SOLUTIONS STARTER MAP

THE EU SECTOR COUPLING: WHO ASKS FOR THE ROAD NEVER GETS LOST
FROM THE NORDICS TO THE EU – SHOWING THE PATH TOWARDS THE 2030 TARGETS

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EXECUTIVE SUMMARY


For the first time, the Finnish Presidency and the European Commission joined forces to discuss together this issue of strategic importance for the EU.

The EU adopted an ambitious legislative framework for 2030 (including targets for greenhouse gas emissions reduction, renewable energy and energy efficiency). In accordance with the EU Governance Regulation, all Member States prepared draft integrated NECPs and will submit their final plans by the end of 2019.

In order to support this planning process, the workshop focused on how to unlock the potential of sector coupling to deliver on the NECPs. The event named:  

*The EU sector coupling: Who asks for the road never gets lost
From the Nordics to the EU – showing the path towards the 2030 targets*

gathered representatives from EU countries and non-EU countries, EU officials and a variety of stakeholders to work on a joint “Solutions Starter Map” on sector coupling and NECPs.

The aim for this collaborative document is to provide a set of key solutions for the implementation of successful sector-coupling initiatives at EU, national, regional and local level. Besides, the “Solutions Starter Map” also aims at providing a concrete input for European and national policymakers involved in the drafting and assessment of the NECPs and beyond.

This innovative drafting exercise outlined the importance of cross-sectoral solutions which would aim at deploying sector integration from different perspectives and in different fields.

The deployment of sector coupling technologies and appropriate infrastructure should be fostered in order to unlock the potential of sector integration. Market mechanisms and financial measures may trigger the needed investments and consumers’ behaviour to speed up the technological and storage development, while also incentivising the shift to sector coupling technologies and services. In this context, supporting digitalisation of the energy system and the deployment of smart appliances may contribute to unlocking the potential of sector integration, increasing the flexibility of energy grids and enable the energy transition. Besides, a comprehensive and detailed infrastructure planning may severely contribute to the technological deployment and the further development of storage solution, which are needed to unlock the potential of sector coupling in order to deliver on the NECPs.

The energy transition and decarbonisation of the European economy should be complemented by a “social transition”. In fact, it should be considered to address energy poverty and social acceptance, while also seizing the opportunity to reap the economic and social benefits of job creation next to the positive climate change mitigation effects.

Such an action could be supported by the establishment of a coherent cooperation between public authorities (local, regional, national and EU levels) and the development of inclusive procedures in order to
democratise the NEPCs drafting and implementation process. Indeed, participants outlined the importance of involving both private and public stakeholders, as well as citizens and businesses, in the pathways towards the decarbonisation of the European economy.

Beyond the NECPs, it was also outlined that the EU may want to consider new policy measures, guidelines on concerted action to facilitate ‘sector coupling’ at various level across the EU.

Lastly, it was suggested for the EU to explore the possibility of creating a Climate Union, which would go beyond the scope of the Energy Union and would set climate change objectives as an overarching target for the European Union (hence reaching beyond the energy sector).

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INTRODUCTION

WHY ‘SECTOR-COUPLING’?

The European Union is committed to reduce greenhouse gas emissions and to provide secure, affordable and sustainable energy for its citizens. It has adopted an ambitious legislative framework for 2030 (including targets for greenhouse gas emissions reduction, renewable energy and energy efficiency). In accordance with the EU Governance Regulation, all Member States have prepared draft integrated National Energy and Climate Plans (NECPs) and will submit their final NECPs by the end of 2019. In its assessment of the draft NECPs, the European Commission (EC) invited Member States to see them as an opportunity to include more forward looking concepts of energy system integration and sector coupling, including the further integration of the power, gas and heat sectors, as they become central for a decarbonised energy system.

At the same time, the EC has also recognised the need to invest in a smart, innovative and sustainable industry in a new industrial age.

The workshop From the Nordics to the EU – Showing the path towards the 2030 targets aims to deliver a solutions starter map for the implementation of successful sector-coupling initiatives at national, regional and local level, inspired by existing solutions in Nordic countries.

