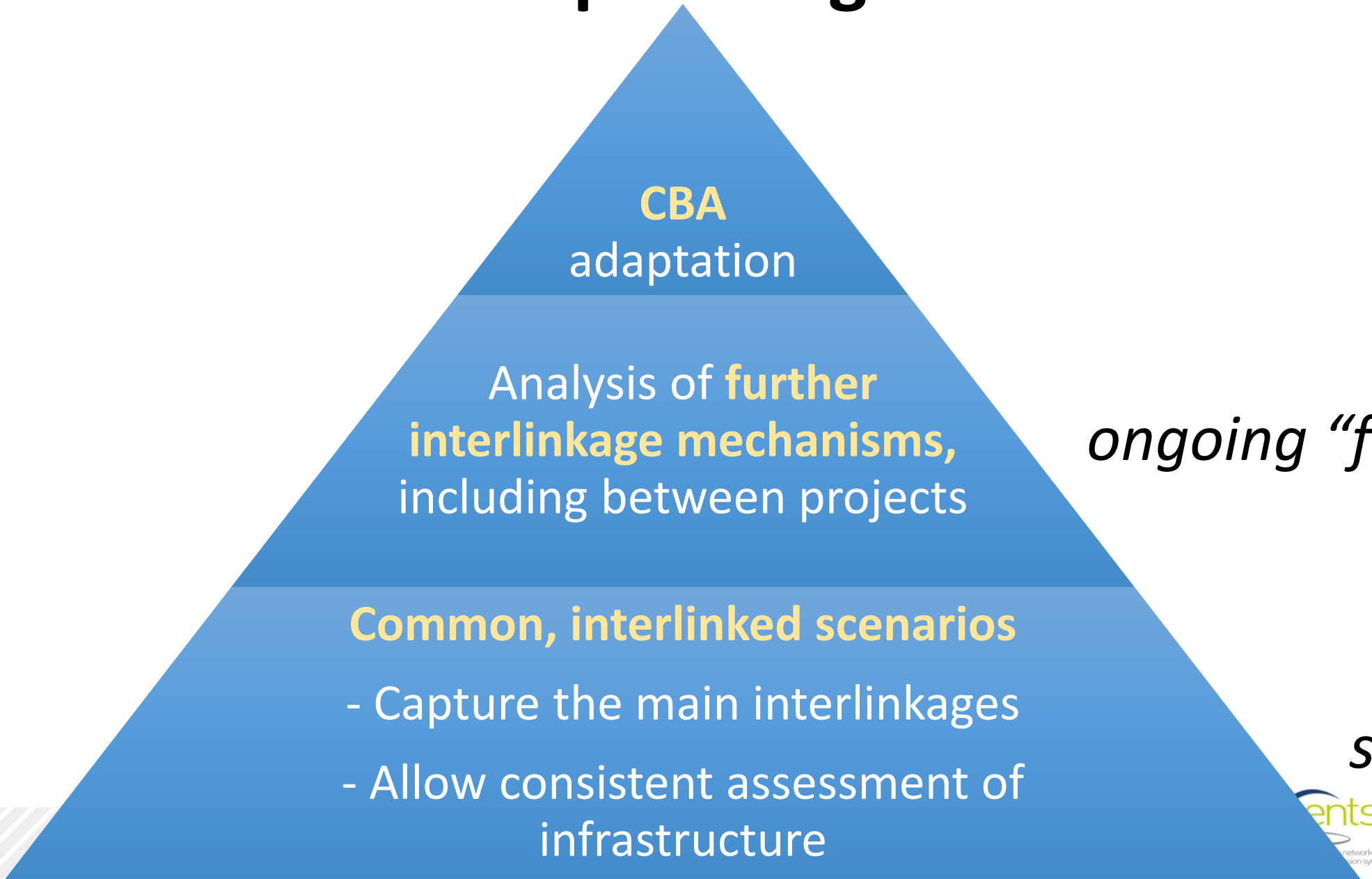
Interlinked Model

Presentation of the focus study

interlinking gas and electricity infrastructure development

Coordinated planning



ongoing "focus study"

since 2018

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Joint scenarios provide a reference for informed cross-sector decision making

