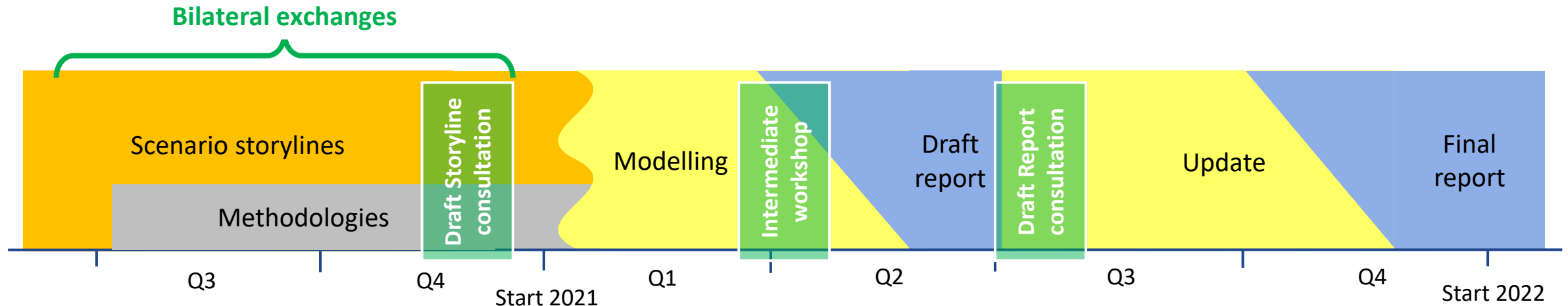
Electrolysers

→ Capacity depends on hydrogen demand and configuration for electrolysers



Next steps in the scenario building process

Overall timeline towards scenario finalization



- ENTSO-E and ENTSO-G will close by February the first step of the scenario building process:
 - Storylines finalization on the basis of the on-going public consultation (DE/GA) and National Trend data collection
 - Finalization of modelling methodology enhancements
- During the first half of 2021 the storylines will be translated in fully-fledged scenarios:
 - Mid-process workshop to inform about the process and to collect necessary data (e.g. gas supply)
 - Providing key information for upcoming TYNDP and CBA
- Scenario finalization on the basis of the public consultation
 - Partial update of the scenario modelling to achieve balance between public consultation feedback, latest dataset and TYNDP timeline

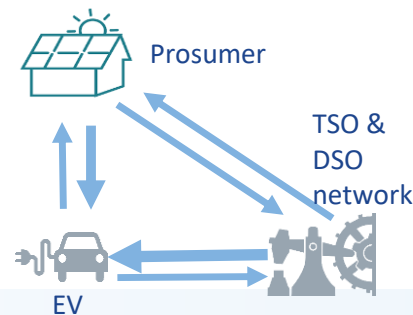
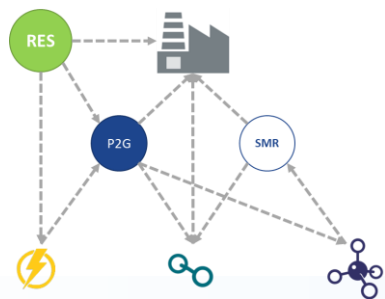
Next Steps: Storyline and methodology finalization

The consultation of the draft storylines for Global Ambition and Distributed Energy scenarios will span from 3 November to 15 December 2020

- Feedback will enable a further refinement of storyline drivers and related quantitative ranges
- Final Storyline report to be published in February 2021

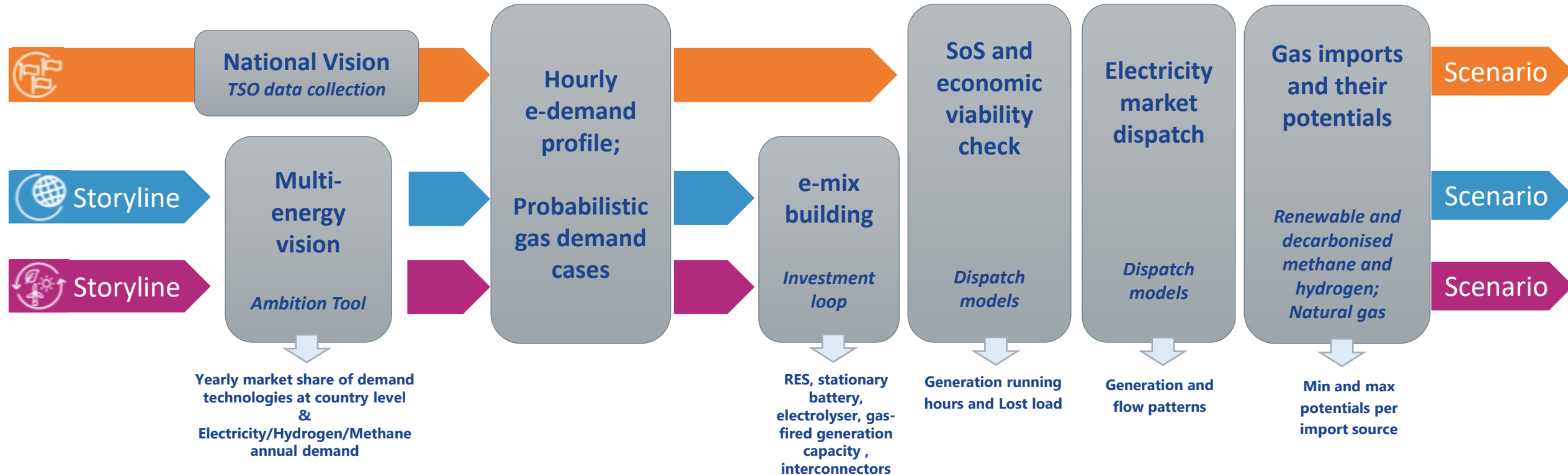
To ensure timely delivery, ENTSOG/E are closing modelling methodology developments and focus on:

