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PROJECT FINAL REPORT

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4.1 Final publishable summary report

Executive Summary

The December 2015 Paris Agreement has put the goal of a decarbonised global economy within the realm of conceivable options. Already in 2008, the EU had declared its ambition to build a low-carbon economy by the middle of the 21st century. Achieving this target will require a transformation of the European economy, affecting a range of sectors – power generation, industry and transport, but also agriculture, construction or finance. Governing this transformation in an effective and efficient way is a challenge – a task that includes stimulating the necessary innovations, ensuring public support, encouraging the needed investments, providing for the right infrastructure, and avoiding lock-in into carbon-intensive technologies.

To manage the transformation to a low-carbon economy, a range of policy instruments is necessary. The EU and its Member States already apply a mix of climate policy instruments, yet these are not sufficient for the task, and need to be scaled up drastically. But to increase the scale and ambition of climate policy, it is essential to understand and to manage the interaction of policy instruments, and to overcome constraints on the political, legal and administrative feasibility. Policies that have worked well in an economic niche are not necessarily suited to guide economic development on a broad scale; instruments that have co-existed well on a small scale may conflict when scaled up to an economywide level.

The CECILIA2050 project has taken on this challenge. In a joint research effort by ten partners from eight countries, the research project has investigated how the existing mix of climate policy instruments needs to evolve, in order to transform the EU towards a low-carbon economy. To this end, the CECILIA2050 project combined a backward-looking (ex-post) stocktaking exercise with a forward-looking (ex-ante) analysis of the necessary policy changes in the medium (2030) and long run (2050). The latter combined model-based techno-economic scenarios – to understand the timing and the dimension of change needed in key sectors – with more detailed, empirical analysis of individual policy instruments and their interactions. In the latter analysis, the project placed particular emphasis on the role of economic instruments in the policy mix, understanding their role in a broader policy mix, and finding ways to exploit their potential more fully. This included empirical analyses of major barriers that inhibit more effective and efficient climate policy – such as acceptance by stakeholders and the public at large, distributional effects, availability of finance, physical infrastructure, but also the administrative and legal framework of EU climate policy.

The research confirms that carbon pricing should be at the heart of any climate policy mix aiming to be ambitious and yet efficient. Yet, for a number of reasons, the current pricing tools in the EU do not deliver a strong enough carbon price. Time is of the essence: in light of the time lags and the path dependency in investment decisions, the EU need to have a meaningful carbon price sooner rather than later. Still, a strong carbon price is no panacea either, but needs to be part of a mix, which employs different tools to addresses different target groups. This is bound to lead to instances where policy instruments overlap, which will create friction and may reduce overall efficiency. The challenge is therefore to better anticipate and manage policy overlaps where it occurs.

Summary Description of Project Context and Objectives

The Paris Agreement adopted in December 2015 under the United Nations Framework Convention for Climate Change, and the good spirits and intentions that made it possible, have put the option of a decarbonised global economy within the realm of the conceivable options. The EU has repeatedly declared its ambition to transform itself to a low-carbon economy by the middle of the 21st century. This transformation process will require an overhaul of the European economy, affecting a range of sectors – not only power generation, industry and transport, but also agriculture, construction or finance. Governing this transformation process is a huge challenge – stimulating the necessary innovations, ensuring public support, encouraging the needed investments, creating the right infrastructure, and avoiding lock-in into carbon-intensive technologies.

The EU is in a special position in this respect: on the one hand, it can build on more than two decades of climate policy, reflected in a number of short- and long-term targets for climate and energy policy, and a suite of climate policy instruments intended to achieve them. On the other hand, there is a gap between the level of ambition expressed in the long-run targets, and the effectiveness of the instruments currently in place. This is confounded by the fact that neither the targets nor the instrument mix are free from inconsistencies, especially when considering interactions with neighbouring policy areas, such as energy or the internal market. And last not least, the EU itself is not a unified actor: between the EU and its 28 Member States, there are diverging visions on the low-carbon future for the EU economy and the policies and instrumentation leading towards it.

To manage the transformation to a low-carbon economy in Europe, a substantial overhaul of the existing mix of climate policy instruments is necessary. In terms of their ambition and reach, existing instruments needs to be scaled up drastically to initiate the necessary changes. But as the scale and scope of instruments increases, it becomes more important to understand and to manage their interaction, as well as the constraints on the political, legal and administrative feasibility. Policy solutions that have worked well in a niche are not necessarily suited to guide economic development on a broad scale; instruments that have co-existed well on a small scale may conflict when scaled up to an economywide level. To evaluate their efficiency and effectiveness, policy instruments thus cannot be viewed in isolation; understanding and managing their interaction becomes key.

The CECILIA2050 project has taken on this challenge: to understand how policy instruments work in interaction, what factors determine their performance, and how the European climate policy instrument mix could evolve to guide the transformation to a low-carbon economy. It places a particular focus on the role of economic instruments in the policy mix, understanding their limitations and finding ways to enhance their performance. The project has researched ways to improve the economic efficiency and environmental effectiveness of the instrument mix, while deepening the understanding of constraints that limit the feasibility of ambitious climate policies, or affect their performance. These constraints include public acceptance, availability of finance and the physical infrastructure, but also the institutional, administrative and legal framework of EU climate policy. To achieve this, the CECILIA2050 project combines a backward-looking (ex-post) and a forward-looking (ex-ante) analysis.

The first, backward-looking part of the project took stock of the existing instrument mix in the EU and its Member States, and has assessed overall their coherence and their past performance. This was achieved in two stages:

First, the initial stage of the project defined the terminology, and created an inventory of the policy instruments already in place. The terminology included both a working definition of the concept of optimality – combining environmental effectiveness and economic efficiency with political, legal and administrative feasibility – as well as a taxonomy of different types of policy instruments. The inventory of policy instruments looked at the suite of climate policy instruments that are currently applied in the eight EU countries that are covered by the CECILIA2050 consortium, as well as at the EU level. Finally, an initial assessment looked at how well the different climate policy instruments were performing, and which interactions could be observed both within and across policy landscapes.

