Pathways for the evolution of existing climate policy mix

This policy brief describes policy pathways for the evolution of the current EU climate policy mix. It defines combinations of instruments that have a reasonable chance of meeting the desired emissions targets.

Policy pathways are defined based on three policy dimensions: 1) Carbon pricing 2) Technology policies and 3) Behavioural Change promotion. Although each pathway focuses more attention in one type of instruments, all packages have a certain combination of the three policy dimensions to meet the targets. Finally, instruments to adapt EU climate policy to different international conditions are explored.

1 The 2050 objective

> To meet the long-term EU emission targets a radical change in the energy sector will be required.

The objective of stabilizing emissions "at a level that would prevent dangerous anthropogenic interference with the climate system" means that global temperatures should not rise by more than 2°C above pre-industrial levels, as it is stated by the United Nations in Copenhagen in 2009. According to the Intergovernmental Panel on Climate Change, this objective will require greenhouse gas concentrations to be limited to around 450 ppm CO_2-equivalent, and for that to happen, global GHG emissions will need to be reduced by around 50% by 2050 (compared to 1990) and more than 80% by 2100.

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Meeting this global target requires not only considerable emission reductions in high-income countries but also the early involvement of developing countries. If a gradual convergence in emissions per capita would be the criteria selected for the regional distribution of the burden, then high-income countries will have to reduce emissions by 80-95% by 2050.

In the case of the European Union (EU), the European Council confirmed in February 2011 the EU objective of reducing greenhouse gas emissions by 80-95% by 2050 compared to 1990. In order to meet this target, and simultaneously stimulate economic growth and ensure competitiveness in the EU, the European Commission (EC) presented a Roadmap for possible action up to 2050, bearing in mind that the reduction objective in the EU will largely need to be met internally. The document sketches how to deliver this target in a cost-effective manner and outlines general milestones for 2020, 2030 and 2050 and also specific milestones by sectors. The emissions should be internally reduced by 40% in 2030 and by 80% in 2050. According to the analysis in the Roadmap, however, current climate policies would only reduce emissions by 30% in 2030 and by 40% in 2050. Table 1 shows the cost-effective distribution of the reduction by sectors. The reduction required shows that while radical changes are needed in all sectors, some sectors, such as the power sector should be almost free of GHG emissions by 2050 if the EU economy as a whole should reduce by 80%. For this to be possible in a cost-effective manner, the investment decision for the decarbonisation of these sectors should be made not later than 2020-2030, considering that the life-time of infrastructures runs into 30-40 years.

> EU agreed to reduce GHGs for 2030 by at least 40% compared to 1990, increase the share of renewable energy to at least 27% and increase energy efficiency by at least 27%.

On 23 October 2014 EU leaders agreed to reduce the domestic GHGs for 2030 by at least 40% compared to 1990, increase the share of renewable energy to at least 27% and increase energy efficiency by at least 27%.

> There is an urgent need for an understanding of how the existing policy mix can be further developed and improved so as to ensure that these milestones can be met in the most efficient and feasible manner.

Modelling shows that it is feasible to achieve these targets, including the long-term decarbonisation target. However, there is an important gap between the

emission pathways derived from the models and the **instruments** that are needed to bring about such change in the real world. Policy instruments are not developed or implemented in a vacuum, but within an institutional, legal and political context, building on a legacy of pre-existing policies. There is an urgent need for an understanding of how the existing policy mix can be further developed and improved so as to ensure that these milestones can be met in the most efficient and feasible manner on the way to the 2050.

CECILIA2050 has endeavoured to contribute to this understanding – and as one of the methodological ways of analysing the implications of different policy choices, defined ideal type policy pathways with distinct characteristics.

Table 1: EU sectoral cost-efficient pathway towards the 2050 objective

Sector	2030	2050
Power (CO_2)	-54 to -68%	-93 to -99%
Industry (CO_2)	-34 to -40%	-83 to -87%
Transport (incl. CO_2 aviation, excl. maritime)	+20 to -9%	-54 to -67%
Residential and services (CO_2)	-37 to -53%	-88 to-91%
Agriculture (non- CO_2)	-36 to -37%	-42 to -49%
Other non- CO_2 emissions	-72 to -73%	-70 to -78%

Source: European Commission

2 Climate policy pathways

There is an important gap between the feasibility demonstrated in the models and the actual feasibility of the instruments in real-world scenarios, which means that theoretically ideal policy choices need to be adapted in reality. Any successful instrument package should thus include a combination of carbon pricing, technology and infrastructure policies and behavioural change promotion.