WHAT IS ‘SECTOR-COUPLING’?

- There is no precise definition of ‘sector coupling’. In general, sector coupling means valuing synergy potentials and interlinkages between different parts of the energy system to contribute to the cost-efficient decarbonisation of the energy system as a whole.

- A study requested by the European Parliament in November 2018 distinguishes between two types of ‘sector coupling’: end-use sector coupling and cross-vector integration. **End-use sector coupling involves the electrification of energy demand while reinforcing the interaction between electricity supply and end-use.** **Cross-vector coupling involves the integrated use of different energy infrastructures and vectors, in particular electricity, heat and gas, either on the supply side, (…) or at the demand side (…).**

- It is suggested for the purpose of this workshop to extend the remit of ‘sector coupling’ to all synergies within (and sometimes beyond) the energy system that increase the level of effectiveness in meeting EU’s climate objectives or increase their level of cost-efficiency.

HOW TO ACHIEVE SUCCESSFUL ‘SECTOR-COUPLING’?

- **This** workshop aims to identify solutions to achieve successful ‘sector-coupling’ across 5 themes:
  - **People** (energy poverty, social acceptance, jobs)
  - **Technology** (enablers, deployment, digitalisation, R&D)
  - **Infrastructure** (system flexibility, storage, buildings)
  - **Markets** (dynamics, fiscal mechanisms, financial sector)
  - **Governance** (objectives, coherent policies, inclusive process)
PEOPLE

RELEVANCE OF THE TOPIC

People are at the heart of the energy system and the transition towards decarbonisation. They are both the main actors and beneficiaries of the energy systems. People-related aspects are very complex and it is crucial to map solutions to addresses them.

FACTS AND FIGURES

- The energy consumption of the residential sector represents 24.6% of the total energy consumption. Heating and hot water alone account for 79% of total final energy use in the residential sector.

- Energy poverty touches each Member State and is monitored by the EU. Between 50 and 125 million people are unable to afford proper indoor thermal comfort. On average, the cost of residential space and water heating, represents 6.4% of European household’s total consumption expenditures, but can be as high as 16%. In addition, disadvantaged groups suffer disproportionately from the adverse effects of climate change and have limited access to adaptation and mitigation measures.

- Social acceptance presents contrasting realities. A recent EU survey shows that over 90% of EU citizens see climate change as a serious problem and think it is important their national government sets ambitious renewable energy targets. Over 80% believe governments should provide support for improving energy efficiency and believe that support should be given to the transition to clean energies, even if it means reducing subsidies to fossil fuels. Yet, social discontent is growing in some Member States and there is lack of personal action.

- The energy and climate transition create jobs. Employment in the environmental sectors of the economy grew considerably faster (+49%) than employment in the economy as a whole (+6%). Today, there are 4 million ‘green jobs’ in the EU. The EU has the demand and potential for many more. EU industrial strategy foresees to upskill EU’s workforce to prepare it for challenges ahead.

SOLUTIONS TO BE IDENTIFIED

- Which solutions will make sector coupling an effective mechanism to tackle energy poverty? How can they be implemented in full consistency with EU’s climate objectives and most cost-efficiently?

- Which solutions will make sector coupling an effective mechanism to strengthen social acceptance (support? involvement?) on climate policies? How can they be implemented effectively and most cost-efficiently?

- Which solutions will make sector coupling an effective mechanism to create more jobs in the EU and upskill the workforce? How can this be implemented in full consistency with EU’s climate objectives and most cost-efficiently?
TECHNOLOGY

RELEVANCE OF THE TOPIC

Technology is needed to enable the coupling/integration of different sectors. For certain sectors to be “coupled”, technical solutions are already available today and need to be deployed on the markets. For other sectors (especially the industrial application), technology development and innovation will have to accelerate during the coming decade\textsuperscript{xiv}.

FACTS AND FIGURES

- A study\textsuperscript{v} for the European Parliament lists and compares the technologies that enable end-use and cross-vector “sector-coupling”. Innovation progress and maturity level\textsuperscript{vi} vary for each technology.