The second stage of the project (Work Package 2) built on the results of the first by taking a deeper look at the functioning of the existing climate policy instruments – either focussing on a particular economic sector, or on particular cross-sectoral policy objectives. Thus, a suite of sectoral analyses looked at the energy sector, the impacts on selected industries, transport, food and agriculture as well as buildings and private households. In addition, cross-sectoral analyses investigated the impact of current climate policies on innovation, international competitiveness and overall economic development. A further analysis looked at the legal and institutional framework of climate policy in Europe, and how this has shaped the existing climate policy mixes in Europe. The different analyses in this second stage of the project applied a range of methods and tools, ranging from literature reviews to different qualitative techniques, including structured interviews with stakeholders, questionnaires, surveys, and to different macro- and microeconomic modelling approaches.

The second, forward-looking part of the project has mapped pathways towards a more ambitious policy mix for 2030 and 2050, starting from the current EU climate policy. With economic instruments at the heart of the mix, it described how the instrumentation could evolve, based on scenarios of the magnitude of change required for the low-carbon transformation. To this end, it combines the state of the art modelling tools with qualitative and participatory methods. The work in the forward-looking part was organised in the following work streams: first, the elaboration and quantification of long-term scenarios for the low-carbon transformation in Europe and internationally, second, the mapping of concrete policy pathways, departing from the current policy mix and leading towards a more "optimal" policy mix for 2030 and beyond, and third, an analysis of the effects of EU climate policies at the global level, as well as the interaction between EU climate policies and global developments.

The first work stream concerns the definition of scenarios for the low-carbon transformation with a view to 2050. This work combined different approaches: first, two modelling frameworks were applied to derive techno-economic transformation scenarios towards 2050. This was done a) with a focus on the energy sector, describing in detail the needed transformation of energy supply and energy use in Europe, and b) in an input-output framework, to understand the types of technological innovation and behavioural change (i.e. changes in consumption patterns) necessary for a drastic reduction of greenhouse gas emissions. These techno-economic scenarios are complemented by policy scenarios – both as idealised 'building blocks' for a future European climate policy instrument

mix, as well as a set of international scenarios, that describe how the international context for climate policy could evolve in the future. The common feature of all these scenarios – both techno-economic and policy scenarios – is that they represent internally consistent, but idealised projections of how the world (i.e. the political, economic, social and technical systems they describe) might evolve. As such, while the scenarios should have a minimum plausibility, the aim of the research was not to assign probabilities to the scenarios – i.e. to predict how the world will (or should) evolve, but rather to express the magnitude of change that is required in the key sectors to achieve a low-carbon transformation.

The second work stream in the forward-looking part of the project, the mapping of policy pathways to 2030 and beyond, has defined possible pathways for how EU climate policy instrumentation might evolve – taking the current policy mix (and its identified shortcomings and deficiencies) as a point of departure. This part of the project thus aims to connect the stocktaking of current European climate policy with the different techno-economic and policy scenarios: while the stocktaking describes where we stand now, and what problems the existing policy mix is facing, the scenarios offer a perspective on where we need to get in 2050, and illustrates the size of the political, economic, social and technological challenge ahead. The function of the policy pathways is to reconcile these two angles, to show how the current EU climate policy could evolve until 2030 and beyond, in order to move into the direction established in the different scenarios. Based on the current EU climate policy mix, these policy pathways embody different philosophies as to how European climate policy may plausibly evolve. Three main policy combinations were defined, differing in terms of the emphasis placed on particular types of instruments: (i) technology-neutral market-based instruments, (ii) technology-specific regulation and technology support measures, and (iii) policies aimed at changing behaviour by individuals and businesses. In addition, these main combinations were combined with different assumptions about the future of EU governance (towards more centralised vs. decentralised governance) and global climate policy cooperation (towards more coordination vs. fragmentation).

In subsequent steps, these policy pathways and the techno-economic scenarios for decarbonisation previously defined then served as a point of reference for an in-depth analysis of main barriers and constraints for more ambitious climate policies emerging from the current policy mix. This "reality check" analysed a broad range of potential barriers, constraints and bottlenecks, assessing to what extent these represent a limitation for ambitious climate policies, and identified options of resolving, bypassing or overcoming these barriers. In this context, for instance, research investigated the institutional and legal conditions for EU climate policy, including the adequate balance between centralised and decentralised climate instruments; other tasks looked at the necessary instruments to encourage innovation in low-carbon technologies and deliver new energy infrastructure; or the extent to which the availability of material resources may constrain low-carbon development. Other tasks applied empirical methods to research the public acceptance, or the distributional implications of different climate policy instruments. Finally, political science approaches were used to evaluate the political feasibility of implementing different policy instruments, by investigating policy makers' understanding of and preferences for different policy designs in a serious gaming exercise.

A third work stream then investigated the interactions between EU climate policy and the global economy. This included socio-political and quantitative economic analyses of the future risk of carbon leakage, as well as options to reduce this risk, concluding that energy-intensive industries can

be incentivised and supported to improve their energy and material consumption, reduce dependency on fossil fuels and invest in innovative technologies and products, improving their international competitiveness. In addition, model-based decomposition simulated the future trajectory of carbon leakage into energy, terms-of-trade, and investment leakage channels, suggesting that while the energy market channel dominates initially, the terms-of-trade effect and especially the international investment channel gain importance over time. Finally, an integrated assessment model was deployed to model the global distribution of industrial and terrestrial GHG emissions, investigating leakage risks due to differential fuel prices (industrial carbon leakage) vs. those resulting from a shift of carbon-intensive biomass/food production.

To ensure policy relevance and mobilise practitioners' knowledge, the project has been engaging with stakeholders in different ways throughout the project, particularly through workshops, dedicated events for stakeholder outreach and engagement, and through the continuous guidance of a Science and Policy Board of high-level experts.

