Contribution ID: 0d112b5c-f8a1-4617-8bff-cd8be2eb0303
Date: 30/08/2023 13:43:15

Heat pumps – action plan to accelerate roll-out across the EU

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Introduction

Rolling out heat pumps is central to the clean-energy transition and to achieving carbon neutrality in line with the goals set in the European Green Deal. All policy scenarios underpinning the 'Fit for 55' legislative proposals show a significant uptake of heat pumps in all sectors, and notably in buildings. To meet the 2030 targets and deliver the needed fast decarbonisation of heat, installing boilers in new buildings and replacing fossil-fuel boilers by newer ones should be discontinued as soon as possible.

The REPowerEU plan calls for prioritising investments in renewables and energy efficiency to reduce fossil-fuel imports and for doubling current roll-out rates of heat pumps in buildings. It also calls for a faster roll-out of large heat pumps for district heating and cooling networks.

There is an urgent need to shift to renewable and efficient heating and cooling technologies in buildings, industry and networks. The European Commission report on the competitiveness of clean energy technologies indicates that the roll-out of all types of heat pumps needs to accelerate further: from heat pumps for single-family houses, large multi-apartment buildings, tertiary buildings and heat networks, to high-temperature heat pumps for industrial applications. The Green Deal Industrial Plan points to heat pumps as one of the key technologies to meet EU climate-neutrality goals in the Net-Zero Industry Act to underpin industrial manufacturing.

Achieving these objectives builds on the framework set by:

- the Renovation Wave;
- the ongoing reviews of heating and cooling product-specific regulations under the Ecodesign and Energy Labelling framework; and
- the ongoing legislative revision of the Energy Performance of Buildings Directive (EPBD), the Renewable Energy Directive (RED) and the Energy Efficiency Directive (EED), which are part of the 'Fit for 55' package.

Purpose of the communication

This initiative will focus on accelerating the roll-out of heat pumps. It will take the form of a strategic communication, with an integrated approach across policy areas. It will seek to draw up an action plan with specific measures to address the main barriers and to strengthen the pull factors for a faster roll-out of heat pumps. The action plan will consider: (i) regulatory and non-regulatory instruments and enabling tools; (ii)

financing, communication and skills-use aspects; and (iii) multiple levels of action (EU, national and local or regional).

The below aspects will underpin the action plan to accelerate the roll-out of heat pumps across the EU.

1. A **platform/accelerator/partnership** of the Commission, Member States, the sector itself, financial institutions and training providers across the whole heat-pump value chain, including on research and innovation, scaling up manufacturing, creating the right national conditions including a favourable electricity /gas price ratio, and cross-cutting standardisation and interoperability aspects to ensure that heat pumps can be widely rolled out without undermining power-grid stability.
2. Focus on **communication** and a dedicated heat-pump skills partnership. There is a need to raise awareness about heat pumps to support their uptake. Consumers, businesses and small industries should have easy access to information on existing heat-pump solutions and on the heat-pump readiness of their buildings, industrial plants and networks, etc.

3. Updated **legislative rules** will aim to ensure a sufficiently strong policy signal for the heat-pump market, including by phasing out stand-alone boilers by 2029. These rules include the recast EPBD and EED, the Article 122 emergency measure on permitting for renewables, the revised RED, the revision of electricity market design legislation, the Net-Zero Industry Act and the Critical Materials Act, and the Commission's proposals for the recast of the Energy Taxation Directive and for a regulation on fluorinated greenhouse gases.

4. More accessible **financing**. To facilitate access to all relevant EU funding programmes, the action plan will map financing possibilities for the roll-out of heat pumps at individual level, and for heating networks supplied by large heat pumps as part of heating and cooling strategies at local and regional level, especially for the less wealthy, like people affected by energy poverty. In this respect, the action plan will also specifically consider the need to boost whole-energy-system approaches in building renovation to prioritise investment in integrated energy-upgrade projects in buildings.

How can I participate

Please complete this questionnaire on the Commission's website. A synopsis report of this public consultation and a summary of the results of all consultations will be published on this page together with the Communication itself. Please note that to ensure a fair and transparent consultation process, only responses received through our online questionnaire will be considered and included in the report summarising the responses.