- In its EU Industrial Policy Strategy, the European Commission mentions that Europe must now capitalise on this leadership in all sectors and tackle increasing global competition in green production and clean energy technologies\textsuperscript{viii}. It is necessary to assess and take account of the costs and benefits of the deployment of new technologies\textsuperscript{xi} on both economic and social dimensions, with the aim of maintaining and improving industrial competitiveness of the EU on a global level. Also, many technologies rely on the availability of suitable infrastructure\textsuperscript{xii}, which can require the expansion or refurbishment of existing infrastructure, or investment in new dedicated infrastructure.

- Sector coupling cannot take place without the digitalisation\textsuperscript{xiii} of the energy system. Yet this englobes a set of challenges. High levels of digitalisation increase exposure to cyber-attacks\textsuperscript{xiv}, which could jeopardise security of supply and/or the data privacy of consumers.

- Innovation in sector-coupling enabling technologies will improve performance\textsuperscript{xv} but this does not come without cost and financial risks. Therefore, sector coupling will also require supporting R\&D and technological investments. The Commission’s proposal for Horizon Europe\textsuperscript{xvi} is a €100 billion research and innovation programme which aims to address global challenges such as climate energy and mobility. The European Strategic Energy Technology Plan (SET Plan)\textsuperscript{xvii} was set up to develop low-carbon technologies and make them economically viable. Meanwhile, energy tech start-ups are popping up all over the world, attracting some 5 billion euro in 2017 in corporate venture capital and growth equity\textsuperscript{xviii}.

SOLUTIONS TO BE IDENTIFIED

- Which technological solutions enable sector-coupling in an effective way? What can strengthen their use? What can make them more cost-efficient?
- Which new technologies need to be deployed? How? What will make them cost-efficient?
- Which digital solutions support sector-coupling in an effective way? How can they be deployed? What can make them more cost-efficient?
- What should happen in the field of R\&D to support sector-coupling? How should the financing be organised?
INFRASTRUCTURE

RELEVANCE OF THE TOPIC
Successful sector coupling requires to address possible infrastructure improvements to connect different sectors. Also, it is precluded that in the final NECPs, infrastructures’ investments and interconnections should be taken into consideration xxvi.

FACTS AND FIGURES

• **Sector coupling** can increase **flexibility of the energy system** to decarbonise in a more cost-effective way xxvii. If increasing intermittent renewable energy generation does not match the load patterns, this will require **flexibility capacity and the reinforcement and extension of the transmission and distribution networks** xxviii. Lastly, the interconnection of smart heating and cooling, as well as mobility systems, will require a greater flexibility from the grid.

• **Deployment of existing storage technologies** is one of the main challenges related to decoupled renewable energy production and demand. Some countries have largely invested in storage technologies xxix, others are lagging behind, but addition solutions for advanced battery storage and materials xxx need to be developed. In 2018, annual deployment of energy storage nearly doubled from 2017 to reach over 8 GWh (excluding pumped hydro) xxxi.

• **Buildings** xxxii: European buildings are responsible for 40% of energy consumption and around 15% of greenhouse gas emissions xxxiii. Unsatisfactory building envelopes combined with an inefficient heating and cooling system contribute to a negative energy performance of buildings. There is a significant opportunity for the decarbonisation of the energy consumption in European buildings, via the implementation of sector coupling. Several technologies are available to decarbonise the energy demand for heating and cooling through sector coupling. These include the direct use of renewable energy for heating purposes, or the indirect use of renewable energy via the electrification of building heating systems and the use of appropriate electric heating appliances. Cross-vector integration is also possible with hybrid and combined solutions xxxiv.

SOLUTIONS TO BE IDENTIFIED

• Which sector coupling solutions help improve the **flexibility of the energy system** an effective way? What can make them more cost-efficient?

• Which current or new **storage** solutions need to be deployed for successful sector-coupling? How should it happen? What will make them cost-efficient?