Dedicated project workshops and conference organised (or co-organised) by the CECILIA2050 project, targeting a mixed audience of policy makers, stakeholders, academia and think tanks: The headline events of the project were the two project conferences: the mid-term conference (Brussels, March 2014) and the final conference of the project (Brussels, June 2015). In addition, CECILIA2050 featured prominently at the Scientific Conference Research for a Post-Carbon Future (Berlin, September 2014). In terms of workshops, a suite of public workshops was organised throughout the project: including on on the status and future of European climate policy (Brussels, February 2013), a seminar jointly organised with the ENTRACTE project (Dublin, September 2013), a workshop on long-term climate policy scenarios (London, October 2013), as well as a workshop focusing on the public acceptability of EU climate policies (Prague, October 2014). Finally, a suite of dissemination events was held in eight countries in October 2015 .

More academically-oriented dissemination included presentations at am international symposium on emissions trading (Beijing, October 2013), seminars at Johns Hopkins University, DC and Duke University, NC, a policy session at the 14th World Congress of Environmental & Resource Economists (Istanbul, July 2014), and two sessions at the conference "Our Common Future under Climate Change" (Paris, July 2015).

Dedicated outreach to policy makers and stakeholders included several side events organised at UNFCCC Conferences (COP-18 in Doha, COP-19 in Warsaw and SBSTTA meetings in Bonn), internal workshops at the German Federal Environment Agency (Dessau, February 2014) and the European Environment Agency (November 2014), and a presentation at the third European Environmental Evaluators Network Forum (Helsinki, April 2014).

The implementation of the project was supported by a distinguished Science and Policy Advisory Board, comprised of 12 leading experts from European and Member States institutions, academia, business associations, environmental NGOs and trade unions. The Advisory Board has met on six occasions to discuss the project progress, to provide guidance on the direction of the research, and to help maximise the policy relevance and potential policy impact of the research. The project website is available at www.cecilia2050.eu and provides an up-to-date inventory of the research work published by the CECILIA2050 project, as well as documentation of all events.

Description of the main S&T results/foregrounds

The S&T results of the CECILIA2050 project are documented in a set of 47 substantive research reports and 7 organisational reports (such as conference proceedings). These documents are organised into 30 Deliverables, all of which have been completed and submitted. With the exception of three internal, purely organisational reports, all these project outputs are available for download on the CECILIA2050 website at http://cecilia2050.eu. In addition, the research results of the CECILIA2050 project have given rise to 17 publications in peer-reviewed journals, two book chapters, one scientific monograph and six theses or dissertations. Finally, the main project results are also documented in a suite of six policy briefs, which summarise key insights from the project and relate them to current EU policy debates.

In terms of evaluating the scientific impact of the project, and the progress achieved beyond the scientific state of the art, the following discussion is structured around key five dimensions. As outlined in the original description of work, the way in which the CECILIA2050 project aimed to advance the state of art, and address identified shortcomings of established approaches in the field of environmental economics and political science was summarised in the following way:

Dimension / Objective	Guiding question(s) to evaluate project success
1. CECILIA2050 will take an inter-disciplinary and geographically diverse approach to the evaluation of economic policy instruments to ensure that results are useful to EU policy makers	Has the project succeeded in drawing on insights from different disciplines, and combining these different perspectives to derive useful and realistic conclusions? Has the project succeeded to mobilise standpoints and experiences from different EU Member States, to reflect the current state of climate policies in Europe?
2. CECILIA2050 will focus attention on the need for radical change required in order to meet the EU's long-term climate objectives.	Has the project succeeded to deliver a "radical and realistic" view, i.e. to combine a top-down view of the scale of change that needs to be achieved by mid-century with the bottom-up view of how this transformation can be initiated, departing from the current endowment of European climate policies?
3. In order to assess different policy instruments, CECILIA2050 will adopt a broad notion of optimality, which does not only analyse what looks best in theory, but also what is the most expedient way forward under real-life constraints.	Has the project succeeded to develop and apply a wider notion of optimality, which extends beyond the narrow criteria of economic efficiency and effectiveness, and also includes aspects of (political, administrative and legal) feasibility in a way that is empirically well-founded?
4. CECILIA2050 will analyse combinations of policy instruments and their	Has the project succeeded to focus the analysis on combinations of different policy instruments,

interaction, rather than optimising individual instruments. It will draw on insights from different disciplines to understand the constraints that limit the performance of instrument mixes, and derive options to tackle these.	allowing a realistic assessment of the entire policy mix, and providing recommendations for the effective combination / sequencing of instruments?
5. CECILIA2050 will utilise innovative modelling combinations to enhance the ability of existing quantitative tools to inform policy requirements over the very long run.	Has the project succeeded in combining the different modelling approaches in a way that supports the analysis by providing a coherent and consistent framework, but allows sufficient flexibility to focus on the most relevant aspects?

The following section is structured around these five dimensions, and explores how the work conducted in the different work packages has served to advance the state-of-the-art.

1. Has the project succeeded in drawing on insights from different disciplines, and combining these different perspectives to derive useful and realistic conclusions? Has the project succeeded to mobilise standpoints and experiences from different EU Member States, to reflect the current state of climate policies in Europe?

The various tasks in **WP2** assessed the EU climate policy mix, or aspects of it (including economic instruments, but also regulatory and behavioural instruments), using a range of analytical approaches. It also assessed Member State level policies, and effects of EU policy at the Member State level.

- In particular, the key instruments of the EU ETS and renewable electricity (RES-E) support mechanisms were assessed from a range of perspectives, using different analytical approaches and methods, and for different purposes. Thus, Task 2.6 (documented in Deliverable 2.2) used the economic-environmental model GINFORS to assess the impact of these instruments, both individually and in combination (along with Environmental Tax Reforms in eight Member States), on CO_2 emissions, economic growth and employment, for each of the EU Member States. This was supported by a review of econometric evidence undertaken by Task 2.1 (documented in Deliverable 2.1). Task 2.1 provided further insight into RES-E support mechanisms, including original analysis into the effect of RES-E deployment on electricity prices in Germany and Spain, and an assessment of 'best practice' approaches to support mechanisms, from past experience.
- Task 2.2 (documented in Deliverable 2.1) and Task 2.7 (documented in Deliverable 2.2) assess the impact of the EU ETS on the competitiveness of EU industry, and whether 'carbon leakage' has occurred, using econometric analysis and literature reviews, respectively, condluding that no evidence for carbon leakage from the EU as a result of the EU ETS carbon price exists.
- Other tasks in WP2 investigated more sectoral and Member State-specific issues. Task 2.5b (documented in Deliverable 2.1) investigated the effectiveness and efficiency of combining carbon pricing and retrofit obligations in the domestic sector in France, using a hybrid

energy-economy model (Res-IRF), whilst Task 2.4 (documented in Deliverable 2.1) assessed the food and agriculture policy mix in four Member States (UK, Netherlands, Spain and Italy), employing literature review, surveys and interviews, and found that an co-ordinated policy approach across the full supply chain is currently absent, but required to drive significant abatement action in the sector.