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* Surname

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* Organisation name

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Swedenergy/Energiföretagen Sverige

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- Sweden

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- Bosnia and Herzegovina
- Botswana
- Bouvet Island
- Brazil
- British Indian Ocean Territory
- British Virgin Islands
- Brunei
- Bulgaria
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- Iceland
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Barriers to the roll-out of heat pumps in buildings, networks and industry

1. What are the key barriers that delay or prevent the roll-out of heat pumps in buildings in the EU? (Please clarify in the comments if you are answering for a particular country)

Please rate the barriers, according to their importance:

	Very important	Important	Neutral	Slightly important	Not important at all	No opinion
* Demand side – High upfront costs (heat pump including additional installations such as water tanks, radiators, pipework, electrical system upgrades, drilling)	○	○	○	◉	○	○
* Demand side – High operating costs (including electricity bill, maintenance, repairs)	○	○	○	◉	○	○
* Demand side – Renovation hassle (e.g. building is not insulated, radiator system not ready for low flow temperature, obsolete piping and cabling, insufficient electrical capacity)	○	○	○	◉	○	○
* Demand side – Space/noise considerations (e.g. in multifamily buildings or in densely populated areas)	○	○	○	◉	○	○
* Supply side – Competition from cheaper, conventional fossil-fuel systems (e.g. gas boilers)	○	○	◉	○	○	○
* Supply side – Manufacturing constraints and supply-chain vulnerabilities (e.g. unavailable products for specific use cases, delivery delays)	○	○	○	◉	○	○
* Supply side – Shortage of skilled/certified installers	○	○	○	◉	○	○
* Supply side – Capacity limitations of distribution grid and cumbersome connection process	○	◉	○	○	○	○
* Energy market and pricing – Unfavourable network tariffs and taxation	○	○	○	○	◉	○
* Financing – Insufficient public support (e.g. grants, incentives)	○	○	○	○	◉	○
* Financing – Lack of simple, attractive and accessible private financing tools (e.g. loans)	○	○	○	○	◉	○

* Awareness – Lack of understanding of and trust in the technology (e.g. through one-stop shops, energy advisers)	○	○	○	○	◉	○
* Awareness – Insufficient awareness of heat pumps' potential for demand-side flexibility	○	○	○	○	◉	○
* Awareness – Unfavourable coverage in the press/media, contradictory information about technology options	○	○	○	○	◉	○
* Regulatory environment – Lack of rules on training and certification	○	○	○	○	◉	○
* Regulatory environment – Restrictive codes and standards	○	○	○	○	◉	○

Comments:

300 character(s) maximum

The Swedish market for heat pumps works well and there is no need of any further policy measures for enhancing the opportunities for installation of heat pumps. There must also be an equal level-playing field between individual heat pumps at building level and large scale heat pumps in DHC systems

2. What are the key barriers that delay or prevent the roll-out of heat pumps in district heating/cooling networks in the EU? (Please clarify in the comments if you are answering for a particular country)

Please rate the barriers, according to their importance:

	Very important	Important	Neutral	Slightly important	Not important at all	No opinion
* Demand side – High upfront costs (capital expenditure)	○	◉	○	○	○	○
* Demand side – High operating costs (operating expenditure, e.g. for electricity, maintenance, repairs)	○	○	◉	○	○	○
* Demand side – Competition from cheaper, conventional fossil-fuel installations (e. g. gas boilers)	○	○	○	◉	○	○
* Demand side – District networks not ready for heat pumps (e.g. non-insulated networks, obsolete piping, networks only compatible with high temperature)	○	○	○	◉	○	○
* Supply side – Manufacturing constraints and supply-chain vulnerabilities (e.g. unavailable products for specific use cases, delivery delays)	○	○	○	◉	○	○
* Supply side – Shortage of skilled/certified installers	○	○	○	◉	○	○
* Energy infrastructure – Limited capacity of the electricity distribution grid	○	○	◉	○	○	○
* Energy infrastructure – Geographical constraints (e.g. lack of space in densely populated urban areas)	○	○	○	◉	○	○
* Energy market and pricing – Unfavourable network tariffs and taxation	○	◉	○	○	○	○
* Financing – Insufficient public support (e.g. grants, incentives)	○	○	○	◉	○	○
* Financing – Lack of simple, attractive and accessible private financing tools (e.g. loans)	○	○	○	◉	○	○
* Regulatory environment – Lengthy permitting and administrative procedure	○	○	◉	○	○	○

* Awareness – Insufficient awareness of heat pumps' potential for demand-side flexibility	○	○	○	◉	○	○
* Awareness – Lack of awareness of successful business cases	○	○	○	◉	○	○

Comments:

300 character(s) maximum

The lack of equal level playing in the heating market field promotes today individual heat pumps at building level instead of large scale solutions within district heating systems with higher energy system efficiency. Large scale heat pumps in Sweden provides about 7% of Swedish DH production.