- **Deviations from the policy due to changes in technologies, business models, behaviors, etc**
- **A framework to test the mechanisms and scaling effects of cross-sector interlinkages**

Sector coupling scenario
Distributed Energy

Sector coupling scenario
Global Climate Action

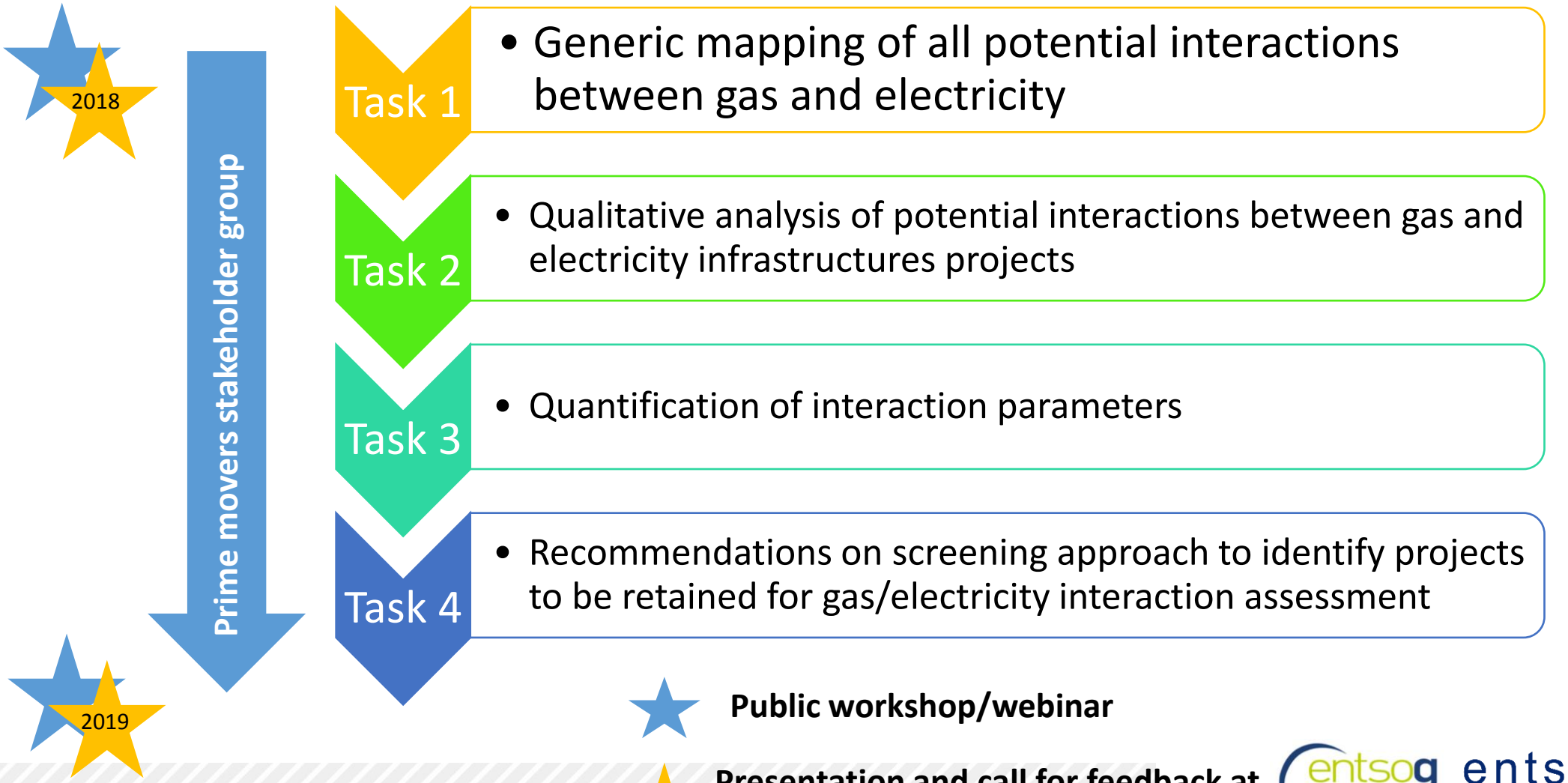
Central Policy Scenario
based on the **National Energy and Climate Plans**