- Task 2.7 (documented in Deliverable 2.2) combined both quantitative and qualitative approaches (interviews and econometrics) to assess the effectiveness of different policy drivers on innovation, across different Member States and sectors. It found that economic instruments have historically been effective in stimulating innovation, but that other non-policy market pressures and local 'systems of innovation' unique to different Member States and sectors are equally important.
- Task 2.5a (documented in Deliverable 2.1) and Task 2.9 (documented in Deliverable 2.3) focussed on the feasibility of policy instruments and their combinations from different angles. The former conducted a stated-preference survey to elicit public preferences surrounding policy and policy mix choices and design, focusing on the Czech Republic, Poland and the UK. They found that, amongst other things, that the public holds a significant aversion to tax for numerous reasons, and even the label 'tax' renders an instrument significantly less acceptable than an identical instrument labelled as something else. Task 2.9 assessed legal and institutional aspects of policies and policy making, focussing on Germany, the UK and Poland, and the EU level. This task used literature reviews, interviews and analysis of legal documents to highlight key legal and institutional conditions for climate policy, such as the role institutional configuration can have on the implementation and effectiveness of policy, that using new regulatory approaches may trigger legal conflict, and that subnational governance levels are often essential in determining the success of policy instrument (or otherwise) in some Member States.

While the previous examples stem from the backward-looking and stock-taking part of the analysis, in the forward-looking part of the project **WP 4**, Task 4.1 defined three possible combinations of instruments for the key emitting sectors that have both plausibility and a reasonable chance of achieving the desired emission reductions. Building on this, Tasks 4.2-4.9 analysed various constraints, risks and bottlenecks that may affect the performance of different instrument mixes in terms of their effectiveness, efficiency or feasibility. These constraints, risks and bottlenecks are of different natures and, therefore, an inter-disciplinary approach is taken. Task 4.2, for instance, focuses its analysis on the institutional and legal conditions for EU climate policy, and the constraints and challenges the legal and institutional configuration implies for instrument choice, instrument design, and the effectiveness of instruments. In this context, inter alia, the authors analysed the adequate balance between centralised and decentralised climate instruments. In Task 4.3 and 4.5, a financial-economic approach is taken to evaluate the set of instruments which encourage innovation in low-carbon technologies and deliver new energy infrastructure. In task 4.9, a political science approach is used to evaluate the political feasibility of implementing different policy instruments, by investigating policy makers understanding of and preferences for different policy designs in a serious gaming exercise constructed around the issue of EU ETS reform. In this WP, the focus of the analysis is on policy instruments at EU level. Discrepancies between Member States, their political culture and the general attitudes, however, featured prominently in the analysis of

public support for different policies (Task 4.7), as well as in the analysis of different political decision makers and their preferences for policies (Task 4.9). In addition, the analysis of energy infrastructure in Task 4.5 discussed the required electricity interconnections between Member States.

WP5 of the CECILIA2050 project focused on the economic and political interactions between EU policies and the rest of the world and the effectiveness, the legal and political feasibility of policy responses to mitigate carbon leakage risk. A good example of the **interdisciplinary approach** is the approach taken in Sub-task 5.2.2, which looked at instruments to mitigate adverse effects of climate policy on competitiveness and leakage. Two disciplinary approaches were combined in this analysis: a socio-political approach and a quantitative economic (modelling) approach. The results of the two lines of research were documented in Deliverables D5.3a and D5.3b.

2. Has the project succeeded to deliver a "radical and realistic" view, i.e. to combine a top-down view of the scale of change that needs to be achieved by mid-century with the bottom-up view of how this transformation can be initiated, departing from the current endowment of European climate policies?

In the context of **WP 3**, which quantified techno-economic scenarios for the transitions of the EU to a low-carbon economy, simulations with the economic-environmental model GINFORS modeled pathways towards was a radical 80% reduction of CO_2 emissions in the EU (below 1990) till 2050. While radical in ambition, this view was also realistic in the sense that the model has econometrically estimated parameters. The model allows a bottom-up view of how this transformation can be initiated because of its deep sectoral, energy carrier and country structure depicting endogenously the production technologies inside the countries and international trade between them. The resulting policy mix differs markedly from the current endowment of European climate policies.

Building on the quantitative scenarios, **WP 4** explores the different choices of policy instruments that the EU could select to achieve the emission reduction scenarios. In addition to their economic efficiency and environmental effectiveness, WP4 analyses various constraints, risks and bottlenecks that may affect the feasibility of enacting different policy pathways. This includes institutional, legal and administrative constraints, the role of energy infrastructure as a bottleneck, the material and financial resources required to implement the necessary investments, the uncertainty arising in terms of the policies' impacts and interaction, and the political feasibility in terms of distributional impacts, public acceptance and stakeholder support. In this sense, WP 4 embodies the "radical but realistic" approach of the CECILIA2050 project: it takes as its starting point the need for a radical low-carbon transformation, as mapped out in the techno-economic decarbonisation scenarios, and the stylised combinations of policy instruments that are supposed to lead the EU economy onto a low-carbon development trajectory. These three combinations (described in Task 4.1, documented in Deliverable 4.1) have, as a starting point, a reasonable expectation of being able to bring about the desired emissions targets by 2030 and beyond, proposing realistic measures to achieve these objectives. However, the policy pathways have varying degrees of 'radicalism'. While the Market-driven and the Technology-specific pathways propose a set of instruments that represents essentially an intensification of certain elements in the current climate policy instrument mix (similar instruments, yet at higher level of ambition), a Behavioural-driven pathway would require a more radical departure from the current policy framework. In this pathway emission reduction is mainly driven by

a behavioural change of households and companies, which is encouraged and facilitated through a suite of policy instruments. In the following Tasks of WP 4, the techno-economic scenarios for decarbonisation and the potential instrument combinations were then subjected to a "reality check" by analysing a broad range of potential barriers, assessing to what extent these represent a limitation for ambitious climate policies, and identifies options of resolving, bypassing or overcoming these barriers. In this context, a particular interest was whether the different barriers had more or less effect on certain types of regulation, or whether the barriers were largely independent from the chosen regulatory approach.