3. What are the key barriers that delay or prevent the roll-out of heat pumps in EU industry?
(Please clarify in the comments if you are answering for a particular country)

Please rate the barriers, according to their importance:

	Very important	Important	Neutral	Slightly important	Not important at all	No opinion
* Demand side – High upfront costs (capital expenditure)	○	○	○	○	◉	○
* Demand side – High operating costs (operating expenditure, e.g. for electricity, maintenance, repairs)	○	○	○	○	◉	○
* Demand side – Competition from cheaper, conventional fossil-fuel installations (e. g. gas boilers)	○	○	○	○	◉	○
* Demand side – Technical limitations (e.g. shortage of space, lack of primary heat source, too high process temperature)	○	○	○	○	◉	○
* Supply side – Manufacturing constraints and supply-chain vulnerabilities (e.g. unavailable products for specific use cases, delivery delays)	○	○	○	○	◉	○
* Supply side – Shortage of skilled/certified installers	○	○	○	○	◉	○
* Financing – Insufficient public support (e.g. grants, incentives)	○	○	○	○	◉	○
* Financing – Lack of simple, attractive and accessible private financing tools (e.g. loans)	○	○	○	○	◉	○
* Regulatory environment – Lengthy permitting and administrative procedure	○	○	○	○	◉	○
* Awareness – Insufficient awareness of heat pumps' potential for demand-side flexibility	○	○	○	○	◉	○
* Awareness – Insufficient internal technical knowledge (e.g. on the minimum heat demand requirements and the applicability of industrial heat pumps in existing processes)	○	○	○	○	◉	○

* Awareness – Lack of critical mass of successful projects in similar industrial processes (lighthouse projects)	○	○	○	○	◉	○

Comments:

300 character(s) maximum

The Swedish market for heat pumps is mature and there is no need of further direct measures to increase use of heat pumps.

Facilitating policies and measures to accelerate the roll-out of heat pumps

4. Which policies and measures do you think are most relevant to accelerate the roll-out of heat pumps in buildings in the EU?

Please rate them according to their relevance:

	Very relevant	Relevant	Neutral	Slightly relevant	Not relevant at all	No opinion
* Requirements on the energy performance of buildings (e.g. mandatory minimum energy-performance standards, zero-emission standards)	○	○	◉	○	○	○
* Requirements on the performance of technical building systems (e.g. minimum requirements on greenhouse-gas emissions of technical building systems, minimum requirements for use of renewable energy in heating and cooling of buildings)	○	○	○	◉	○	○
* Limitations on installations of new stand-alone fossil-fuel heating systems (e.g. via ecodesign minimum requirements)	○	○	◉	○	○	○
* Legal mandates / minimum targets for heat-pump installations in public buildings	○	○	○	○	◉	○
* Ambitious ecodesign regulations for heat pumps (e.g. by introducing a minimum seasonal heating efficiency)	○	◉	○	○	○	○
* Introduction of a unified EU energy label to make it possible to compare different technologies	○	◉	○	○	○	○
* Requirements for energy-efficiency obligation schemes to promote the uptake of heat pumps to comply with the energy-saving obligation	○	○	○	○	◉	○
* Requirements for the roll-out of separate sub-metering for heat pumps	○	◉	○	○	○	○
* Regulatory measures to strengthen compatibility, interoperability and communication of heat pumps with other building management systems or with the grid	○	○	◉	○	○	○
* Mandatory training and certification on the use of climate-friendly refrigerants	○	○	○	◉	○	○
* Incentivisation of heat pumps through green public procurement	○	○	○	○	◉	○

* National targets and roadmaps for rolling out heat pumps	○	○	○	○	◉	○
* Incentives for replacing existing stand-alone fossil-fuel heating systems (e.g. gas boilers) with heat pumps	○	○	○	○	◉	○
* Incentives for developing demand-side flexibility, including heat pumps and storage	○	○	○	◉	○	○
* Strengthening carbon pricing to reflect external costs of fossil fuels, including through the new emissions trading system covering fuels used for combustion in the buildings, road transport and additional sectors	◉	○	○	○	○	○
* Strengthening consumer information on / awareness of the importance of low-temperature radiators through an EU energy label	○	○	◉	○	○	○
* Increased market transparency for heat pumps via the EPREL energy-labelling database	○	◉	○	○	○	○
* Introduction of information/advice on low-temperature heating in energy performance certificates	○	○	○	◉	○	○

Comments:

300 character(s) maximum

Heat pumps are already a viable heating solution in the heating market with high market penetration.There is no need of additional policy measures to further promote heat pumps. Instead there is a need to create a more even level-playing field so that district heating can compete on equal conditions

5. Which policies and measures do you think are most relevant to accelerate the roll-out of heat pumps in district heating/cooling networks in the EU?