• How should be the role of **buildings** in sector-coupling? What solutions are needed to allow them to play that role effectively and the most cost-efficiently?
MARKETS

RELEVANCE OF THE TOPIC

Successful sector coupling requires functioning market dynamics. The role of fiscal mechanisms and the financial sector are also important elements with this regard.

FACTS AND FIGURES

- **Market dynamics**: Global markets for climate-friendly businesses and technologies have already grown to close to one trillion euro annually. Yet, current EU energy market design form a barrier to sector coupling technologies, either by not internalising all positive and negative effects of various technologies (due to the lack of an adequate carbon pricing in particular) or by obstructing the technologies needed for sector coupling. The NECPs should support the introduction of forward-looking policies aimed at developing competitive retail markets in Europe, allowing consumers to take advantage of smart infrastructures. In this regard, by 2020, it is expected that almost 72% of European consumers will have a smart meter for electricity. Yet, the European Investment Bank still outlines the fragmentation of Europe’s markets as a barrier to digitalisation in Europe.

- **Fiscal mechanisms**: Focusing public resources in a coherent and cost-effective manner into clean energy transition and innovation without distorting the energy market and inhibiting investment is crucial. In 2017, € 96.29/MWh was the weighted average subsidy paid to renewable generators, on top of the wholesale market returns.

- **Financial sector**: Green bonds still only represent a tiny fraction (less than 1%) of the overall bond market and large institutional actors – insurance companies, pension funds and sovereign wealth funds have been particularly slow to pick up green investment. The NECPs should provide clarity and predictability for the business and finance sector to stimulate necessary private investments, but the involvement levels of the sector remain low.

SOLUTIONS TO BE IDENTIFIED

- Which evolution in the market dynamics will contribute to the deployment of sector coupling technologies? How can sector coupling reduce the fragmentation of EU’s energy market? How can they be implemented most cost-effectively in full consistency with EU’s climate objectives and market rules? How can the NECPs be helpful in this exercise?

- Which fiscal solutions can contribute to enabling sector coupling as a model to fulfil the 2030 targets? How can they be implemented most cost-effectively in full consistency with EU’s climate objectives and market rules? How can the NECPs be helpful in this exercise?

- Which solutions will make sector coupling a stimulating mechanism to trigger the interest of the financial sector? How can they be implemented most cost-effectively in full consistency with EU’s climate objectives and market rules? How can the NECPs be helpful in this exercise?
GOVERNANCE

RELEVANCE OF THE TOPIC

Setting up and running sector coupling requires a good governance. This notably includes clear objectives, coherent policies, and inclusive processes.

FACTS AND FIGURES

- **Clear objectives**: The Governance of the Energy Union\textsuperscript{46} aims at a clear combination of coordinated action – legislative and non-legislative – at EU and national level. It ensures that policies and measures at various levels are coherent, complementary and sufficiently ambitious.

- **Coherent policies**: A novelty of the Governance Regulation in addition to the NECPs is the development of national long-term greenhouse gas emission reduction strategies\textsuperscript{46} with a perspective of at least 30 years. In addition, Member States must adopt long-term renovation strategies by March 2020 as set out in Article 2a of the Energy Performance of Buildings Directive\textsuperscript{47}. By the end of 2020, Member States have then also to submit their comprehensive assessments of the potential for efficient heating and cooling as set in Article 14 and Annex VIII of the energy efficiency directive\textsuperscript{48}. The European Commission has set up a task force to work on the topic of sector coupling, defining the energy efficiency first principle and establishing a taxonomy for sustainable financing. Now that the EU electricity market design has been revised, the gas legislation will need to be updated, too. On the global level, IRENA has also started to look into the topic\textsuperscript{49}.

- **Inclusive processes**: Energy consumers, smart cities and communities participate increasingly in the evolution of the energy market\textsuperscript{50}. More generally, many major global investors have joined forces in the ‘Climate Action 100+ group\textsuperscript{51}, calling for improved climate change governance, emissions reductions and greater transparency on climate risks.