In the context of the WP 5, examples of the **radical and realistic view** are the scenario analysis in **Task 5.1** and the economic modelling exercises in **Tasks 5.2** and **5.3** that that describe, respectively model, radical but feasible 2°C emissions mitigation scenarios for the EU and the world. The research is documented in **Deliverables D5.1, D5.3b, and D5.4**. In terms of adding nuance to existing policy debates, the WP 5 also looked at the validity of claims that ambitious (radical) climate policy would risk de-industrialising the EU, and would therefore be economically detrimental, politically unfeasible, and hence ultimately unrealistic. This questions was investigated from two separate research angles, the results of which are documented in Deliverables D5.3a and D5.3b. Both researches arrived at the conclusion that energy-intensive industries such as the steel sector can be incentivised and supported to improve its energy and material consumption, reduce dependency on fossil fuels technologies and invest in innovative technologies and products which in the long term, would reduce carbon costs as part of the production costs and improve international competitiveness. The European steel sector could thus compete internationally through innovative high value-added products rather than on energy prices and volumes.

3. Has the project succeeded to develop and apply a wider notion of optimality, which extends beyond the narrow criteria of economic efficiency and effectiveness, and also includes aspects of (political, administrative and legal) feasibility in a way that is empirically well-founded?

The Working Definition of Optimality, which covers the dimension of (environmental) **effectiveness**, short run (static) and long run (dynamic) **efficiency**, and (political, legal and administrative) **feasibility**, was developed in the initial phased of the project (Task 1.1), is documented in Deliverable D 1.1, and continued to serve as the conceptual basis for the following work, and in particular as a reference point for optimality assessments conducted in various parts of the project, be it for individual sectors or policy instruments, or for the climate policy mix in its entirety.

For instance, various tasks in **WP 2**, whilst considering the key criteria of policy and policy mix effectiveness and cost-efficiency, explicitly considered aspects of political, administrative and legal feasibility. Key examples include Task 2.4 (documented in Deliverable 2.1), which viewed the climate policy mix in the food and agriculture sector across the EU against an assessment framework explicitly comprised of 'effectiveness', 'cost-efficiency' and 'feasibility; Task 2.5a (documented in Deliverable 2.1), which analysed public preferences regarding policy and policy mix design; and Task 2.9 (documented in Deliverable 2.3), which assessed legal and institutional drivers and constraints to an effective and cost-efficient climate policy mix.

Similarly, the economic modelling conducted in **WP 3** also integrated broader real-world notions beyond a pure economistic set of assumptions. This is based on the insight that the observable behavior of consumers, producers and investors cannot be explained by economic efficiency alone, as assumed in a setting of perfectly functioning markets. Real world decisions, by contrast, also reflect considerations of political, administrative and legal feasibility. The econometric estimation of behavioral equations in the model GINFORS includes these aspects in an empirically well-founded way.

In the structure of the project, **WP 4** has been set up with the explicit intention of conducting a detailed analysis of various dimensions of political feasibility, by investigating a set of different barriers and constraints on the feasibility of ambitious climate policies. For instance, Task 4.9 analyses the political feasibility of climate policy instruments in the EU. They show that the EU ETS and carbon taxes are exposed to strong opposition if their impact on specific societal groups is evident. The feasibility of a market-based policy pathway would increase considerably if the EU ETS is reformed in order to improve its effectiveness. Likewise, Task 4.2 evaluates the legal feasibility of climate instruments and Task 4.6 addresses the role of uncertainty in the choice and the design of climate policy instruments, as well as their combination in a policy mix. The latter shows that subsidies to renewable energy may be justified as a kind of insurance.

Within the frame of the **WP 5**, a wider notion of optimality is embodied in Tasks 5.2 and 5.3. In Task 5.2: Instruments to mitigate adverse effects on competitiveness and leakage, the performance of policy instruments has been explicitly assessed against the criteria of environmental effectiveness, dynamic efficiency, political feasibility, and legal feasibility (see D5.3a, Section 3.3 on Evaluation criteria and indicators for assessing policy options). The quantitative economic modelling approach also considered indicators of domestic and international political feasibility (see D5.3b, Section 7: Optimality assessment).

In the concluding discussion in the frame of **WP 6**, the broadening of the concept of optimality beyond customary welfare approaches, first conducted conceptually and theoretically in Task 1.1, was further applied and elaborated at several levels in WP6. Thus, the concept of feasibility was further broadened beyond the legal, administrative and political feasibility, to include aspects of economic feasibility (linked to efficiency), social feasibility (linked to political feasibility), and legitimacy, as the broad acceptability of climate policy instrumentation within broader views on governance, including aspects of national autonomy and supranationality. These feasibility aspects allow for a reasoned assessment on how realistic the instruments strategies may be. Together with efficiency they relate qualitatively to the ultimate long-term optimality aspects: risks, costs and welfare.

4. Has the project succeeded to focus the analysis on combinations of different policy instruments, allowing a realistic assessment of the entire policy mix, and providing recommendations for the effective combination / sequencing of instruments?