This section defines three combinations of instruments that have a reasonable chance of meeting the desired emissions targets by 2030 and beyond, and yet representing three distinct and different pathways how the current EU climate instrument mix could evolve. Consequently, each of these pathways has advantages and disadvantages. Thus, **the policy pathways represent different options that the EU can select to achieve its climate targets.**

It is important to mention that although each pathway will place greater emphasis on one type of policy instruments; **all pathways represent a combination** of three types of policy instruments. These three are:

- Carbon pricing,
- Technology and infrastructure policies (supply-side policies),
- Behavioural change promotion (demand-side policies).

Why are all three types required for any pathway? Any successful instrument package should include economic incentives and, therefore, should include a carbon price on emissions. Also, given the current dispersion of the implicit and explicit price of CO_2 among instruments, sectors and countries, a convergence on carbon price will also be needed. Similarly, an investment programme (public by necessity) will be required in order to speed up the development of key technologies and infrastructures. Finally, the amount of change is so significant that some degree of behavioural change will be inevitable in order to deliver additional abatement. Also a change in behaviour is fundamental to the promotion of energy conservation and efficiency and helps to avoid undesirable rebound-effects.

Taking all of this into consideration, we propose the following pathways:

Market-driven: key instruments are related to economic incentives and the EU emphasises market options.

Technology-specific: the key instruments are related to technology support measures and regulation tools.

Behaviour-driven: the key instruments are related to raising consumer awareness and demand-side efforts – making smarter choices – rather than technical solutions.

2.1 Market-driven pathway

In a "Market-driven" pathway, a carbon price signal is the main driver of emissions reduction and the EU ETS (reformed and extended to other sectors) is the key instrument.

This policy pathway is built around economic instruments, emphasising above all the static efficiency of the policy mix. **A carbon price signal is the main driver for emissions reduction and the EU ETS is the key instrument used to provide the price signal.** By setting a single EU-wide cap, the EU ETS limits the emissions of all covered emission sources – while by setting a single carbon price, the scheme provides the operators of such sources (or: installations) with the flexibility to find the cheapest ways to reduce emissions. This implies that **static efficiency is** also **guaranteed**. However, as of now, the main weakness of the EU ETS has been a lack of dynamic efficiency. For most of its existence, the EU ETS has not been able deliver a carbon price at a level that is sufficient to spur innovation and promote investments in new low-carbon technologies. In order to fulfil its envisaged role as the flagship instrument of European climate policy, the EU ETS would need to provide a sufficient carbon price signal with long-term predictability. This requires a structural reform of the scheme, a further tightening of the cap, and elimination of the current surplus of allowances. One possible solution to ensure this would be to establish a carbon price floor and ceiling, with an explicit carbon price objective as a bandwidth.

In those sectors not covered by the EU ETS, other market-based instruments are implemented to reduce emissions (e.g. direct or indirect carbon prices). In order to increase the efficiency of the policy instrument mix, the price signal should be aligned more closely across sectors and countries. Ideally there would be gradual convergence of carbon prices. This implies that carbon prices in non-ETS sectors would have to be established in line with the carbon price of the EU ETS. An alternative to aligning prices would be to expand the EU ETS to cover other sectors. Given the distribution of emissions, this would only seem feasible as upstream trading, covering transport and heating fuels rather than the individual emission sources.

In general, also in a policy pathway that is built around carbon pricing as the central mechanism, there will still be a need and a role for complementary policies. The justification for these measures and instruments, however, should be to remove or to help overcome market failures, which inhibit the functioning of carbon pricing. This could include, for instance, lowering transaction costs by providing information (e.g. labelling), providing access to finance, or paying support in compensation for technological spill-over effects and other positive externalities.

Thus, while the promotion of renewables and energy efficiency should ultimately be driven by the carbon price there is a place for support measures to help cover the learning costs. However, to enhance the efficiency of the system, national technology-specific support measures and instruments (e.g. feed-in tariffs and emission standards) are gradually phased out. These could be replaced by EU-wide instruments that are more compatible with market logic, such as a system of tradable renewable quotas, which deploy renewables not according to national boundaries, but in regards to natural conditions.