Please rate them according to their relevance:

	Very relevant	Relevant	Neutral	Slightly relevant	Not relevant at all	No opinion
* Simplification and acceleration of permitting procedures for connection to distribution grids	○	○	◉	○	○	○
* Minimum targets for district network operators on use of renewable energy	○	○	○	○	◉	○
* Increasing the capacity of the electricity grid and putting in place communication standards between heat pumps and the electricity grid to facilitate demand-side flexibility	○	◉	○	○	○	○
* Promotion of large-scale heat pumps through green public procurement	○	○	○	◉	○	○
* Financial support and incentives for the installation of heat pumps in district heating networks	○	○	○	◉	○	○
* Strengthening carbon pricing to reflect external costs of fossil fuels, including through the new emissions trading system covering fuels used for combustion in the buildings, road transport and additional sectors	◉	○	○	○	○	○
* National targets and roadmaps for rolling out heat pumps	○	○	○	○	◉	○

Comments:

300 character(s) maximum

In Sweden large scale heat pumps are used since the 1980's and contributes today with about 7% av the annual DH production. FF55 already drives the roll-out of HP with the ETS2 and strengthened ETS1, as well as new RED and EED requirements and there is no need of more technology specific policies.

6. Which policies and measures do you think are most relevant to accelerate the roll-out of heat pumps in EU industry?

Please rate them according to their relevance:

	Very relevant	Relevant	Neutral	Slightly relevant	Not relevant at all	No opinion
* Simplification and acceleration of permitting procedures for connection to distribution grids	○	○	○	○	◉	○
* Minimum targets for industries on use of renewable energy	○	○	○	○	◉	○
* Increasing the capacity of the electricity grid and putting in place communication standards between heat pumps and the electricity grid to facilitate demand-side flexibility	○	○	○	◉	○	○
* Financial support and incentives for the installation of heat pumps in industrial facilities	○	○	○	○	◉	○
* Strengthening carbon pricing to reflect external costs of fossil fuels, including through the new emissions trading system covering fuels used for combustion in the buildings, road transport and additional sectors	○	◉	○	○	○	○
* National targets and roadmaps for rolling out heat pumps	○	○	○	○	◉	○

Comments:

300 character(s) maximum

Carbon pricing and the FF55 package already drives the roll-out of HP with the ETS2 and strengthened ETS1, as well as new RED and EED requirements and there is no need of more technology specific policies.

Economic and financing tools to accelerate the roll-out of heat pumps

7. Which economic and financing tools do you think are most relevant to accelerate the roll-out of heat pumps in buildings in the EU?

Please rate them according to their relevance:

	Very relevant	Relevant	Neutral	Slightly relevant	Not relevant at all	No opinion
* EU public funding – Steer funding from existing instruments towards rolling out heat pumps (e.g. incentives for replacing existing stand-alone fossil-fuel heating systems)	○	○	○	◉	○	○
* Private funding – Attractive and easily accessible private financing tools (e.g. low-interest loans, revolving funds, green leasing, energy service agreements, energy performance contracts)	○	○	◉	○	○	○
* Private funding – Incentivise and de-risk private-sector investment (e.g. leveraging revolving funds, guarantees)	○	○	○	◉	○	○
* Innovative financing – Explore innovative financing tools (e.g. including heat service contracts, on-bill schemes, crowdfunding, performance guarantees)	○	○	○	◉	○	○
* Taxation – Favourable pricing policies for purchasing heat pumps (e.g. tax reductions and deductions, etc.)	○	○	○	◉	○	○
* Taxation – Favourable tax rates for electricity compared to gas	○	○	○	◉	○	○
* Taxation – Increased carbon pricing of fossil fuels through the Emissions Trading System, including through the new system covering fuels used for combustion in the buildings, road transport and additional sectors	○	◉	○	○	○	○

* Taxation – Provisions in the Energy Taxation Directive (e.g. introduction of new minimum rates that enable a direct comparison between more and less polluting fuels)	○	○	○	◉	○	○

Comments:

300 character(s) maximum

Carbon pricing with ETS2 and stregthened ETS1 should be the main driver for the transition from fossil-fuel based heating. There is no need of additional public funding to accelerate the roll-out of heat pumps.

8. Which financing tools do you think are most relevant to accelerate the roll-out of heat pumps in district heating/cooling networks in the EU?