SOLUTIONS TO BE IDENTIFIED

- Which clear governance **objectives** should be set for sector coupling? How can they be fully consistent with EU’s climate objectives? How can the NECPs be helpful in this exercise?

- How can sector coupling be addressed **coherently across policies**? How can the NECPs help?

- What **inclusive processes** should be established for successful sector coupling governance? How can they be consistent with EU’s climate action? How can the NECPs be helpful in this exercise?

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SOLUTIONS STARTER MAP

EXPLANATION

The “Solutions Starter Map” consolidates the main finding of the workshop, highlighting the solutions identified for each of the working themes (people, technology, infrastructure, markets).

PEOPLE

SOLUTIONS TO BE EXPLORED IN NECPs

Energy poverty

✓ NECPs may address the measures that make the socially disadvantaged the frontrunners in meeting EU’s climate and energy goals (rather than allowing them to lag behind for social reasons), as they are the first ones to endure the costs and other detrimental effect of status quo.

✓ NECPs may specify what market-driven measures can help the energy poor reap the benefits from technological innovation, choice and openness.

✓ NECPs may specify what social policy measures will facilitate and make affordable the behavioural changes required for a successful energy transition.

✓ NECPs may enquire how the benefits of ‘sector coupling’ (cost-reduction through system efficiencies, increased flexibility…) can better support the energy transition of the energy poor, notably for the renovation of the social housing sector.

✓ NECPs may describe how revenues related to the energy transition (e.g. taxes, funds…) are used to facilitate the energy transition of the energy poor.

Social acceptance

✓ NECPs may describe how ‘sector coupling’ - through a combination of increased electrification, flexibility, supply of renewable heat and cold, efficiency at all levels and possible fiscal and social measures - is ‘packaged’ so that the change is perceived as economically advantageous for all citizens and businesses.

✓ NECPs may describe the communication strategy implemented by Member States to achieve behavioural change (including reduction/suppression of energy consumed and environmental footprint), increase social acceptance and even generate social enthusiasm with respect to the energy transition, notably through sector coupling (e.g. raising awareness on actual and personal immediate benefits or threats). A priority may be put on making ‘sector coupling’ easy for end customers with no extra hurdle.

Jobs

✓ NECPs may point towards the advantages of ‘sector coupling’ in terms of job creation and stability, as well as the consequent upskilling, training and certification mechanism required.

✓ NECPs may consider promoting or planning large-scale building renovation programmes or other labour intensive ‘sector-coupling’ projects to reap the economic and social benefits of job creation next to the positive climate change mitigation effects.
SOLUTIONS BEYOND NECPs

National level

✔ Member States may want to take measures to increase the quality of ‘sector coupling’-related installations (power, heating and cooling, mobility) and the trust of the final consumer.
✔ Member States may want to foster (for instance through a dialogue with technical universities) knowledge building on and transfer of system and engineering solutions, instead of a narrow product focus.
✔ Member States may want to seek further convergence in sectoral standards, for instance between the new and the existing building stock, as well as on the European level (e.g. energy performance of buildings standards).

Regional and local level

✔ Regional and local authorities may want to organise adequate communication and education campaigns at regional, local and (renewable) energy community level, to raise awareness on the economic benefits of ‘sector coupling’ related measures and energy transition in general, especially to socially disadvantaged people.
✔ Regional and local authorities may want to set up information centres and support the work of independent bodies to help citizens and businesses find personalised advice on how to best modernise their installations in a climate targets-compatible and cost-efficient way.

EU Level

✔ The EU may want to reinforce any of the above by offering appropriate information, guidance or harmonised solutions/standards (e.g. social housing standards).
✔ The EU may want to bring the necessary adaptations to its budgetary rules to facilitate the actions of Member States, local and regional authorities towards the fight against energy poverty, the promotion of social acceptance and the creation of jobs, especially with regard to sector coupling (e.g. concerning upfront investment).
✔ The EU may want to further enshrine ‘sector coupling’ and other ‘green’ technologies and processes into its industrial competitiveness policies.
✔ The EU may want to bring the necessary changes to the funding and taxation policy in its remit to improve the fight against energy poverty, the promotion of social acceptance and the creation of jobs across the EU.
TECHNOLOGY

SOLUTIONS TO BE EXPLORED IN NECPs

**Enabling technologies**

- NECPs may describe the current state of development of the technologies that enable ‘sector coupling’, such as smart and connected dual thermal use (heat pumps), clean district heating and cooling (both low-temperature (30-40° Celsius) and high-temperature), cogeneration, electric mobility and electric or thermal storage systems.

