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Open public consultation - Questionnaire on the electrification action plan

Fields marked with * are mandatory.

Introduction

About you

*Language of my contribution

English

*I am giving my contribution as

Business association

*First name

Roberto

*Surname

Francia

*Email (this won't be published)

*Organisation name

255 character(s) maximum

ENTSOG - European Network of Transmission System Operators for Gas

*Organisation size

Small (10 to 49 employees)

Transparency register number

Check if your organisation is on the transparency register. It's a voluntary database for organisations seeking to influence EU decision-making.

565032821273-72

* Country of origin

Please add your country of origin, or that of your organisation.

This list does not represent the official position of the European institutions with regard to the legal status or policy of the entities mentioned. It is a harmonisation of often divergent lists and practices.

Belgium

* Which sector or role best describes your core business or activity related to energy and electrification?

- ○ Administration (planning, permitting, national or local administration)
- ○ National regulatory agency
- ○ Industry sector (energy consumer)
- ○ Transport and e-mobility sector
- ◉ Transmission system operator (TSO)
- ○ Distribution system operator (DSO)
- ○ Energy utilities and providers
- ○ Energy retailers
- ○ Flexibility service provider / aggregator
- ○ Energy communities and cooperatives
- ○ Advisory services and energy service companies
- ○ Finance and investment in energy
- ○ Policy and advocacy
- ○ NGO
- ○ Power generation
- ○ Energy storage providers
- ○ Renewable energy developers
- ○ Research and development
- ○ Other (please specify)
- ○ Not active in this field

The Commission will publish all contributions to this public consultation. You can choose whether you would prefer to have your details published or to remain anonymous when your contribution is published. **For the purpose of transparency, the type of respondent (for example, 'business association, 'consumer association', 'EU citizen') country of origin, organisation name and size, and its transparency register number, are always published. Your e-mail address will never be published.** Opt in to select the privacy option that best suits you. Privacy options default based on the type of respondent selected

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Organisation details and respondent details are published: The type of respondent that you responded to this consultation as, the name of the organisation on whose behalf you reply as well as its transparency number, its size, its country of origin and your contribution will be published. Your name will also be published.

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Part 1 - Cross-sectoral questions on the electrification action plan

1.A - Scope

*1. What should be the **general objective/s** of an EU electrification action plan?
Use drag&drop or the up/down buttons to change the order or accept the initial order.

- Other (please specify)
- Energy security
- Energy affordability
- Decarbonisation
- Competitiveness
- Environmental protection
- Fairness, consumer protection and empowerment
- Energy efficiency

Other (please specify):
100 character(s) maximum

An approach to energy vectors integration, balancing affordability, SoS and decarbonisation.

1.B - Barriers

*2. What are the **key barriers** hampering electrification decisions **across all sectors**?
Between 1 and 5 selections

- ☐ High upfront transition costs for electrification of end-uses
- ☐ Insufficient policy signals at EU or national level, particularly in the form of targets
- ☐ Insufficient renewable electricity generation

- [ ] Lack of availability of fit-for-purpose electrically-powered equivalent technologies
- [ ] Lack of consumer acceptance or trust in electrification technologies
- [ ] Lack of or insufficient remuneration of demand flexibility, incl. via aggregators
- [ ] Lack of or insufficient roll-out of storage assets
- [ ] Lack of skilled professionals
- [ ] Length and/or complexity of administrative and permitting procedures
- [ ] High operational costs
- [ ] Uncertainty about the future price of electricity compared to fossil fuels
- [ ] Unfavourable retail price ratio between electricity and fossil fuels
- [ ] Unfavourable tax treatment of electricity compared to fossil fuels
- [ ] Weak implementation of the current regulatory framework
- [ ] High cost of network tariffs
- [ ] High upfront costs or delays to connect to the grid
- [ ] Insufficient capacity of the electricity grid
- [ ] Other (please specify)
- [x] N/A

1.C - Policy options

3. What are the **priority policy options** for accelerating **electrification of energy demand**?

*3.1 **EU policy framework**

Between 1 and 3 selections

- [ ] Adaptation of current legislative framework (towards 2030)
- [ ] Additional policy initiatives (non-regulatory)
- [ ] Additional public financing
- [ ] Implementation of the current EU regulatory framework
- [ ] New legislative framework (towards 2040)
- [x] Other (please specify)
- [ ] N/A

*Other (please specify)

200 character(s) maximum

```
Policy should focus on decarbonising energy demand beyond electrification.
Integrating energy vectors offers the most secure, affordable path to a
competitive, decarbonized EU economy.
```