Given that, in this pathway, the carbon price is the main driver for emission reduction, the price signal has to be high enough to meet the 2050 objective. The high carbon price eventually implied raises questions about the political feasibility of this scenario: investors will only form expectations about a high carbon price will only s would have a considerable impact on the distribution of welfare and the competitiveness of several sectors.

One **guiding principle** for the instrumentation of the "market-driven" pathway is **technology-neutrality**, i.e. where possible the decision on the cheapest technology should be left to the market. However, some strategic choices, e.g. relating to the shape of the electricity grid, will be impossible to resolve through markets only. Thus, if electricity should replace fossil fuels in transport and heating, new infrastructure would need to be installed. The deployment of renewables would need to be supported by expanded and improved storage systems which ensure the continuity of electricity supply. Investment in smart grids will be essential to manage electricity demand.

Although government intervention is minimized in this scenario, public investment might be necessary to develop new infrastructure. In order to build the appropriate infrastructure, public institutions have to identify private needs. Public support for R&D will be focused on basic research. Public institutions might consider some technologies as essential (e.g. CCS) and support their development.

2.2 Technology-specific pathway

In a "Technology-specific" pathway dedicated technology-support policies are the key instruments.

In this pathway public bodies play an important role in defining the ways towards a low carbon economy. Technology-support policies are the key instruments to promote the development and deployment of low-carbon technologies. Renewables and energy efficiency are promoted through these mechanisms. Efficiency and technology standards interact with public subsidies and other financial support measures.

The EU ETS remains in existence and covers current sectors. The cap on emissions is set in accordance with the expected contribution of other instruments. Energy taxes and other indirect carbon taxes cover non-ETS sectors. However, the **carbon price signal** from the EU ETS and energy taxes is **lower than in the previous pathway**, as carbon pricing is not the main driver of emission reductions. In this scenario, the carbon price has a supportive role, e.g. to avoid rebound effects. Energy efficiency gains must not result in a higher energy demand and, hence, price signals are still necessary.

While this pathway is characterized by lower explicit carbon prices than in the market scenario, technology-support policies such as emission and technology standards might result in higher costs for private companies and households. Moreover, public subsidies and other financial support measures would increase the potential impact on tax payers. Therefore, although carbon prices are lower, the final cost for the economy can be higher, especially if governments promote the 'wrong' technology. Similar implementation related drawbacks do exist for the market-driven pathway also, however, e.g. failure to reach a high enough carbon price.

The interaction of the EU ETS with technology-support policies may result in low and volatile carbon price signals, because the performance of the latter is difficult to predict. This would hamper dynamic efficiency. However, stable technology-support instruments would encourage private innovation in clean technology. Public institutions play an active role on R&D. There is public-private coordination to spur innovation in low carbon technologies. Infrastructures are built by public institutions. Government planning facilitates the identification of required infrastructures.

2.3 Behaviour-driven pathway

In this pathway emission reduction is mainly driven by a change in behaviour of households and companies. The role of policy instruments is to encourage and facilitate the shift

> In a "Behavior-driven" pathway the key instruments are those which increase public awareness about climate change through information and education campaigns.

to a low-carbon lifestyle, foster different initiatives and coordinate them. Therefore, the key instruments in this pathway are those which increase public awareness, facilitate the adoption of clean initiatives and coordinate them.

Individual awareness is promoted through information and education campaigns, which induce the population to reduce energy consumption and improve energy efficiency. Both households and companies benefit from lower energy consumption and, thus, lower energy bills (or bills not rising with higher energy prices). Individual awareness also encourages the promotion of renewables, even when they are more costly than conventional fossil fuels. Policy instruments, such as subsidies to purchase low-carbon technologies, are implemented to facilitate individual initiatives. Information campaigns and labelling programs correct a lack of information about the carbon footprint of products and practices. This encourages companies to improve emission efficiency and, thus, reduce their emissions. Voluntary agreements between the government and particular sectors are also used to reduce emissions. The government implements instruments to **coordinate private initiatives**.

Although public awareness is the main driver of emissions reduction in this pathway, **carbon price signals are still necessary**. The EU ETS remains and covers current sectors. The cap on emissions is set according to the contribution of other instruments. The effectiveness of the key instruments of this pathway is very uncertain, which makes the carbon price of the EU ETS potentially very volatile. Energy taxes are used to cover non-ETS sectors. The behavioural change is not based on high carbon prices and, therefore, these are low. Carbon price signals do, however, reinforce the behavioural change driven by information and voluntary approaches and could act as a backstopping tool to prevent rebound effects. Instruments for the promotion of clean technology are also necessary, especially to remove financial barriers. High investment costs could hamper the adoption of clean technology and, therefore, public subsidies might be necessary.