**Deployment of technologies**

- NECPs may contain measures to strengthen the deployment of climate targets-compatible, energy efficient, renewable energy-based and circular-economy advanced ‘sector coupling’ technologies, such as the further development of smart grids and cities and other regulatory and market-based mechanism.
- NECPs may specify how the constant technological upgrade arising from innovation can be reflected on the ground.

**Digitalisation**

- NECPs may specifically address the digital aspects of ‘sector coupling’, such as the ‘smartening’ of the infrastructure and the technologies concerned by ‘sector coupling’, including solutions making use of artificial intelligence (AI) and buildings information or information management systems.
- NECPs may describe the measures taken or planned to ensure that data security and privacy are guaranteed.

**Research and development**

- NECPs may address what research and development efforts are needed to further develop or make cost-effective certain ‘sector-coupling’ technologies, such as CCS, hydrogen and high-temperature solutions for industry, electric applications in shipping and aviation, high-performance buildings material, electrolysers.
- NECPs may address what research and development efforts are needed to increase the connectivity between various sectors, for instance with IoT solutions.

**SOLUTIONS BEYOND NECPs**

**National level**

- Member States may set up the appropriate national regulatory framework to further deploy ‘sector coupling’ technologies and foster innovation, for instance with improved building and installation standards, as well as open protocols in software for digital technologies.

**Regional and local level**

Regional and local authorities may want to take geographically and culturally-tailored measures to further deploy ‘sector coupling’ technologies and foster innovation, notably in their (sustainable) local action plans and urban/rural planning provisions.

**EU Level**

- The EU may want to reinforce any of the above by offering appropriate information, guidance or harmonised solutions/standards (e.g. building and product standards).
- The EU may want to facilitate cross-border regional and other ‘sector coupling’ initiatives to further deploy ‘sector coupling’ technologies and foster innovation.
- The EU may want to bring the necessary changes to the funding and taxation policy in its remit to further deploy ‘sector coupling’ technologies and foster innovation.
INFRASTRUCTURE

SOLUTIONS TO BE EXPLORED IN NECPs

Flexibility of systems

- NECPs may address how the shifts from one type of energy carrier to another (electricity, heat, cool, natural and renewable gas) should be organised.
- NECPs may address how Member States plan to make the best use of existing national and cross-border electricity, gas, heat/cold networks (both transmission and distribution) and to upgrade/downgrade them where needed in order to meet the needs of a climate targets-compatible cost-effective ‘sector-coupled’ energy system.
- NECPs may address how Member States plan to ‘smarten’ their infrastructure.
- NECPs may address how national and cross-border infrastructure is improved to utilise waste heat (e.g. from data centres, waste incineration).

Energy storage

- NECPs may contain an assessment of the different storage technologies in place, (batteries, power-to-x, power-to-gas, power-to-hydrogen, power-to-heat, pumped hydro storage), as well as measures to strengthen their deployment where needed.
- NECPs may describe how seasonal storage is organised in a climate targets-compatible way (gas, thermal storage in buildings or systems, demand-side management...).

Buildings

- NECPs may describe to what extent they plan to further electrify directly or indirectly (using gas and hydrogen) the building sector in a climate targets-compatible and cost-effective way.
- NECPs may describe how Member States plan to turn buildings into active, critical infrastructure of a climate targets-compatible energy system.

SOLUTIONS BEYOND NECPs

National level

- As a prerequisite, Member States may want to offer real time information on supply/consumption on all grids (electric/heat/cool/gas) and tools to process these data.
- Member States may set up the appropriate national regulatory framework to scale-up ‘sector coupling’ infrastructure, such as improved building and installation standards.