*3.2 **General policy design measures**

Between 1 and 3 selections

- [ ] Accelerate and simplify permitting procedures
- [ ] Adopt an EU target for electrification
- [ ] Adopt a target for non-fossil flexibility
- [ ] Introduce consumer-centric measures to increase flexibility of the system
- [ ] Propose decarbonisation pathways
- [ ] Remove non-energy related costs from electricity bills
- [ ] Revise energy taxation in favour of electricity

- [ ] Other (please specify)
- [x] N/A

*3.3 **Access to grid and flexibility**

Between 1 and 3 selections

- [ ] Accelerate digitalisation of energy systems to support automation and system optimisation
- [ ] Accelerate roll-out of smart metering to facilitate demand response and active consumer participation
- [ ] Implement measures to ensure electricity system adequacy and reliability, incl. risk preparedness
- [ ] Implement network tariffs that promote flexibility and incentivise consumer behaviour to reduce grid costs
- [ ] Improve access to participation and remuneration of flexibility services
- [ ] Increase grid capacity
- [ ] Enable timely grid connections
- [ ] Other (please specify)
- [x] N/A

*3.4 **Financing and investment**

Between 1 and 3 selections

- [ ] Increase availability of financial instruments to cover upfront costs
- [ ] Measures promoting simultaneously electrification and access to renewables, including through power purchase agreements (PPAs).
- [ ] Provide public grants or loans, including EU funds to leverage private funds
- [ ] Provide technical assistance to facilitate project financing
- [ ] Targeted funding for research and innovation
- [ ] Other (please specify)
- [x] N/A

Part 2 - Flexibility: demand response and storage

2.A - Scope

*1. What are the most relevant technologies and solutions for increasing **flexibility** in the energy system?

Between 1 and 5 selections

- [ ] Thermal storage (electrified heat)
- [ ] Electrochemical storage (incl. stationary batteries and mobile batteries, electric vehicle (EV) batteries)
- [ ] Mechanical storage (incl. pumped hydro storage, compressed air storage, flywheels and gravitational energy)
- [x] Chemical storage (incl. hydrogen, ammonia, synthetic fuels)
- [ ] Electrical storage (incl. supercapacitors)
- [ ] Vehicle-to-grid (V2G) technologies
- [ ] Industrial process flexibility
- [ ] Demand response in buildings
- [ ] Smart consumption appliances
- [ ] District heating systems
- [x] Other (please specify)

- [ ] N/A

*Other (please specify)

200 character(s) maximum

```
Thermal storage in district heating, CHP with biogas, CCGTs with clean gases, demand response via electrolysers linked to H2 storage and backbone for H2 production substitution.
```

2.B - Barriers

*2. What are the **key barriers** to **demand response**?

Between 1 and 5 selections

- [ ] Administrative/regulatory barriers
- [ ] Skills-related barriers
- [ ] High financing costs
- [ ] High initial investment
- [ ] High operational costs
- [ ] Insufficient awareness of or trust in solutions
- [ ] Insufficient digitalisation
- [ ] Lack of fit-for-purpose or easily available and affordable technologies
- [ ] Lack of renumeration for the provision of services
- [ ] Lack of interoperability of flexibility tools
- [ ] Technical barriers
- [x] Other (please specify)
- [ ] N/A

*Other (please specify)

200 character(s) maximum

```
Insufficient policy support for grid electrolysis, sector coupling, diverse energy mixes; a synergic system is key for demand response and flexibility as an alternative to austerity.
```

3. Please elaborate on key specific barriers to demand response.

300 character(s) maximum

```
N.A.
```

*4. What are the **key barriers** to the **deployment of storage solutions**?

Between 1 and 5 selections

- [x] Administrative/regulatory barriers
- [ ] Skills-related barriers
- [ ] Double taxation for storage
- [ ] Grid connection
- [ ] High financing costs
- [x] High initial investment
- [ ] High operational costs

- [ ] Insufficient awareness of or trust in solutions
- [ ] Insufficient digitalisation
- [ ] Lack of fit-for-purpose or easily available and affordable technologies
- [ ] Lack of renumeration for the provision of services
- [x] Length of permitting processes for storage
- [ ] Technical barriers
- [x] Other (please specify)
- [ ] N/A

*Other (please specify)

200 character(s) maximum

```
Too much emphasis on one technology only (batteries) in which the EU has neither competitive advantage nor the best access to raw materials.
```

5. Please elaborate on key specific barriers to the deployment of storage solutions.

300 character(s) maximum

```
ENTSOG is referring in Q4 above to all types of storage solutions for the energy system, that should be equally facilitated in function of their own merits, as a more diverse set of solutions is needed.
```