This scenario is characterized by high uncertainty and low carbon prices. Therefore the incentives for private R&D are low. Public support for innovation is required. New infrastructures are built by public bodies to facilitate the behavioural change of consumers and companies. This can be particularly important in the transport sector, where a more efficient public transport should be developed.

Table 2 on the following pages provides an overview of instruments per sector.

Table 2: Climate policy instrument mix by pathway and by sector

Sector	Market-driven	Technology-specific	Behavioural-driven
Energy	Key instrument: EU ETS National energy markets are linked and EU-wide energy market is established. Other policy instruments (e.g. RES support mechanisms) are gradually removed. Public support for the development of low-carbon technology is marginal and focused on basic research.	Key instrument: RES support schemes EU ETS remains but complemented by intensity standards	Information campaigns and labels used to inform households about environmental impact of energy products Local initiatives in energy supply and autonomy EU ETS and RES support schemes remain Public subsidies on clean technologies Shift in investments, away from fossil fuels
Industry	Key instrument: EU ETS In non-ETS sectors, direct or indirect taxes are set	Key instrument: energy efficiency standards Public subsidies protect domestic industries from foreign competition Public support for low-carbon innovation EU ETS remains as main economic instrument	Voluntary agreements: standards, procedures, targets, etc. Corporate social responsibility Consumer awareness lowers demand for carbon intensive products
Buildings	Taxes on energy products not covered by EU ETS (e.g. heating fuels) Regulatory and information instruments used to account for market failures (e.g. principle-agent problem)	Key instrument: energy efficiency standards for buildings and appliances Refurbishment programmes implemented, supported by public institutions Energy taxes high enough to avoid rebound effects	Large focus on this sector Public information campaigns Labelling programs Energy taxes maintained to avoid rebound effect
Transport	EU ETS expands to cover transport fuels Public infrastructure makes electrification of mobility possible	Key instruments: energy efficiency standards for new vehicles and support schemes for low carbon mobility (e.g. hybrid and electric vehicles)	Information campaigns Modal shift in used forms of transportation
Agriculture	Indirect taxes or subsidies Diet change promoted through meat taxes	Technology standards (fertilizers, manure management)	Diet change through environmental awareness Voluntary agreements with farmers

3 Governance scenarios

The suitability and effectiveness of different combinations of policy instruments are affected by many different factors. An important dimension for EU climate policy are the broader internal and external developments on cooperation and coordination – or in this context, short: governance. Two different directions of governance at the EU level and at the global level are considered to assess the plausibility of the three policy pathways: 1) the evolution of the EU towards more or less political integration, and 2) the existence or not of an international consensus to take meaningful climate actions (see also CECILIA2050 Deliverable 5.1 for international scenarios).

Based on these two dimensions, four different governance scenarios are obtained, which are anaysed in more detail below, to assess which pathway might fare better or worse under the respective governance conditions.

i. EU **centralised** with global ambition,
ii. EU <u>decentralised</u> with global ambition,
iii. EU **centralised** with global *fragmentation*
iv. EU <u>decentralised</u> with global *fragmentation*.

3.1 EU centralised with global ambition

This scenario assumes a context of further EU policy centralisation and an international consensus to reduce emissions globally. This scenario fits well for market-driven instruments (see Table 6). A higher EU centralisation allows applying instruments EU-wide and exploiting gains from intra-EU trade. EU centralisation would facilitate the expansion of the EU ETS to cover other sectors and carry out a structural reform which improves the scheme. EU-wide ambitious taxes also require a strong and centralised EU. The international consensus to reduce emissions decreases the risk of carbon leakage. The high carbon prices that characterize the market-driven pathway would not lead to a lower international competitiveness of domestic industries.

A technology-driven pathway also fits in this scenario. Similarly to the market-driven pathway, the higher costs derived from climate regulations would not reduce domestic competitiveness due to global ambition. Given that all Member States are subject to the same policies, EU-wide regulation also encourages intra-EU competition. The deployment of low-carbon technologies would benefit from the common market.