- Power-to-Gas/Liquid: modelling the wide range of configuration between RES, electrolysis, electricity and gas system in line with European and national hydrogen strategies
- Improvement of the Ambition Tool by increased granularity of input parameters
- Prosumer behavior at distribution level with the support of DSO associations
- District heating ability to combine local energy sources, recovered heat and network energy
- Renewable and decarbonised gas import potentials



The scenario modelling process

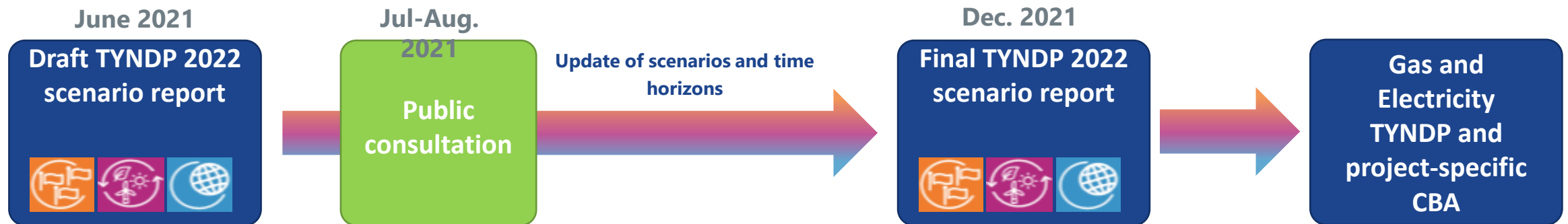
- Making transparent the translation of storylines into fully-fledged scenarios



- An intermediate workshop will be organised early Q2 2021 to inform stakeholders on process status and collect possible additional data (e.g. gas supplies)

Scenario finalization

- The publication of the Draft TYNDP 2022 Scenario report is expected for mid-2021. It will cover:
 - The scenario report
 - An extended input and output dataset
 - A visualisation platform
- Public consultation and subsequent processes



The Final TYNDP 2022 Scenario report will ensure transparency on final scenarios description and use.



Stakeholder Engagement

Stakeholder Engagement in the TYNDP 2022 – Our Goals

Stakeholder
Engagement from
Day 1

Input on Key
Parameters

Consultation on
Hard Data – Not
just Concepts

Transparent
Documentation of
Interactions

Answering Stakeholders' Questions

- 42 questions received from stakeholders after webinar on 3 July
- All answers can be found on the dedicated scenarios website
- Categories included:
 - Projections for new technologies
 - Role of fossil fuels
 - Modelling PtG
 - Disruptive technologies
 - Stakeholder interaction

On this page: » Stakeholder engagement for the TYNDP 2022 storylines » Stakeholder meeting log » Q & A » Q & A Feedback

Questions and answers – Webinar 3 July 2020

[DOWNLOAD Q&A WEBINAR 3 JULY 2020 \(PDF, 170KB\)](#)

Category	Question	Answer from ENTSOG and ENTSO-E
Biomass	How did you take into account a limited availability of sustainable biomass for GA?	The use of European biomass in GA is 3% above the one in LT 1.5 Tech.
CBA	How does the TYNDP influence the selection of Projects of Common Interest under TEN-E? And what's the influence of the scenarios on this?	Demand and supply level, repartition and profiles are specific of each scenario. As a result the need to transport energy from one country to the other differs between scenarios. Electricity and gas TYNDPs identify the investment gaps according to these needs and CBAs assess projects cost and ability to fill these gaps. Ultimately the selection of PCI project is up to EC and regional groups.
	Is it correct that a CBA will only be done for the NT Scenario?	In electricity, NT is used as the Reference scenario for the CBA with a lighter analysis done in 2030 on the DE and GA scenarios. The three scenarios are used on equal basis for the gas CBA.
	I am missing consideration of climate change impacts (e.g. less heating demand more cooling demand, worse performance of nuclear). NT scenario comes with higher impacts. Will you include that? Climate change is already changing energy system needs (less heating more cooling demand). How did you take future climate impacts into account?	At this stage global warming impact is not taken into account in the scenario quantification. We invite people to contact us regarding the statement about a higher impact of NT.
	What is the "dunkerflaute" situation?	Dunkelflaute' is a German expression for cold dark doldrums. This is cold spell of 2 weeks with unfavourable conditions for solar PV and wind generation. Under these high energy demand circumstances, the supply of electricity relies on dispatchable power plants.