2.C - Policy options

6. What are the **priority policy options** for increasing the **flexibility** of the system?

*6.1 **EU policy framework**

Between 1 and 3 selections

- [x] Adaptation of current legislative framework (towards 2030)
- [ ] Additional policy initiatives (non-regulatory)
- [ ] Additional public financing
- [ ] Effective implementation of the current EU regulatory framework
- [x] New legislative framework (towards 2040)
- [x] Other (please specify)
- [ ] N/A

*Other (please specify)

200 character(s) maximum

```
The current policy framework is not sufficiently neutral from a technological point of view.
```

*6.2 **Policy design options**

Between 1 and 3 selections

- [ ] Abolish double charging for storage
- [x] Accelerate and simplify permitting procedures for energy storage solutions
- [ ] Introduce an EU target for non-fossil flexibility

- [ ] Promote digitalisation, ensure interoperability, and facilitate data sharing to enable flexibility services and demand response
- [x] Other (please specify)
- [ ] N/A

*Other (please specify)

200 character(s) maximum

Promote energy vector integration and interoperability, simplify RFNBO/LC DAs, ensure electrolysis gets HV DCC access and equal support as batteries for grid connection and flexibility.

*6.3 **Access to grid and flexibility**

Between 1 and 3 selections

- [ ] Accelerate digitalisation of energy systems to support automation and system optimisation
- [ ] Accelerate roll-out of smart metering to facilitate demand response and active consumer participation
- [ ] Deploy non-fossil flexibility solutions, including electricity and thermal storage and demand response solutions
- [x] Facilitate grid connection for flexibility assets
- [x] Other (please specify)
- [ ] N/A

*Other (please specify)

200 character(s) maximum

Deploy clean molecular flexibility solutions, to minimise internal and cross border congestion, value excess intermittent electricity supply and avoid negative hub prices.

*6.4 **Financing and investment/Promotion of business models and innovation**

Between 1 and 3 selections

- [ ] Enable participation in support schemes for flexibility solutions
- [ ] Enable access to electricity markets for flexibility services
- [ ] Implement network tariffs that promote flexibility and incentivise consumer behaviour to reduce grid costs
- [x] Incentives for system operators to use flexibility services
- [x] Increase availability of financial instruments to cover upfront costs of flexibility solutions
- [ ] Support for innovation in flexibility solutions
- [x] Other (please specify)
- [ ] N/A

*Other (please specify)

200 character(s) maximum

Implement network conversion and storage of intermittent electricity supply as H2, to value excess supply and avoid grid congestion, molecules transport and storage is highly efficient system-wise.

Part 3 - Electrification of transport

3.A - Barriers

1. Please elaborate on one key barrier to the **electrification of transport** in the EU.
300 character(s) maximum

N.A.

2. What are the **key barriers** specific to the **electrification of the road sector**?
Between 1 and 5 selections per column

	For electric light-duty vehicles	**For electric heavy-duty vehicles**	**For smart charging**	**For bidirectional charging**
High operational costs linked to electricity	☐	☐	☐	☐
Complexity of permitting procedures for the installation of recharging points	☐	☐	☐	☐
Difficulties to secure an appropriate grid connection	☐	☐	☐	☐
Lack of financial incentives (please specify at which level)	☐	☐	☐	☐
Lack of cost-reflective network charges	☐	☐	☐	☐
Lack of deployment of smart meters	☐	☐	☐	☐
Lack of interoperability (please specify at which level)	☐	☐	☐	☐
Low technological maturity	☐	☐	☐	☐
Lack of consistent standards in both the charging infrastructure and the vehicles	☐	☐	☐	☐
Lack of certified metering dedicated to vehicle-to-grid (V2G)	☐	☐	☐	☐
Lack of access to markets for small and mobile assets/local flexibility markets	☐	☐	☐	☐
Need for common technical requirements for grid connection	☐	☐	☐	☐
Double taxation for storage	☐	☐	☐	☐

Insufficient in-vehicle data sharing	☐	☐	☐	☐
Lack of awareness and behavioural resistance/social acceptance	☐	☐	☐	☐
Other (please specify)	☐	☐	☐	☐
N/A	☑	☑	☑	☑

3.B - Policy options

3. What are the **priority policy options** for accelerating **electrification of transport**?

*3.1 **EU policy framework**

Between 1 and 3 selections

- ☐ Adaptation of current legislative framework (towards 2030)
- ☐ Additional policy initiatives (non-regulatory)
- ☐ Additional public financing
- ☐ Effective implementation of the current EU regulatory framework
- ☐ New legislative framework (towards 2040)
- ☑ Other (please specify)
- ☐ N/A

*Other (please specify)

200 character(s) maximum

We urge the EC to consider molecules as complementary to transport electrification—a diverse system is more resilient, affordable, and sustainable for decarbonisation.