Please rate them according to their relevance:

	Very relevant	Relevant	Neutral	Slightly relevant	Not relevant at all	No opinion
* EU public funding – Steer funding from existing instruments towards rolling out heat pumps (e.g. incentives for replacing existing fossil-fuel systems)	○	○	○	◉	○	○
* Steer revenues from the Emissions Trading System towards rolling out heat pumps	○	○	◉	○	○	○
* Incentivise and de-risk private-sector investment (e.g. leveraging revolving funds, guarantees)	○	○	○	◉	○	○
* Attractive and easily accessible private financing tools (heat-pump loans, revolving funds, green leasing, energy service agreements, energy performance contracting, etc.)	○	○	○	◉	○	○
* Innovative financing schemes for network operators and public authorities to invest in heat pumps (e.g. municipal bonds, heat service contracts, etc.)	○	○	○	◉	○	○
* Indirect financial incentives, e.g. lower insurance premiums	○	○	○	○	◉	○

Comments:

300 character(s) maximum

Carbon pricing with ETS2 and strengthened ETS1 should be the main driver for the transition from fossil-fuel based heating. There is no need of additional public funding to accelerate the roll-out of heat pumps, in particular in Sweden with only 2% of fossil fuel based heating left.

9. Which financing tools do you think are most relevant to accelerate the roll-out of heat pumps in EU industry?

Please rate them according to their relevance:

	Very relevant	Relevant	Neutral	Slightly relevant	Not relevant at all	No opinion
* EU public funding – Steer funding from existing instruments towards rolling out heat pumps (e.g. incentives for replacing existing fossil-fuel systems)	○	○	○	○	◉	○
* Steer revenues from the Emissions Trading System towards rolling out heat pumps	○	○	○	○	◉	○
* Incentivise and de-risk private-sector investment (e.g. leveraging revolving funds, guarantees)	○	○	○	○	◉	○
* Attractive and easily accessible private financing tools (heat-pump loans, green leasing, energy service agreements, energy performance contracting, etc.)	○	○	○	○	◉	○
* Innovative financing schemes for industries to invest in heat pumps, including heat service contracts	○	○	○	○	◉	○
* Indirect financial incentives, e.g. lower insurance premiums	○	○	○	○	◉	○

Comments:

300 character(s) maximum

Heat pumps are already competitive as a sustainable heating solutions in the heating market and there is no need of further direct finacial measures apart from R&D in the case of Sweden.

10. Which are the most important types of EU funding to support the roll-out of heat pumps in buildings, district heating /cooling networks and in industry in the EU?

Please rate the types of funding, according to their importance:

	Very important	Important	Neutral	Slightly important	Not important at all	No opinion
* Funding for research and innovation actions (e.g. via Horizon Europe programme)	○	◉	○	○	○	○
* Funding for market-uptake actions (e.g. via LIFE-Clean Energy Transition programme)	○	○	◉	○	○	○
* Funding for large-scale demonstrators and big flagship projects (e.g. via the Innovation Fund)	○	◉	○	○	○	○
* Funding from national/regional funds (e.g. cohesion policy funds: European Regional Development Fund, Cohesion Fund, Just Transition Fund, Modernisation Fund)	○	○	○	◉	○	○
* Funding using revenues from the Emissions Trading System	○	○	○	◉	○	○
* Manufacturing subsidies (e.g. via Important Projects of Common European Interest)	○	○	○	○	◉	○

Comments:

300 character(s) maximum

EU funding should be concentrated to research and innovation actions and large-scale demonstrators. Since heat pumps is already a mature technology there is no need of any further large-scale investment support schemes.

Strengthening technical assistance and awareness to accelerate the roll-out of heat pumps

11. Which measures to strengthen technical assistance and awareness do you think are most relevant to accelerate the roll-out of heat pumps in buildings in the EU?

Please rate them according to their relevance:

	Very relevant	Relevant	Neutral	Slightly relevant	Not relevant at all	No opinion
* National/regional communication campaigns targeting consumers presenting available technical solutions for various use cases	○	○	○	◉	○	○
* Community-led information campaigns at local level, for example by fostering communication between installers, consumers and energy advisers	○	○	○	◉	○	○
* Access to tailored advice (e.g. one-stop shops) for households, especially vulnerable ones and those at risk of energy poverty	○	○	○	◉	○	○
* Operational support for project conception, design and implementation	○	○	○	◉	○	○
* EU countries to exchange best practice and to support each other in drawing up national heat-pump action plans	○	○	○	◉	○	○
* Track progress on heat-pump roll-out targets at EU level and across all EU countries	○	○	○	○	◉	○

Comments:

300 character(s) maximum

It is relevant to inform house-owners about sustainable heating solutions, i.e. from municipal energy and climate counsellors, but it should not favour one single technology but also DH etc. We are against technology-based targets since that will distort the competition within the heating market.