- **A common pathway towards European energy targets**
- **A reference for the assessment and support of infrastructure development in Europe**
- **A Consistency between TYNDPs and National Plans**

Proposed set of scenarios to be developed for the TYNDPs 2020 – and possibly the following

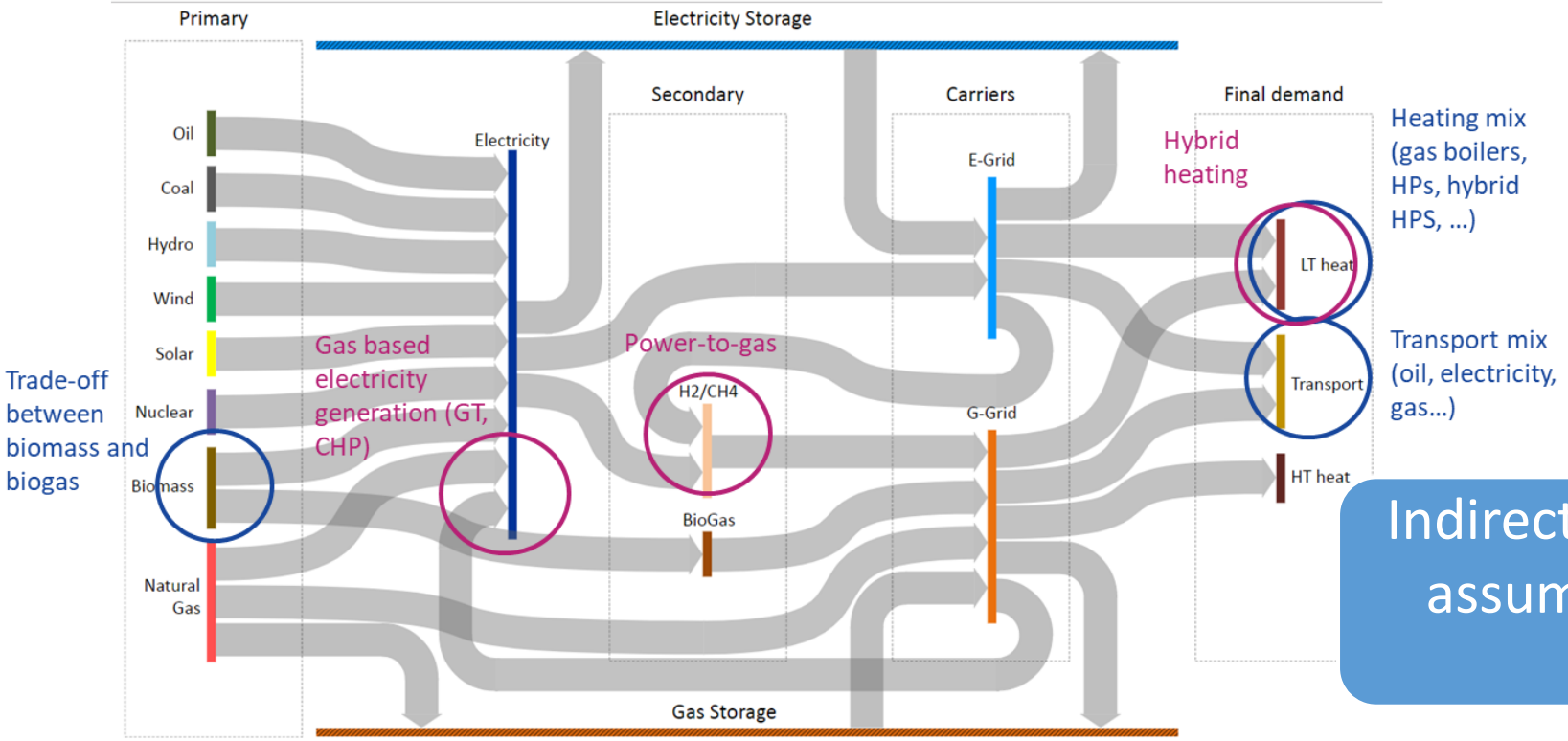
Further interlinkage mechanisms were analysed