On the other hand, the instrument package in the behaviour-driven pathway is based on national, sub-national and local policies. Therefore, it does not require a strong and centralised EU. However, a global consensus on emission reduction would increase the individual awareness on climate change and facilitate voluntary agreements between the EU and particular industrial sectors.

3.2 EU decentralised with global ambition

This scenario assumes that the EU climate and energy policy tends to a further decentralisation (or: renationalisation) and there is international consensus to reduce emissions. It is intuitive, that an intra-EU move to work at different speeds, with more fragmentation, could be at odds with a situation in which globally the level of action is increasing in greater harmony.

In the absence of (strong) EU-wide markets, the efficiency of market-based instruments is reduced. The EU-ETS could remain, but it could be adapted in this new scenario, moving back from EU-wide cap to country caps. Energy taxes would be set at national level. Different carbon price signals increase the differences between countries in abatement costs and, thus, reduce the static efficiency. This also leads to different production costs across countries, affecting market competition in some sectors. Global ambition would allow EU to keep industrial competitiveness in international markets, though.

> A decentralization of EU climate and energy policies will require a strong effort in coordination and harmonization of carbon pricing.

In a technology-driven pathway, the choice of technologies in this scenario is best determined at the national level. However, different regulations across countries could jeopardize the effective working of a common market, increasing cost. The role of the EU should be focused on the coordination of national regulations and promote knowledge sharing.

A behaviour-driven pathway could fit well in this scenario. Global commitment on climate change encourages individual initiatives to reduce emissions. Besides, a decentralised EU does not represent an obstacle for climate policies, which are set at national and local level. National governments promote and coordinate local initiatives. The economic burden on households and companies is lower than in other pathways and, therefore, the common market should not be affected.

3.3 EU centralised with global fragmentation

This scenario assumes that EU (climate) policy is being developed more centrally but that there is no international consensus to reduce emissions. In this scenario, the market-driven pathway could work, but it might be necessary to shield EU economy from foreign competition. The carbon price of the EU ETS and other market-based instruments could reduce the international competitiveness of domestic companies. Additional measures such as carbon tariffs could be implemented (see also CECILIA2050 deliverables 5.2 and 5.3). On the other hand, as argued above, a strong and centralised EU is in line with a market-driven pathway, so this pathway still works well under this scenario in principle.

> If global climate policy remains fragmented it will be very difficult to meet the long-term targets, even if measures to avoid carbon leakage are implemented.

In a technology-driven pathway implemented under this scenario, the higher costs of regulation should not result in a loss of international competitiveness. Consequently, the regulation burden could not impact those sectors exposed to foreign competition. Policy instruments such as public subsidies to support investment in low-carbon technology would need to spread the cost of climate policies to other sectors. The EU could pick winners, and cooperate with the private sector to develop and implement low-carbon technologies. R&D public funding is essential to reduce abatement costs and make cheaper the transition to a low-carbon economy. When low-carbon technologies become economically attractive, non-EU countries could adopt them, facilitating global ambition in the long run.

Neither EU centralisation nor global fragmentation is supportive of a behaviour-driven pathway. It would be difficult (although not impossible) to increase the individual awareness about climate change when there is no international agreement. Moreover, behavioural change is best encouraged through national and local measures. EU-driven policies might even be counterproductive. This policy approach would thus fare better under other governance conditions.

3.4 EU decentralised with global fragmentation

This scenario assumes that the EU climate and energy policy tends toward a further decentralisation and that there is no international consensus to reduce emissions. This is the worst scenario to implement market-based instruments. As mentioned above, global fragmentation would require measures to protect domestic companies. Without a strong and centralised EU, a fragmented implementation of market-based instruments across countries would be incompatible with the common market and lead to inefficiencies.

A technology-driven pathway could be adapted to this scenario. Each Member State would implement their own strategy to develop particular technologies. The role of the EU should be focused on the coordination of national policies and guarantee equal competition in the common market.

This scenario could also be suitable for a behaviour-driven pathway, which implies a lower economic burden on households and companies than other pathways. Although behavioural change is difficult to promote without a global commitment, the lower economic cost of the policy instruments increases the plausibility of this scenario. A decentralised scenario would benefit the implementation of national and local measures.