12. Which measures to strengthen technical assistance and awareness do you think are most relevant to accelerate the roll-out of heat pumps in district heating /cooling networks in the EU?

Please rate them according to their relevance:

	Very relevant	Relevant	Neutral	Slightly relevant	Not relevant at all	No opinion
* Technical assistance for network operators in legal, planning, permitting, technical, administrative and financing matters (e.g. via ELENA grants)	○	○	○	◉	○	○
* Communication campaigns targeting network operators and public authorities on available heat-pump solutions for district heating/cooling networks	○	○	○	◉	○	○
* Facilitate large-scale projects and interregional cooperation to scale up manufacturing of the most efficient technologies for large-scale heat pumps for district heating and cooling networks	○	○	○	◉	○	○
* EU countries to exchange best practice and to support each other in drawing up national heat-pump action plans	○	○	◉	○	○	○
* Track progress on heat-pump roll-out targets at EU level and across all EU countries	○	○	○	○	◉	○
* Raise awareness through energy audits	○	○	◉	○	○	○

Comments:

300 character(s) maximum

We question technology specific roll-out targets for heat pumps since it is already a viable technology within the heating market and it would distort the competion within the heating market, in particular against district heating.

13. Which measures to strengthen technical assistance and awareness do you think are most relevant to accelerate the roll-out of heat pumps in EU industry?

Please rate them according to their relevance:

	Very relevant	Relevant	Neutral	Slightly relevant	Not relevant at all	No opinion
* Technical assistance for industries in legal, planning, permitting, technical, administrative and financing matters (e.g. via ELENA grants)	○	○	○	○	○	◉
* Communication campaigns targeting businesses and small industries on available solutions for high-temperature heat pumps for industry	○	○	○	○	○	◉
* Bring together the heat-pump sector (manufacturers, suppliers) with industrial sectors to develop tailor-made solutions for the specific needs of the industry and standardise them to reduce cost and risks	○	○	○	○	○	◉
* Develop more energy-services companies to provide technical and/or financial support for the integration of heat pumps in existing processes	○	○	○	○	○	◉
* Facilitate large-scale projects and interregional cooperation to scale up manufacturing of the most efficient technologies for large industrial heat pumps	○	○	○	○	○	◉
* EU countries to exchange best practice and to support each other in drawing up national heat-pump action plans	○	○	○	○	○	◉
* Track progress on heat-pump roll-out targets at EU level and across all EU countries	○	○	○	○	○	◉

* Raise awareness through energy audits	○	○	○	○	○	◉

Comments:

300 character(s) maximum

Improving skills and knowledge to accelerate the roll-out of heat pumps

14. Which measures to improve skills and knowledge do you think are most relevant to accelerate the roll-out of heat pumps in buildings, district heating/cooling networks and in industry in the EU?

Please rate them according to their relevance:

	Very relevant	Relevant	Neutral	Slightly relevant	Not relevant at all	No opinion
* Mapping of skills shortages in relevant sectors, including traditional and new skills (e.g. digitalisation, hybridisation, system optimisation, use of natural refrigerants)	○	○	○	◉	○	○
* Mutual recognition of skills and qualifications across EU countries in the context of free movement of workers	○	○	○	◉	○	○
* EU-wide recognition mechanisms of relevant professions, tasks or skills (e.g. certification, qualification, accreditation)	○	○	○	◉	○	○
* National/regional dedicated training programmes for engineers and installers organised by educational institutions and/or training providers	○	○	○	◉	○	○
* Identifying common core training aspects of relevance for rolling out heat pumps in national training curricula with relevance to building renovation and modernisation	○	○	○	◉	○	○

* Incorporating training and degree courses into formal higher education curricula to provide the relevant skills set	○	○	○	◉	○	○
* Developing key modules of training materials that could fit into standardised core training with focus on the technologies in question that could be easily adjusted to national contexts	○	○	○	◉	○	○

Comments:

300 character(s) maximum

There are already enough competent installers available in the Swedish market so any EU actions must take into account the diversity and different starting points in EU member states.

15. Which specific activities are most relevant to improve skills and knowledge for the roll-out of heat pumps in buildings, district heating/cooling networks and in industry in the EU?