Stakeholder engagement



Systematic mapping and analysis of interactions between gas and electricity systems

Direct and indirect interactions



Indirect interactions relate to scenarios assumptions and are translated into demand

Direct interactions relate to scenarios assumptions as well and are translated into generation/conversion capacities, and can be submitted to TYNDPs as projects

Conclusion

The Focus Study confirms that **interactions between gas and electricity systems are dependant on scenario assumptions** and most of the interactions are considered in the TYNDP scenarios

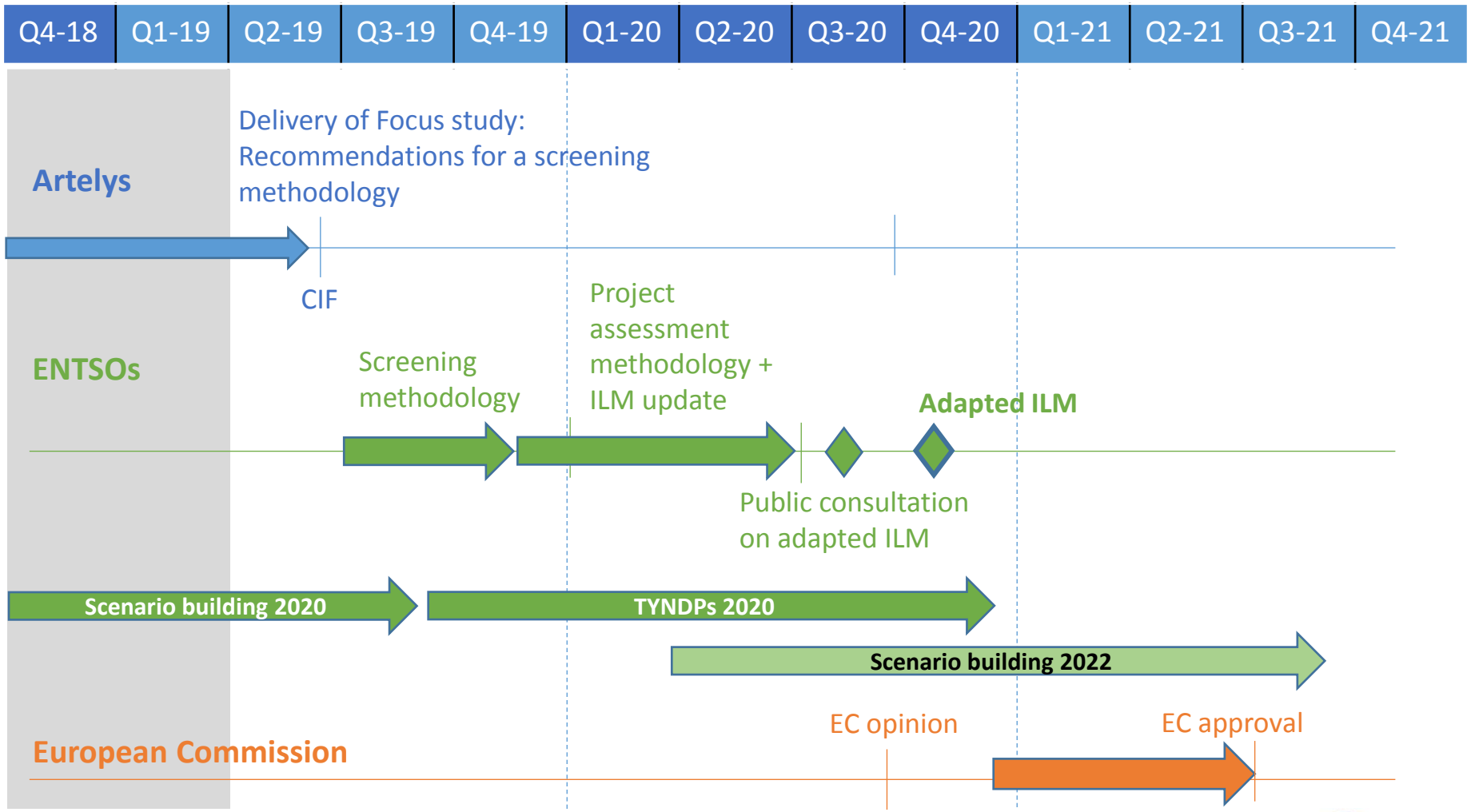
Indirect interactions are captured at scenario level and, once defined, have no impact - or are not impacted by – new infrastructure (projects)