*3.2 **General policy design measures**

Between 1 and 3 selections

- ☐ Accelerate and simplify permitting procedures for recharging points
- ☐ Accelerate and simplify grid connection procedures for recharging points
- ☐ Introduce policy incentives for EV-related electricity demand
- ☐ Introduce incentives for interoperable smart charging and for V2G-ready vehicles
- ☐ Introduce consumer-centric measures to increase demand flexibility
- ☐ Facilitate data sharing between the electricity system, the recharging point and the EV
- ☐ Promote interoperability between the electricity system, the recharging point and the EV
- ☐ Other (please specify)
- ☑ N/A

*3.3 **Access to grid and flexibility**

Between 1 and 3 selections

- ☐ Accelerate digitalisation of energy systems to support automation and system optimisation
- ☐ Accelerate roll-out of smart metering to facilitate demand response and active consumer participation
- ☐ Implement measures to ensure electricity system adequacy and reliability, incl. risk preparedness

- [ ] Implement network tariffs that promote flexibility and incentivise consumer behaviour to reduce grid costs
- [ ] Improve access to participation and remuneration of flexibility services
- [ ] Increase grid capacity and enable timely connections
- [ ] Promote the deployment of electricity storage coupled with charging points
- [ ] Other (please specify)
- [x] N/A

Part 4 - Electrification of heating and cooling in industry and buildings

4.A - Scope

1. What are the most relevant technologies for the **affordable decarbonisation of heating** towards 2040?
Between 1 and 5 selections per column

	For space heating (individual)	**For space heating (collective/large)**	**For district heating**	**For industrial heat below 200°C**	**For industrial heat between 200°C and 500 °C**	**For industrial heat above 500°C**
Air-source heat pump	☐	☐	☐	☐	☐	☐
Ground-source heat pump	☐	☐	☐	☐	☐	☐
Deep geothermal	☐	☐	☐	☐	☐	☐
Waste heat	☐	☐	☑	☐	☐	☐
Solar heat	☐	☐	☐	☐	☐	☐
Cogeneration using renewable energy	☐	☐	☑	☐	☐	☐
Biomass	☐	☐	☐	☐	☐	☐
Biomethane	☑	☑	☑	☑	☑	☑
Hydrogen	☑	☑	☑	☑	☑	☑
Electric boiler	☐	☐	☐	☐	☐	☐
Other electric solutions	☐	☐	☐	☐	☐	☐

Small modular nuclear	☐	☐	☐	☐	☐	☐
Carbon capture and storage	☐	☐	☑	☑	☑	☑
Other (please specify)	☑	☐	☐	☐	☐	☐
N/A	☐	☐	☐	☐	☐	☐

*Other (please specify)

200 character(s) maximum

'Other' reflects hybrid heat pumps. A mix of technologies is desirable and optimal for a fast, secure and affordable decarbonisation.

4.B - Barriers

2. What are the key specific **barriers** to the **affordable electrification of heating and cooling in buildings**?

Between 1 and 5 selections per column

	Residential heating and cooling in individual dwellings	**Collective residential heating and cooling in apartment buildings**	**Non-residential building heating and cooling (public or private)**
Administrative/regulatory barriers	☐	☐	☐
High financing costs	☐	☐	☐
High initial investment	☐	☐	☐
High operational costs	☐	☐	☐
Infrastructure-related barriers	☐	☐	☐
Insufficient awareness of or trust in solutions	☐	☐	☐
Lack of fit-for-purpose or easily available and affordable technologies	☐	☐	☐
Lack of incentives for landlord and/or tenant in the case of rental	☐	☐	☐

Skills-related barriers	☐	☐	☐
Technical barriers	☐	☑	☐
Other (please specify)	☐	☑	☐
N/A	☐	☐	☐

* Other (please specify)

200 character(s) maximum

Large-scale heat pumps are inefficient in cold climates. Hybrid (electrons + molecules) heating works more effectively and efficiently across diverse conditions.

3. Please elaborate on one key barrier to the affordable electrification of heating and cooling in buildings in the EU.

300 character(s) maximum

Deep renovation or full electrification is often impractical for historical/finalized buildings. Green gases via existing infrastructure offer a cost-effective path. Users should access diverse clean options, not be forced into one.