Regional and local level

- Regional and local authorities may want to take action to support and raise awareness on the need to develop local ‘sector coupling’ infrastructure (electric/thermal/district heating and cooling), notably in their (sustainable) local action plans and urban/rural planning provisions.
EU Level

- The EU may want to facilitate the deployment of cross-border regional ‘sector coupling’ initiatives infrastructure (smart electric and thermal grids).
- The EU may want to bring the necessary changes to the funding and taxation policy in its remit to further deploy ‘sector coupling’ infrastructure projects.
MARKETS

SOLUTIONS TO BE EXPLORED IN NECPs

Market dynamics

✓ NECPs may describe how a market for ‘sector coupling’ can be developed to incentivise investments.
✓ NECPs may describe how proper ‘sector coupling’ allows consumers to benefit from lower price fluctuation, while still reaping the benefits from a shift towards real-time energy prices.
✓ NECPs may explore how the shift on energy markets from commodities and products to services may support ‘sector coupling’ objectives.
✓ NECPs may describe how the optimisation of grid costs and the integration of load shifting plans from one grid to another may avoid new costly investments.

Fiscal mechanisms

✓ NECPs may address the creation of price signals (including incentives, taxes and the creation of/adjustments to national ETS system) to make ‘sector coupling’ technologies and infrastructure competitive on the market and to scale them up. Upfront costs and split incentives (owners vs tenants) and the need to avoid double taxation may receive specific attention.
✓ NECPs may describe how national fiscal mechanisms concerning ‘sector coupling’ ensure effective achievements of EU climate objectives for 2030 and 2050, while still allowing future technological developments along the way to speed up the process. Market products that reward the flexibility of energy storage technologies (e.g. enhanced frequency response) may receive specific attention.

Financial sector

✓ NECPs may describe how investment certainty is created to enable private investments.
✓ NECPs may describe how public R&D financing combined with private investments will meet the financial needs of the ‘sector coupling’ sector.

SOLUTIONS BEYOND NECPs

National level

✓ To strengthen their fiscal mechanisms or as an alternative to them, Member States may want to carry out life cycle assessments of the environmental footprint of services and goods relevant for ‘sector coupling’. These may facilitate fair comparison and also allow for the identification of targeted CO2 reduction measures.
✓ Member States might want to explore innovative models where price spikes in the system would be covered by insurance products (that can be bought).
✓ Member States may want to develop tools to compare the environmental footprint of services and allow end-users, businesses, policy makers and investors to make better decisions on investments in ‘sector coupling’ projects.
Regional and local level

✓ Regional and local authorities may want to take similar economic and fiscal actions to make ‘sector coupling’ technologies and infrastructure competitive on the regional and local market and attract investors.
✓ Regional and local authorities may want to support local (renewable) energy communities under certain conditions (for instance, they may be exempted from contributing to network tariffs, assuming they manage their production and demand internally in an aggregated way, and that they cover their own infrastructure costs).

EU Level

✓ The EU may want to bring the necessary changes to the funding policy (MFF, Horizon Europe, EiB criteria, Important Projects of Common European Interest – IPCEIs) and taxation policy (EU energy taxation directive, other harmonised measures on carbon pricing, on energy conversions and infrastructure) in its remit to further deploy ‘sector coupling’ infrastructure projects and technologies.
✓ The EU may want to consider new legislative measures to modify the remit and functioning of its current carbon pricing regime, the pricing of energy carriers (such as nodal pricing of electricity, gas and heat), to establish performance contracting with sectoral CO2, renewable energy and energy efficiency targets, to support aggregation of demand-side measures and consumption points.
GOVERNANCE

SOLUTIONS TO BE EXPLORED IN NECPs

Clear objectives

✓ NECPs may include a national or European definition of ‘sector coupling’ and mention how it can contribute to the EU 2030 and 2050 targets.
✓ NECPs may include pathways for the development of ‘sector coupling’ technologies and infrastructure.