Direct interactions (G2P, P2G and Hybrid technologies) are mostly captured in scenarios. However, **in some specific configurations, a project can have an impact on** – or be impacted by – **the other energy system**.

Next steps

- Based on the study output, the ENTSOs will **adapt the Interlinked Model** in view of enhanced project assessment. It will require the ENTSOs:
  1. To elaborate a screening methodology to identify the infrastructure projects requiring a dual system assessment
  2. To elaborate an assessment methodology for those projects having an impact on both gas and electricity systems, and implement it to the respective e-TYNDP and g-TYNDP
- Once approved, the Interlinked Model will form part of the CBA methodologies, ensuring a better common perspective in regards to electricity and gas projects assessment

Interlinked Model timeline



THANK YOU FOR YOUR ATTENTION

Contact and feedback:
Please refer to « focus study » in the subject

futuregrid@entsoe.eu

sysdev@entsog.eu

Task 1 – Mapping

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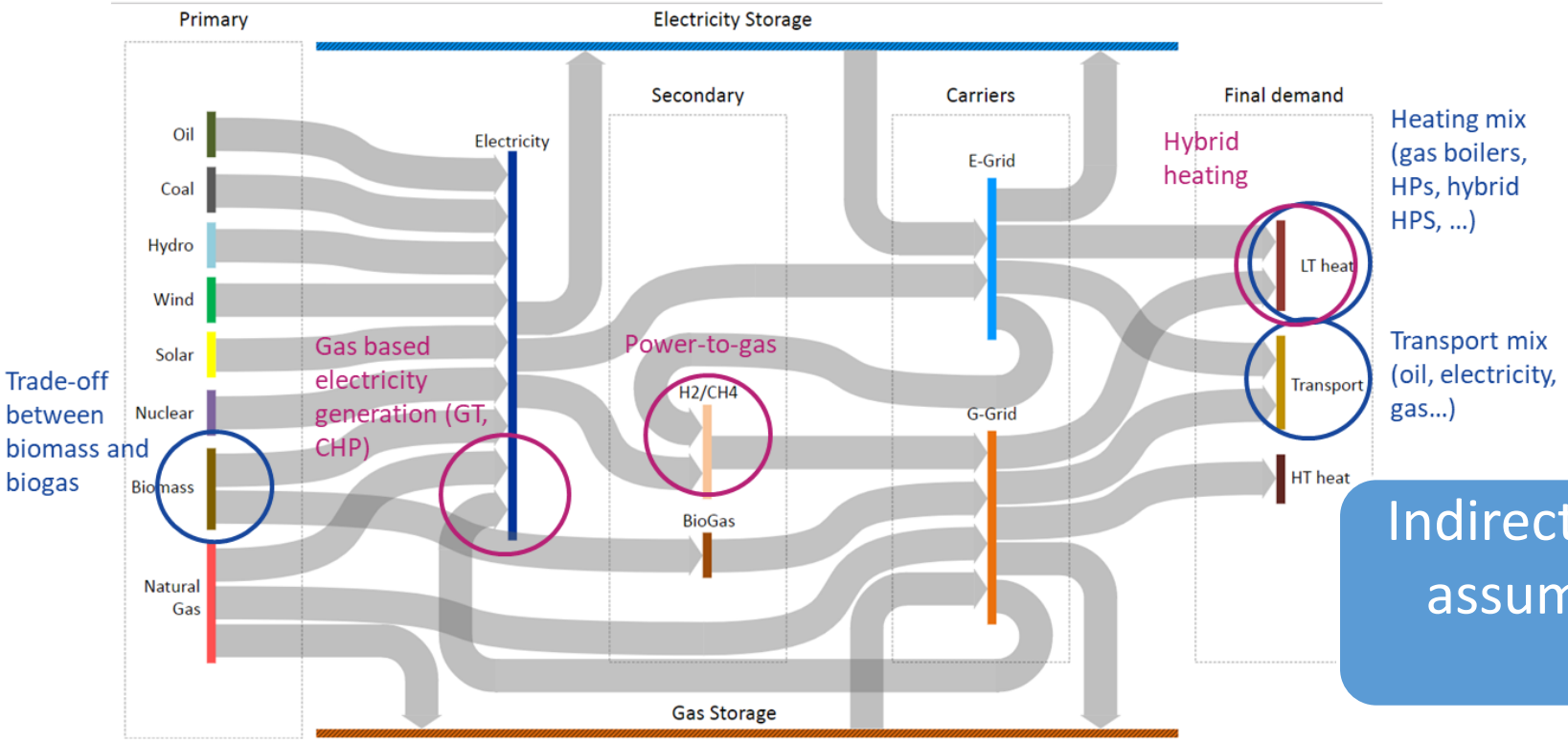
Systematic mapping of interactions between gas and electricity systems

Direct and indirect interactions



Indirect interactions relate to scenarios assumptions and are translated into demand

Direct interactions relate to scenarios assumptions as well and are translated into generation/conversion capacities, and can be submitted to TYNDPs as projects

Task 2 and 3 – Qualitative and quantitative analysis of potential interactions

3 main sources of interlinkages between gas and electricity systems

- **Gas to Power (G2P)**
- **Power to Gas (P2G)**
- **Hybrid systems**

The relevance of the interaction depends on a number of parameters

- Presence of G2P and P2G
- Share of vRES-e in electricity generation
- Quantity of electricity storage (capacity of a 6hrs battery)
- Quantity of gas seasonal storage (capacity and volume)
- Presence of non-G2P gas demand in a zone
- Different level of gas and electricity interconnections
- In case of congestions in gas interconnections, gas price difference between two areas

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entsog european network of transmission system operators for gas

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Task 2 and 3 – Qualitative and quantitative analysis of potential interactions

- Gas to Power

In the presence of G2P, there can be some interactions between gas/electricity system and infrastructure projects, in areas with a **high share of G2P** if the gas consumption required for electricity purposes creates **constraints on the gas system** (congestions or security of supply issues)