4. What are the key specific **barriers** to the **affordable electrification of industry**?

Between 1 and 5 selections per column

	For industrial heat below 200°C	**For industrial heat between 200°C and 500°C**	**For industrial heat above 500°C**
Infrastructure-related barriers	☐	☐	☐
High capital cost	☐	☐	☐
High operational costs	☐	☐	☐
High financing costs	☐	☐	☐
Lack of access to clean energy contracts, including PPAs	☐	☐	☐
Length of permitting processes	☐	☐	☐
Lack of flexibility of industrial process	☐	☐	☐
Difficulties to adapt industrial process	☐	☐	☐
Impact on competitiveness vis-a-vis EU competitors	☐	☐	☐
Impact on competitiveness vis-a-vis international competitors	☐	☐	☐

Lack of technology adapted to specific needs	☐	☐	☐
Lack of operational standards adapted to specific needs	☐	☐	☐
Insufficient awareness or trust in solutions	☐	☐	☐
Other (please specify)	☐	☐	☐
N/A	☑	☑	☑

5. Please elaborate on one key barrier to the affordable electrification of industry in the EU.
300 character(s) maximum

There is a need to accept a diversity of decarbonised solutions in industry, and much of it will be decarbonised molecules and fuels, if the economic conditions so demand, all industry is “hard to abate” system-wise.

4.C - Policy options

5. What are the **priority policy options** for accelerating the **affordable electrification of heating and cooling in industry and buildings**?

5.1 **EU policy framework**
Between 1 and 3 selections per column

	For space heating	**For industrial processes**
Adaptation of current legislative framework (towards 2030)	☐	☐
Additional policy initiatives (non-regulatory)	☐	☐
Additional public financing	☐	☐
Implementation of the current EU regulatory framework	☐	☐
New legislative framework (towards 2040)	☐	☐
Other (please specify)	☐	☐
N/A	☑	☑

5.2 **Policy design, targets and support schemes**
Between 1 and 3 selections per column

	For space heating	**For industrial processes**
Faster and simpler permitting	☐	☐

Improved statistics, long-term projections, decarbonisation pathways	☐	☐
Legislative limits for the use of fossil fuels or combustion	☐	☐
Taxation of fuels used in heating and cooling	☐	☐
Taxation of gaseous and solid emissions from heat generators	☐	☐
Technology-specific targets	☐	☐
Other (please specify)	☐	☐
N/A	☑	☑

5.3 **Energy system design**

Between 1 and 3 selections per column

	For space heating	**For industrial processes**
Cooperation between electricity grid operators and district heating and cooling systems	☐	☐
Integrated planning of electricity, gas and heat infrastructure at EU level	☐	☐
Integrated planning of electricity, gas and heat infrastructure at national level	☐	☐
Integrated planning of electricity, gas and heat infrastructure at local level	☐	☐
Mapping of future cooling needs	☐	☐
Mapping of heat sources and demand at national level	☐	☐
Planned gas infrastructure decommissioning	☐	☐
Stronger integration of cooling in urban planning	☐	☐
Other (Please specify)	☑	☑
N/A	☐	☐

* Other (please specify)

200 character(s) maximum

```
Coordinated (not integrated) planning of electricity, gas, and heat
infrastructure at all levels is viable but not reflected in current selection
wording.
```

5.4 **Promotion of business models and innovation**

Between 1 and 3 selections per column

	For space heating	**For industrial processes**

Commitments by manufacturers of clean heating and cooling appliances and systems	☐	☐
Incentives for installers of clean heating and cooling appliances and systems	☐	☐
Incentives for manufacturers of clean heating and cooling appliances and systems	☐	☐
Promotion of replacement schemes or social leasing for heating appliances	☐	☐
Promotion of third-party services	☐	☐
Rewarding of non-fossil flexibility in electricity markets	☐	☐
Support for innovation	☐	☐
Support for manufacturing of clean heating and cooling technologies	☐	☐
Other (please specify)	☐	☐
N/A	☑	☑

5.5 **Affordability, just transition and consumer empowerment**

Between 1 and 3 selections per column

	For space heating	**For industrial processes**
Information tools: further improvement of energy labelling of heating and cooling appliances	☑	☑
Promotion of renewable heat communities	☐	☐
Protection of energy poor and vulnerable consumers	☐	☐
Support for demonstration projects	☐	☐
Support for skills	☐	☐
Targeted programmes for specific regions (e.g. coal regions in transition, outermost regions)	☐	☐
Other (Please specify)	☑	☑
N/A	☐	☐

* Other (please specify)

200 character(s) maximum

```
Energy labelling favors one technology due to narrow system and footprint views;
opening to diverse options would yield better, affordable, user-fit solutions.
```

Contact

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