Various Tasks in **WP 2** assessed the effects of policy combinations, from which key insights were drawn. Key examples include Task 2.6 (documented in Deliverable 2.2), which assessed the combined effect of the EU ETS, renewable electricity support mechanisms and Environmental Tax Reforms on CO_2 emissions, economic growth and employment in each Member State, Task 2.5b

(documented in Deliverable 2.1), which modelled the effect of combining carbon taxes with retrofit obligations in the French domestic sector. Both studies concluded that renewable support mechanisms have thus far induced more CO_2 abatement across the EU than the EU ETS. However, the latter concludes that the interaction between the two instruments has thus far not been negative, as the EU ETS cap was set in light of expected RES-E deployment induced by dedicated support mechanisms. Task 2.6 concludes that the combination of these instruments has not had a negative impact on economic growth (and may have been positive). Task 2.7 (documented in Deliverable 2.2) points to the importance of the broader institutional framework and networks for the performance of policy instruments: it observed that economic instruments have historically been effective in stimulating innovation, but that other non-policy market pressures and local 'systems of innovation' unique to different Member States and sectors are equally important. Likewise, Task 2.9 highlighted the role of the institutional configuration for the implementation and the effectiveness of climate policy, and suggested that using new regulatory approaches may trigger legal conflict, thus creating a path-dependence for climate policy instrumentation within the legal system.

In **WP 3** three models, which together represent a broad methodological spectrum of economic environmental modelling, have been applied. Furthermore, a set of options (building blocks) for coherent instrument mixes in respect to European climate governance and a discussion on international climate policy was developed, defining the overall research framework. These different approaches yielded a common message, that a carbon price alone will not be able to reach a global CO_2 emissions trajectory in line with the 2° limit, and will not deliver an 80% reduction in CO_2 emissions in Europe. The presented abatement strategy focuses on sectoral approaches to decarbonise electricity production, electrify road transport and improve the energy efficiency of the building stock

Within **WP 4**, the policy combinations developed in Task 4.1 – which framed the subsequent analysis – in themselves represented combinations of different policy instruments, albeit with each expressing a strong focus on a particular category of policy instruments (market-based instruments vs. technology support, standards and regulation vs. soft measures). The analysis of constraints, risks and bottlenecks in the ensuing Tasks 4.2 - 4.9 then looked both at individual instruments as well as combinations of policy instruments. For instance, Task 4.5 assesses the Market-driven, the Technology-specific and the Behavioural-driven pathway in developing new infrastructure.

Finally, the concluding **WP 6** introduced a further structuring element into the analysis of policy mixes, by distinguishing between two abstract and radical strategies, embodying regulatory philosophies and with associated policy instrumentation, with each realistically able in principle to reach the deep reductions by 2050 of in the order of 90% less CO2 emissions. These regulatory philosophies relate to a Planning & Control Strategy and an Institutionalist Strategy for climate policy instrumentation. In the Planning & Control Strategy, instruments regarding specific technologies have primacy. They comprise a combination of subsidies and standards for emission reducing technologies and behaviour, using taxes in specific circumstances for a fast phase out as of older coal fired power stations. National policies have primacy in most fixed investments, with EU primacy for movable products, especially in transport. EU directives and adjoining subsidies give guidance to national developments, including spatial planning. Electricity markets remain national substantially.

5. Has the project succeeded in combining the different modelling approaches in a way that supports the analysis by providing a coherent and consistent framework, but allows sufficient flexibility to focus on the most relevant aspects?

While economic models of different designs have been used to support analytical steps in various parts of the project, most of the modeling efforts conducted in the project were concentrated in the WP 3, which quantified techno-economic scenarios for the transition to a low-carbon economy. Within the WP three models were applied:

- The **European Times Model (ETM-UCL**) is a dynamic partial equilibrium energy system model with an inter-temporal objective function to minimise total discounted system costs, based on the TIMES model generator. It is a technology rich, bottom-up model with perfect foresight and covers energy flows across supply side and demand side sectors. The model comprises a total of thirty-one countries (EU28 plus Norway, Iceland and Switzerland) grouped into 11 regions along with a "global" region. Each region is modelled with supply, power generation and demand side sectors, and is linked through trade in crude oil, hard coal, pipeline gas, LNG, petroleum products, biomass and electricity.

- **GINFORS** is a global multicounty/multisector economic–environmental model. All countries in the EU27, all OECD countries, the BRIC countries and a "Rest of the World" region are explicitly modeled. It is a dynamic model which depicts the global economic, social and environmental relations for each country in deep product group detail (59), including the inputs of capital (fixed and intermediate), labour markets and the developments of all components of final demand depending on relative prices. The prices of all products are explained by the unit costs of the 35 sectors. The macro variables are given by explicit aggregation of the sectoral variables determining GDP as the aggregate of sectoral value added. International trade between all countries is depicted bilaterally for 59 product groups with price dependent structures. The energy intensities for heating, mobility and electricity for the use of machinery and household appliances are explained by relative prices for each of the 35 sectors and private households in each of the 39 countries. . The carrier structure also depends on their price relations. All parameters of the model are estimated econometrically.

- The **EXIOBASE** Input Output model distinguishes 44 trade linked countries with 129 sectors per country. The base year for the structural relations of the model is 2000. For the purpose of the study the countries have been aggregated into four regions: EU27, other High Income Countries, the BRICS and the Rest of the World including most African and Middle Eastern countries. Structural change of the economy and the energy system is given by exogenous assumptions. GDP Growth was taken from OECD growth perspective, and energy efficiency improvements were forecasted by trends.

One key result from the simulations with all three models was that a robust carbon price, while necessary for the transition, is insufficient in an of itself to achieve a transformation. Rather, it needs

to be combined with a sectoral strategy that decarbonises electricity production, electrifies road transport and improves the energy efficiency of buildings.

Concerning the decarbonisation of the power sector three technologies can achieve this result: nuclear, CCS and renewables. In the GINFORS alternative policy simulations, due to a lack of public acceptance of this technology, and hence lacking political feasibility, nuclear follows the levels of the baseline. For the EU countries, these were taken from the EU reference scenario, for all other countries the planned capacities of the IAEA country nuclear power profiles 2012 were the data source. In the ETM-UCL simulations the level of nuclear power was held constant.

In the case of CCS such a clear judgement concerning public acceptance and political feasibility cannot be given. While a part of the political spectrum emphasises the risks and potentially dangerous side effects accompanied with the application of CCS, others do not see this or are convinced that further research will avoid these problems. Insofar we need a discussion about the acceptance of CCS, and if the expectation of severe risks cannot be eliminated we need a policy decision. Our simulations have shown that the targets might be met with CCS (ETM-UCL and EXIOBASE) but also without it (GINFORS).