Please rate them according to their relevance:

	Very relevant	Relevant	Neutral	Slightly relevant	Not relevant at all	No opinion
* National/regional certification programmes for e.g. engineers and installers	○	○	○	◉	○	○
* Training programmes organised by installers associations, funded by national/regional funds	○	○	○	◉	○	○
* Obligation on heat-pump manufacturers and suppliers to train and certify engineers, installers and retailers	○	○	○	○	◉	○
* National/regional train-the-trainers programmes for energy advisers, who act as recognised and trusted trainers for engineers and installers	○	○	○	○	◉	○
* One-stop shops at national /regional level that provide trusted advice to engineers and installers	○	○	○	◉	○	○

* National/regional registers (databases) of trained/certified engineers and installers	○	○	○	◉	○	○
* Free online courses in all EU languages collected on a common platform (e.g. BUILD Up Skills)	○	○	○	◉	○	○
* Fostering cooperation between players of the heat-pump value chain: engineers; installers; retailers; manufacturers; component, material and technology suppliers, etc.)	○	○	○	◉	○	○
* Development of practical training material providing information on best installation practice and common mistakes to avoid	○	○	○	◉	○	○
* Development of practical training material providing information on training and certification programmes for heat-pump engineers and installers	○	○	○	◉	○	○

Comments:

300 character(s) maximum

There is already enough competent installers in the Swedish market and we have about 40 years of experience to build upon regarding installation of heat pumps borth at building level and in DHC so any EU actions must take into account the diversity and different starting points in EU member states.

Facilitating system integration of heat pumps

16. Integration with local renewables: If you have a heat pump for your domestic or business needs, is it coupled to local renewable generation?

- ○ Yes, solar photovoltaic generation
- ○ Yes, solar thermal generation
- ◉ Yes, both solar photovoltaic and solar thermal generation
- ○ No

If Yes, why? [more than one answer possible]

- ☐ To increase self-consumption of my electric generation

- [ ] To increase self-consumption of my thermal generation
- [x] To improve the efficiency of my heat pump
- [x] To better offset my electric loads from load peaks in the grid
- [ ] Other

Comments:

500 character(s) maximum

System integration must be seen at a much broader level taking into account the system efficiency of integrating other kinds of renewable sources such as biomass CHP, CCS/CCU and making use of of low-temperature waste heat from eg. data centers and waste water-treatment facilities and also district cooling HP. Switchable large-scale heat pumps can also be switched off at peak-load hours and if grid capacity constraints where CHP installations instead could increase their electricity production.

17. Integration with local storage: If you have a heat pump for your domestic or business needs, is it coupled to a local storage system?

- ( ) Yes, electric storage (battery)
- ( ) Yes, thermal storage (e.g. water tank)
- (•) Yes, both thermal and electric storage
- ( ) No

If Yes, why? [more than one answer possible]

- [ ] To increase self-consumption of own renewable energy generation (e.g. from solar)
- [x] To better offset my electric loads from load peaks in the grid
- [x] To better manage my thermal loads
- [ ] Other

Comments:

500 character(s) maximum

Thermal storage integration must be used in a broader system efficiency operation synergies with sector integration both between electricity and district heating and cooling systems as well as the development of large scale CCS/CCU installations which will enable to supply more waste heat where the role of thermal storages also might increase.

18. How would you assess the below factors that may deter you from installing a local renewable or storage system?

Please rate the factors, according to their importance:

	Very important	Important	Neutral	Slightly important	Not important at all	No opinion
Funding for research and innovation actions (e.g. via Horizon Europe programme)	○	◉	○	○	○	○
Lack of standardised solutions	○	○	○	○	◉	○
Lack of trustworthy/experienced installers	○	○	○	○	◉	○
Environmental issues with end-of-life disposal/recycling	○	○	○	○	◉	○
Grid connection issues (e.g. permitting, smart metering)	○	◉	○	○	○	○
Safety-related issues (e.g. fire safety)	○	○	○	○	◉	○
Space availability issues (e.g. roof space)	○	○	○	◉	○	○
Maintenance hassle	○	○	○	○	◉	○

Comments:

500 character(s) maximum

19. Integration with the grid: If you have a heat pump for your domestic or business needs, do you provide flexibility services (e.g. through demand response) to the local electricity grid?

- (●) Yes
- ( ) No

If Yes, why? [more than one answer possible]

- [ ] Explicit demand response through an independent aggregator (e.g. virtual power plant)
- [x] Explicit demand response through the energy retailer
- [x] Implicit demand response (dynamic pricing)

Comments (if applicable, please describe the setting in which these services are provided):

500 character(s) maximum

Switchable large-scale heat pumps are used and may be switched off at peak-load hours and if grid capacity constraints where CHP installations instead could increase their electricity production. Furthermore a PFAS ban including HFO refrigerants is a major obstacle of maintaining present large-scale heat pump capacity. An inclusion of HFO in ban lack scientific basis an there must be viable alternatives before introduced and take into account the already strict monitoring of refrigerants used.