Coherent policies

✓ NECPs may address the need for a coherent cooperation athwart political layers and ministerial competences in order develop and deploy ‘sector coupling’ across the national energy system, taking into account – where needed – geographical and cultural specificities.
✓ NECPs may address how horizontal ‘sector coupling’ of different sectors (e.g. heating/cooling, electricity, transport) can help better deliver on the EU 2030 and 2050 targets.

Inclusive processes

✓ NECPs may address how to establish a multi-level cooperation between public authorities (local, regional, national, transnational and European) to strengthen the effectiveness or the cost-efficiency of relevant initiatives for ‘sector coupling’.
✓ NECPs may address how utilities and the industry can be better involved in planning of ‘sector coupling’ projects, how they can make further public commitments towards EU’s 2030 and 2050 climate and energy objectives, as well as how they can create innovative business cases, products, services or offer other support.
✓ NECPs may address how communication and clear informative measures can raise citizens’ and businesses’ awareness on and (potentially financial) involvement in ‘sector coupling’ projects.

SOLUTIONS BEYOND NECPs

National level

✓ Member States may want to make public all the feasibility studies related to ‘sector coupling’ projects.
✓ Member States may want to reach out to other stakeholders impacted by ‘sector coupling’ beyond the energy sector (e.g. water distribution, shipping).

Regional and local level

✓ Regional and local authorities may want to be fully involved in all the above mentioned, as what applies to the national level even applies to a larger extent to the regional and local levels.

EU Level
The EU may want to explore the possibility of creating a Climate Union, which would go beyond the scope of the Energy Union and would set climate change objectives as an overarching target for the European Union (hence reaching beyond the energy sector).

The EU may want to consider new policy measures, guidelines on concerted action to facilitate ‘sector coupling’ at various levels across the EU.
CONCLUSION

The workshop raised the interest of a variety of stakeholders based both in Brussels and outside Belgium. The number of Member States representatives, EU officials, associations, companies and think tanks present in the room supported the idea that sector integration can be a key vector to deliver on ambitious NECPs. Yet, the high participation also revealed the need for sharing of best practices and brainstorming on solutions which will help to unlock the potential of sector coupling.

Overall, the innovative structure of the event was highly appreciated by the participants, who had the opportunity to exchange on NECPs and sector integration across five topics: people, technology, infrastructure, markets and governance. The workshop concept stimulated an active exchange among the participants, whose input has been gathered and compiled in this “Solutions Starter Map”.

The workshop session was followed by a panel discussion that reflected upon discussion and findings. Within the five themes, the panel outlined the relevance of the topic of “people” to unlock the potential of sector coupling. Indeed, in the context of the energy transition and the decarbonisation of the European economy, the change of consumers’ behaviour remains one of the biggest challenges. People are at the heart of the decision making, and the main actors and beneficiaries of the transition towards decarbonisation.

The discussion underlined that NECPs are an opportunity for national policymakers to involve consumers and citizens. Consumers can be involved in the transition via democratic processes which will ensure the possibility for citizens and stakeholders to voice their concerns at all levels. However, the panel also specified that these processes should be established in a clear, simple and inclusive way, in order to reach out to all the different segments of consumers.

The exercise highlighted the importance of cross-sectoral solutions to co-create sector integration from different perspectives and in different fields so that nobody is left behind.

In the light of these reflections, the Solutions Starter Map should be understood as a tool that can support and inspire the work of national, local and regional, as well as European policy makers. In particular, it was prepared in view of the Energy Council which will take place on 4th December 2019 and underlines that sector integration can be a vector to deliver on ambitious NECPs.

In addition, the solutions compiled in this document go beyond NECPs and suggest actions that can reduce greenhouse gas emissions and decarbonise multiple levels of the European economy.

DISCLAIMER

This non-exhaustive document has been prepared by the three organisations mentioned hereafter for the sole purpose of stimulating the discussion during the workshop and summarising the participants’ exchange. No part of it may be considered as a statement or a position to be attributed to any organiser of the workshop.
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