- Power to Gas

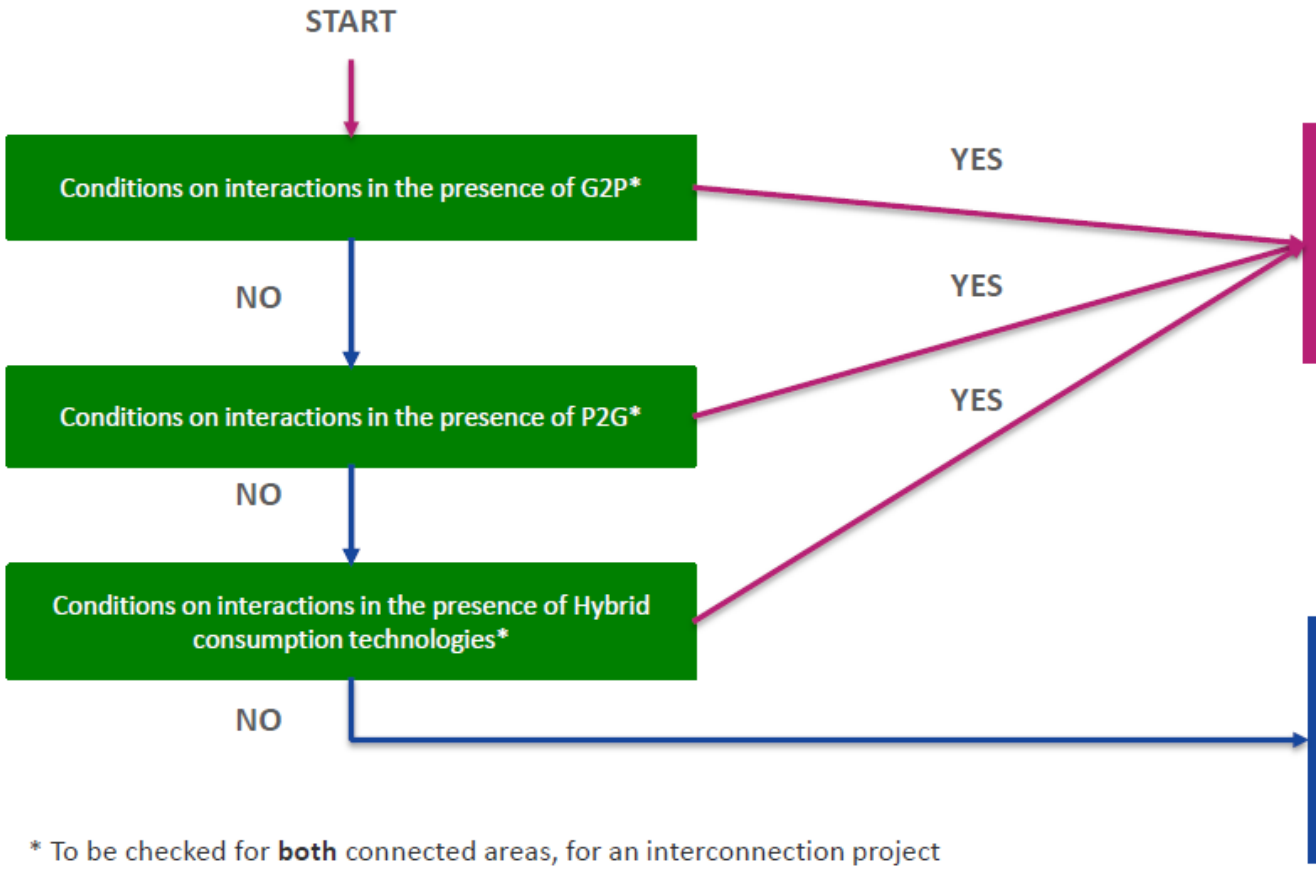
In the presence of P2G, there can be some interactions between gas/electricity system and infrastructure projects, in areas with **high price-driven P2G capacities** and with a **high share of low variable cost electricity generation** (vRESe, nuclear), relatively to the consumption (including pumping)

- Hybrid demand technologies

In the presence of Hybrid technologies, there can be interactions between gas/electricity system if there are **frequent arbitrage opportunities** between gas and electricity **and if there are significant volumes transferred** from gas to power or from power to gas **or shortages** in either gas or electricity systems

Task 4 – screening of projects for gas/electricity interaction assessment

- Possible process for project screening



* To be checked for **both** connected areas, for an interconnection project

Assessment of the impact of the project on electricity system **AND** gas system

Assessment of the impact of the project on electricity system **OR** gas system