If CCS is excluded subsidies or quotas for renewable energies might be necessary to avoid the 'lock-in' of existing installations. In the GINFORS simulations a quota for the total of renewables was introduced leaving the choice of the type of technology open to the market depending from the relation of unit costs. The decarbonisation of other ETS sectors like cement production is difficult to achieve: Even with high carbon prices the low extraction prices (especially for coal) in relation to the relatively low price elasticities will not create high enough shadow prices. This problem might be solved without the use of traditional climate policy instrumentation; the discussion on material inputs in the broader context of resource efficiency has shown that there are substantial inefficiencies in material inputs in all sectors of the economy due to market failures. This discussion will induce the implementation of material efficiency policy instruments including consulting and information programs to reduce the coefficients of material inputs in all stages of production. In the end, demand for basic products and their production will be reduced.

Electrification of road transport has a big potential for decarbonisation (EXIOBASE and GINFORS). How this potential will be used concerning the concrete policy mix that favours "clean" technologies and discriminates against cars driven by fossil fuels has been left open, but it could be shown that the choice of the vehicle technologies will be still open to the market.

The EXIOBASE and the GINFORS simulations have made clear that a core strategy consisting only of decarbonisation of the power sector and the electrification of road transport accompanied by an economy wide carbon price is not able to meet the targets. As the GINFORS simulations have shown the improvement of the energy efficiency of buildings and the improvement of material efficiency can close the gap.

The GINFORS simulations have shown that a combination of an economy wide carbon price with the sectoral strategy described above has the potential to reach the climate targets and at the same time raise GDP. The combination of economic instruments or regulations and their concrete formulation to push e-mobility, the inputs of renewables in the power sector and the renovation rate

of buildings in combination with an economy wide carbon price has to be the subject of further considerations.

WP 4 combines qualitative and quantitative assessment. In the latter category, different modelling approaches were deployed to analyse climate policy instrument mixes: Task 4.4 used an econometric model to investigate how financial barriers affect investment in low-carbon technologies. Task 4.6 develops a stochastic model of the European energy sector to analyse how uncertainty may affect climate policy instrument mixes. The analysis of Task 4.9 is combined structured in-depth interviews, focus groups, an online survey and a policy simulation with relevant stakeholders in the EU climate policy domain.

Within **WP 5,** innovations in economic modelling have been made with respect to the analysis of carbon leakage. **Task 2, Deliverable D5.2**, decomposed the simulated future trajectory of carbon leakage into energy, terms-of-trade, and investment leakage channels. The simulations suggest that in this scenario the energy market channel dominates carbon leakage initially. However, over time the terms-of-trade effect and especially the international investment channel gain importance (Figure 1).

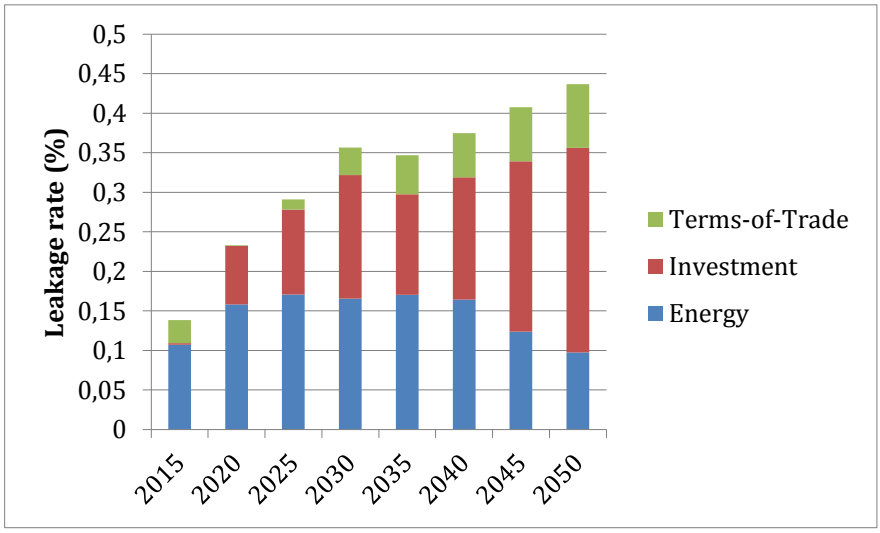

Figure 1: Carbon leakage in the Middle of the Road scenario

Task 3, **Deliverable D5.4** employed a very innovative integrated assessment model that distinguishes between industrial and terrestrial emissions of greenhouse gases. The model tracks emissions and atmospheric concentrations of GHGs, carbonaceous aerosols, sulphur dioxide, and reactive gases and provides estimates of the associated climate impacts. An important feature of the GCAM architecture is the terrestrial carbon cycle model embedded within the agriculture-land-use system model. Thus, all land uses and land covers, including the non-commercial lands, are fully integrated into the economic modelling in GCAM. This coverage gives GCAM the capability to model policies that jointly cover carbon in all activities in the energy, agriculture, forest, and other land uses. In this study two sources of leakage are considered: one due to the different fuel prices in countries with a carbon target as opposed to countries without one (referred to as industrial carbon leakage or ICL), and the other resulting from a shift of biomass/food production that is carbon intensive out of regions with a carbon target to regions without one (referred to as terrestrial carbon leakage or TCL). The analysis shows the total leakage rates to be significant, in the period to 2050

TCL is the dominant form of leakage but in the period 2050-2100 it is ICL that dominates. The conclusion emerges that it is important to take terrestrial emissions into account, certainly for the medium term to understand leakage effects.

Potential Impact, Main Dissemination Activities and Exploitation of Results

Potential strategic impact

European climate policy stretches back for more than 20 years, and over that time it has become increasingly complex, ambitious, pervasive and Europeanised. Since 2008, the European Council has repeatedly confirmed the EU objective of reducing greenhouse gas emissions by 80-95% by 2050 compared to 1990, and has also made reference to this objective in its Intended Nationally Determined Contribution submitted to the UNFCCC in the run-up to the Paris 2015 summit.