Don't Forget! All stakeholders have the opportunity to ask questions during today's workshop

Bilateral Engagement

- Bilateral meetings between Scenario Building Team and different organisations
 - Full table of stakeholder meetings (up to start of Consultation) available online
- Improving the quality of the storylines by:
 - Using the latest data from experts
 - Asking specific questions to solve issues in the storyline development
 - Comparing our work with studies and analysis from other organisations

Stakeholder meeting log

Date	External Stakeholder(s)	Topic
18.06.2020	EuroHeat	District Heating Data and Modelling
19.06.2020	DSO Expert Group	Roadmap for Joint Scenario Building
22.06.2020	Joint Research Center (JRC)	IDEES dataset; POTENCIA model
08.07.2020	ACER	Feedback from 2020 cycle and way forward
15.07.2020	DSO Expert Group	Debriefing Stakeholder Webinar
17.07.2020	DG ENER	LTS Scenarios parameters
21.07.2020	AIT (Austria)	District Heating Data and Modelling
23.07.2020	IFIEC	Industrial sector roadmaps for decarbonisation
27.08.2020	Eurelectric	General Comments on TYNDP 2022
09.09.2020	RWTH Aachen	PtX modelling
22.09.2020	Eurogas DNVGL	Study presentation
23.09.202	CAN Europe/EEB	PAC Scenario presentation
06.10.2020	DSO Expert Group	Distribution network modelling
14.10.2020	EDF	Storyline Consultation
22.10.2020	Hydrogen Europe	Future development of hydrogen and hydrogen technologies

Bilateral engagement is a transparent and open process: We are always open to new perspectives

Draft Storyline Report: Which elements are different than 2020?

How did stakeholder feedback affect our consultation process?

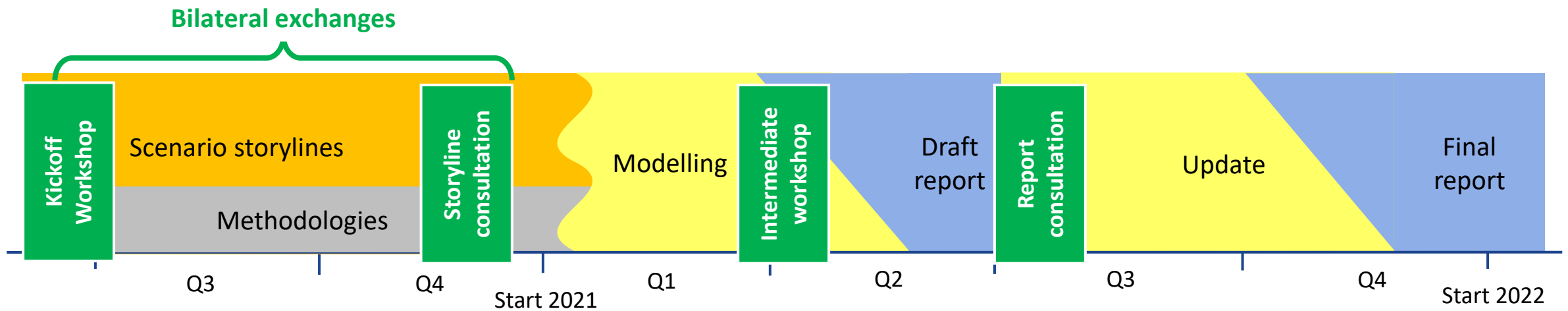
- Stakeholder Matrix in 2020 was considered unclear
 - The matrix has been adjusted to provide more clarity
 - Backed up by greater quantitative elements
- Differentiation between the storylines was not always clear
 - Storyline diversity is presented directly in the Storyline matrix
 - Greater contrasts between technologies and energy carriers

Which elements have we added in the 2022 Draft Storyline Consultation?

- Benchmarking against other studies
 - Provides greater context and comparison for the Draft Storylines
- More focus on quantitative topics
 - Consultation of data ranges for key topics



When and how can stakeholders interact with the scenario building process?



When?	What?
3 November – 15 December 2020	Draft Storyline Report Consultation + Workshop
Q1/Q2 2021	Intermediate Workshop on Gas/Hydrogen Import Potential
Q3 2021	Draft Scenario Report Consultation + Workshop

- Two official public consultation phases
 - Results of the consultation will be published subsequently
- Four public workshops
 - Q+A tool will be available at every workshop
 - After each workshop outstanding questions will be answered by the Scenario Building Team
- Bilateral exchanges with other organisations

Thank you for your attention

Consultation: [ENTSO-E - ENTSOG 2022 Scenario Storyline Consultation - European Network of Transmission System Operators for Electricity - Citizen Space](#)

Website: [TYNDP 2022 Scenarios – Draft Storyline Report by ENTSOG and ENTSO-E \(entsos-tyndp-scenarios.eu\)](#)

Location: Online

Date: 02.12.20