Increasing sustainability, resilience, competitiveness, innovation and transparency along the heat-pump value chain

20. How would you rate the below factors that may hamper the EU's capacity for innovation in relation to the heat-pump value chain?

Please rate the factors, according to their importance

	Very important	Important	Neutral	Slightly important	Not important at all	No opinion
Lack of support to academic and research institutions for research and innovation	○	○	○	◉	○	○
Limited large-scale manufacturing in the EU at present	○	○	○	○	◉	○
Lack of financing for start-ups	○	○	○	◉	○	○
Process for EU-wide patents is too long and costly	○	○	○	○	◉	○
No possibility to apply for a provisional patent at EU level, with minimal cost, securing short-term (e.g. 1-year) patent protection	○	○	○	○	◉	○
Lack of technical and financial capacity to enter into future intellectual property disputes	○	○	○	○	◉	○
Lack of standardisation (e.g. of data interface)	○	○	○	○	◉	○
Lack of updated safety standards	○	○	○	○	◉	○

Comments:

500 character(s) maximum

A PFAS ban which is currently proposed by ECHA could stop further opportunities for large-scale heat pumps. We consider that there is a need of at least a 12-year derogation and at maximum the remaining lifetime of existing heat pump installations in district heating and cooling, conditioned that there is sufficient evidence of lack of viable alternatives. More research and development is necessary to develop alternative HP solutions with natural or other sustainable refrigerants.

21. How would you rate the potential of the individual sectors of the heat-pump value chain to increase the competitiveness and reduce the dependency of the EU industry?

Please rate the factors, according to their importance

	Very important	Important	Neutral	Slightly important	Not important at all	No opinion
Motors, compressors, accumulators, fans	○	○	○	○	○	◉
Heat exchangers	○	○	○	○	○	◉
Electronics, chips, controllers, semiconductors	○	○	○	○	○	◉
Raw materials (e.g. copper, steel)	○	○	○	○	○	◉
Piping, valves	○	○	○	○	○	◉
Natural refrigerants	○	○	○	○	○	◉
Module production	○	○	○	○	○	◉
Project engineering, procurement and construction	○	○	○	○	○	◉
Project operation and maintenance	○	○	○	○	○	◉
System dismantling and recycling	○	○	○	○	○	◉

Comments:

500 character(s) maximum

22. Would you consider it useful to introduce any of the below sustainability measures related to the production and/or lifecycle of heat-pump products/systems sold in the EU?

- Yes
- No
- No opinion

Comments:

500 character(s) maximum

23. Do you consider that supply-chain challenges could have a substantial impact on the availability of heat-pump solutions in the EU market from now until 2030?

- Certainly yes
- Likely
- Maybe
- Unlikely
- Certainly no
- No Opinion

Comments:

500 character(s) maximum

24. Do you consider that supply-chain challenges could have a substantial impact on the affordability of heat-pump solutions in the EU market from now until 2030?

- Certainly yes
- Likely
- Maybe
- Unlikely

- Certainly no
- No Opinion

Comments:

500 character(s) maximum

25. What measures do you think the EU heat-pump industry should take to ensure that businesses across the supply chain can meet demand?

500 character(s) maximum

There is already several large-scale manufacturers of heat pumps in the EU and any EU policy measures that may distort the heating market competition between sustainable fossil-fuel-free heating solutions should be avoided.

26. What measures do you think EU countries, regions and local authorities should take to support the manufacturing and roll-out of heat pumps?

500 character(s) maximum

27. Do you consider that the EU's reliance on imported products/materials in the heat-pump sector may jeopardise a speedy roll-out of heat pumps?

- Yes
- No

Comments:

500 character(s) maximum

28. For which raw materials or specific intermediate components do the below situations apply – if any?

a. EU suppliers depend on a single supplier / non-EU country for a critical percentage (e.g. 65% of the total trade volume)
b. EU suppliers encounter trade barriers / non-tariff measures imposed by non-EU countries
c. Specific measures of cooperation with non-EU countries (e.g. partnerships) should be taken (also for final products)

500 character(s) maximum

29. Please upload your file(s), if you have any further comments or specific contributions that are relevant for heat pump roll-out and are not covered by the questionnaire.

Only files of the type pdf,txt,doc,docx,odt,rtf are allowed

Contact

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