Table 3: Plausibility of the policy pathways under different governance scenarios

EU dimension	**EU centralised**	**EU decentralised**	**EU centralised**	**EU decentralised**
Global dimension	**Global ambition**	**Global ambition**	**Global fragmentation**	**Global fragmentation**
Market-driven	1	2	3	4
Technology-driven	5	6	7	8
Behaviour-driven	9	10	11	12

Colour coding legend

Very Plausible	Plausible	Depends	Questionable	Implausible

4 Pathway choice and the current EU climate policy debate

The pathway choice is related to current debate on the future of European climate policy. In January 2014 the EC presented the 2030 policy framework on climate and energy, which aims to make the EU's economy and energy system more competitive, secure and sustainable. In October 2014 EU leaders agreed to reduce the domestic GHGs for 2030 by at least 40% compared to 1990, increase the share of renewable energy to at least 27% and increase energy efficiency by at least 27%. Council and Parliament reached consensus on the Market Stablity Reserve (MSR) as a means of stabilising the ETS carbon price in 2015. Following that, the Commission submitted a proposal for the revision of the EU Emissions Trading System in mid-July of 2015, implementing the new target.

The 2030 policy framework establishes that the EU ETS should remain the central instrument of the EU's policy to combat climate change. The EC acknowledge that the EU ETS has failed to encourage investment in low-carbon technologies and, therefore, a reform of the system is necessary. The EC proposal does not, however, consider the expansion of the EU ETS to cover other sectors. The main objective of the reform is to make the EU ETS effective in the promotion of low-carbon technologies. The establishment of the MSR, which would adjust the supply of allowances based on pre-defined set of rules, should help stabilize allowance prices and, thus, improve resilience to market shocks and enhance market stability. This new structure implies a shift from the volume (only) approach to a price-based approach, with some similarities to the functioning of a carbon tax (the preferred choice of many academic authors).

A key element in the debate on the future of European climate policy was the number of targets to be pursued, which is related to the policy pathways presented in the previous section. In theory, a single reduction target would fit better with a market driven pathway, while a scenario with two or more targets could fit in both a market driven pathway and a technology-specific pathway. A behavioural-driven pathway might be a choice that could work in the absence of any binding targets.

In the current context, with three targets adopted but under different levels of bindingness, there is scope for all three approaches to have a role to play in principle.

Both a market driven and a technology-specific pathway can fit in a context with different targets for emissions reduction, renewable energy and energy efficiency. The achievement of different targets requires several instruments, which can be market-based instruments or technology support instruments. Currently the promotion of renewables and energy efficiency has been mainly based on the interaction of the EU ETS and technology support policies (e.g. feed-in tariff and energy efficiency standards). Nevertheless, in the future, they could be promoted only through market-based instruments and, therefore, a market driven pathway would be compatible with different targets. Indeed, the EC proposal states that "the benefits of renewable energy must be exploited in a way which is to the greatest extent possible market driven" and "subsidies for mature energy technologies, including those for renewables, should be phase out". At the same time, even the ETS reform proposal envisages stronger means for technological innovation support – evidence of the understanding the all types of policy may be needed in combination.

The 2030 policy framework proposed by the EC establishes an emission target and a renewable energy target. However, in contrast to the 2020 framework, the renewable energy target is not to be binding on the Member States. To the EC proposes a governance structure where Member States elaborate their plans and the EU coordinates and assesses those plans to ensure compliance with climate and energy objectives. In absence of binding national targets, the new governance should generate new ways to coordinate and harmonise national policies. This seems more akin to a governance scenario with a tendency towards decentralisation, but there are moves towards centralisation also where it matters, i.e. where markets are concerned (e.g. in rules for state aid support or with regard to further implementation of the ETS). Therefore, at present the movement seems towards a balanced middle ground EU governance situation, suitable in principle to all three pathways.

A positive outcome from the UN climate change negotiations in Paris in December 2015 could furthermore give a signal that the global trajectory is towards greater ambition, alleviating concerns about competitiveness of EU industry to some extent. This would be supportive of all three pathway options, leaving greater choice for EU policy makers on the main type of policies to be deployed towards the 2050 target.

The CECILIA2050 project was set up as a three-year research project, funded by the European Union's 7th Framework Programme for Research. It brings together ten leading research institutions from eight EU countries to assess the performance of the existing climate policy mix, and to map pathways towards future climate policy instrumentation for the European Union, with a prime focus on economic instruments.

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All underlying reports can be accessed at: www.cecilia2050.eu.

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