**Open public consultation - Questionnaire on the electrification action plan**

**I campi contrassegnati da \* sono obbligatori.**

**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? (seleziona e ordina)

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

Other (please specify): Specifica altro (max 100 caratteri)

**1.B - Barriers**

**\* 2. What are the key barriers hampering electrification decisions across all sectors? (scegli da 1 a 5)**

|  |
| --- |
| 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) |
| N/A |

**Other (please specify): Specifica altro**

**1.C - Policy options**

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

**\*3.1 EU policy framework (seleziona 1-3)**

|  |
| --- |
| 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 |

**Other (please specify): Specifica altro**

**\*3.2 General policy design measures (seleziona 1-3)**

|  |
| --- |
| 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) |
| N/A |

Other (please specify): Specifica altro

**\*3.3 Access to grid and flexibility (seleziona 1-3)**

|  |
| --- |
| Accelerate ncentivizeon 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 ncentivize 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) |
| N/A |

**Other (please specify): Specifica altro**

**3.4 Financing and investment (seleziona 1-3)**

|  |
| --- |
| Increase availability of financial instruments to cover upfront costs |
| Measures promoting simultaneously electrification and access to renewables, including through 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) |
| N/A |

Other (please specify): Specifica altro

**Part 2 - Flexibility: demand response and storage**

**2.A - Scope**

**\*1. Most relevant technologies and solutions for increasing flexibility (scegli 1-5)**

|  |
| --- |
| Thermal storage (electrified heat) |
| Electrochemical storage (incl. stationary batteries and mobile batteries, EV batteries) |
| Mechanical storage (incl. pumped hydro storage, compressed air storage, flywheels and gravitational energy) |
| 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 |
| Other (please specify) |
| N/A |

Other (please specify): Specifica altro

**2.B - Barriers**

**\*2. Key barriers to demand response (scegli 1-5)**

|  |
| --- |
| 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 |
| Other (please specify) |
| N/A |

**3. Please elaborate on key specific barriers to demand response: Max 300 caratteri**

**\*4. Key barriers to the deployment of storage solutions (scegli 1-5)**

|  |
| --- |
| Administrative/regulatory barriers |
| Skills-related barriers |
| Double taxation for storage |
| Grid connection |
| 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 |
| Length of permitting processes for storage |
| Technical barriers |
| Other (please specify) |
| N/A |

**5. Please elaborate on key specific barriers to the deployment of storage solutions: Max 300 caratteri**

**2.C - Policy options**

**6. Priority policy options for increasing system flexibility**

**\*6.1 EU policy framework (seleziona 1-3)**

|  |
| --- |
| 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): Specifica altro

**\*6.2 Policy design options (seleziona 1-3)**

|  |
| --- |
| Abolish double charging for storage |
| 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 |
| Other (please specify) |
| N/A |

Other (please specify): Specifica altro

**\*6.3 Access to grid and flexibility (seleziona 1-3)**

|  |
| --- |
| 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 |
| Facilitate grid connection for flexibility assets |
| Other (please specify) |
| N/A |

**Other (please specify): Specifica altro**

**\*6.4 Financing and investment / Business models and innovation (seleziona 1-3)**

|  |
| --- |
| 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 |
| Incentives for system operators to use flexibility services |
| Increase availability of financial instruments to cover upfront costs of flexibility solutions |
| Support for innovation in flexibility solutions |
| Other (please specify) |
| N/A |

**Other (please specify): Specifica altro**

**Part 3 – Electrification of transport**

**3.A – Barriers**

**1. Please elaborate on one key barrier to the electrification of transport in the EU: Max 300 caratteri**

**2. Key barriers specific to the road sector (1-5 per colonna)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 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 (specify level) |  |  |  |  |
| Lack of cost-reflective network charges |  |  |  |  |
| Lack of deployment of smart meters |  |  |  |  |
| Lack of interoperability (specify 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) |  |  |  |  |

**3.B - Policy options**

**\*3.1 EU policy framework (seleziona 1-3)**

|  |
| --- |
| 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 |

**\*3.2 General policy design measures (seleziona 1-3)**

|  |
| --- |
| 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 |

**Other (please specify): Specifica altro**

**\*3.3 Access to grid and flexibility (seleziona 1-3)**

|  |
| --- |
| Accelerate ncentivizeon 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 ncentivize 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) |
| N/A |

**Other (please specify): Specifica altro**

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

**4.A - Scope**

**1. Most relevant technologies for the affordable decarbonisation of heating towards 2040**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 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 |  |  |  |  |  |  |

**4.B - Barriers (buildings)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | 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 |  |  |  |

**3. Please elaborate on one key barrier to the affordable electrification of heating and cooling in buildings in the EU: Max 300 caratteri**

**4. Barriers to affordable electrification of industry**

|  |  |  |  |
| --- | --- | --- | --- |
|  | 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-à-vis EU competitors |  |  |  |
| Impact on competitiveness vis-à-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: Max 300 caratteri**

**4.C - Policy options**

**5.1 EU policy framework (seleziona 1-3 per colonna)**

|  |  |  |
| --- | --- | --- |
|  | 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 |  |  |

Other (please specify): Specifica altro

**5.2 Policy design, targets and support schemes (seleziona 1-3 per colonna)**

|  |  |  |
| --- | --- | --- |
|  | 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 |  |  |

**Other (please specify): Specifica altro**

**5.3 Energy system design (seleziona 1-3 per colonna)**

|  |  |  |
| --- | --- | --- |
|  | 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): Specifica altro**

**5.4 Promotion of business models and innovation (seleziona 1-3 per colonna)**

|  |  |  |
| --- | --- | --- |
|  | 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 |  |  |

Other (please specify): Specifica altro

**5.5 Affordability, just transition and consumer empowerment (seleziona 1-3 per colonna)**

|  |  |  |
| --- | --- | --- |
|  | 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): Specifica altro**