In the "Roadmap for moving to a competitive low-carbon economy in 2050" the European Commission sets out a plan to drastically reduce domestic emissions by mid-century. It shows how the sectors responsible for Europe's emissions - power generation, industry, transport, buildings and construction, as well as agriculture - can achieve the transition to a low-carbon economy over the coming decades. However, although there is a policy framework in place for the 2020 targets, the longer-term policy framework for the 2030 targets and beyond is still under development, and is only beginning to take shape. The CECILIA2050 project has responded to this urgent need by fostering the 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 an environmentally effective, efficient and feasible manner, on the way to the 2030 and 2050 targets. It has done so, inter alia, in the following way:

1. In a set of modelling exercises (documented in Deliverables D 3.1 – 3.3), the project has developed techno-economic scenarios for the transformation to a low-carbon economy, providing insights into the scale of the transformation needed in different economic sectors, changes in infrastructure and technologies, and the intensity of policy interventions needed. This comprised economywide scenarios (including global interactions) derived from a global CGE model and an input-output model, as well as detailed analysis for the electricity generation and energy-using sectors.
2. Documented in Deliverable 4.1, the project has developed three distinct, stylised options of how the EU the climate policy mix could evolve in order to achieve the emission reduction scenarios. These three stylisded combinations of policy instruments have, as a starting point, a reasonable expectation of being able to bring about the desired emissions targets by 2030 and beyond, proposing realistic measures to achieve these objectives. However, the policy pathways express varying degrees of ‘radicalism’ in terms of whether they require merely the intensification of existing policies and removal of inconsistencies, or whether they represent a more radical departure from established policies. While the Market-driven and the Technology-specific pathways propose a set of instruments that represents essentially an intensification of certain elements in the current climate policy instrument mix (similar instruments, yet at higher level of ambition), a Behavioural-driven pathway would require a more radical change.
3. In a series of empirical analyses (documented in Deliverables D 4.2 – 4.5), the project has analysed key barriers and constraints that may affect the feasibility of enacting different policy pathways. This includes institutional, legal and administrative constraints, the role of energy infrastructure as a bottleneck, the material and financial resources required to implement the necessary investments, the uncertainty arising in terms of the policies’ impacts

and interaction, and the political feasibility in terms of distributional impacts, public acceptance and stakeholder support.

Identify faster and more cost-effective greenhouse gas emissions reductions pathways

The CECILIA2050 project has identified faster, smoother and more cost-effective emission reduction pathways by improving the mix of climate policy instruments that guide economic and social development patterns in Europe. The research has analysed a number of market imperfections, bottlenecks and limitations that limit the efficiency and effectiveness of policy instruments and their combinations.

In particular, the project has taken a critical look at the potential for economic instruments (carbon pricing) to achieve fast and cost-effective emission reduction. It has empirically analysed key barriers and constraints that inhibit economic instruments from exploiting their full potential, but has also critically reflected on the inherent limitations of carbon pricing. In doing so, the research has followed a broad interpretation of economic instruments, including not only explicit pricing tools but also other instruments that affect the economic incentives of decision makers. Furthermore, the project has paid special attention to the interactions between different policy instruments, and analysed ways of optimising these interactions through active management or through smart instrument design.

The relevant findings and research results are documented in the following items:

1. A set of nine empirical studies, documented in Deliverables 2.1 – 2.4, has identified and assessed market imperfections and limitations of the current instrument mixes employed by the EU and at the level of its Member States. These analyses have looked at the limitations encountered a number of key sectors (energy, transport, industry, households, food and agriculture), as well as a number of cross-cutting factors that serve to explain the instrument choice and the functioning of policy instruments and their combinations (such as legal and institutional frameworks, availability of finance and the propensity to innovate).
2. A set of eight empirical investigations, documented in Deliverables 4.2 – 4.5, has identified and assessed market imperfections and limitations that will shape the European climate policy going forward, and which limit the (political, legal and administrative) feasibility of certain reform options. These analyses included institutional and legal conditions for EU climate policy, the availability of finance and the availability of material resources, as well as the importance of physical infrastructure particularly for the energy sector. Furthermore, the project empirically researched constraints on the political feasibility of instrument choices, in terms of the public acceptance of different climate policy instruments, their distributional implications as well as policy makers' understanding of and preferences for different policy designs.
3. The empirical research has given rise to a set of recommendations to overcome market imperfections and limitations, in order to exploit more fully the potential of economic instruments in climate policy. These recommendations, made both for the short to medium term (towards 2030) and for the medium to long term (towards 2050) are based

on the analysis of the performance of existing policies and the identified barriers that inhibit their performance, and suggest ways of resolving, bypassing or overcoming these barriers. For the longer term, the recommendations also aim to provide strategic guidance for the long-run orientation of climate policy, based on different fundamental perceptions of the possible role of climate policy and the distribution or knowledge and responsibilities between the public sector, businesses, consumers and civil society.

Foster faster introduction of highly innovative and low carbon technologies

The transformation to a low-carbon economy will require unprecedented levels of innovation in low-carbon technologies, the subsequent roll-out of these technologies through investments, including infrastructure, but also major changes in behaviour patterns and institutions. Such innovation will not come about through market processes alone – it will need to be driven, stimulated and supported by many facets of public policy. The CECILIA2050 project has determined how the current policy instrument mix has influenced the innovation system in terms of encouraging low-carbon solutions. The project has also improved our understanding of how public policy has stimulated – or should stimulate – innovation and environmental R&D. It has also analysed some of the conditions that determine the speed at which technologies can diffuse throughout the economy, including the availability of finance for low-carbon technologies, the necessary changes of the energy infrastructure, but also the response of consumers and the public at large.

The relevant findings and research results in relation to innovation and low carbon technologies are documented in the following items:

1. Understanding the performance of existing innovation policy frameworks in general, and the effects of climate policy instruments on innovation and diffusion activities, as documented in Deliverable D 2.2.
2. Modelling the need for radical innovation as part of techno-economic decarbonisation scenarios, in order to understand the magnitude of change required in key sectors – resulting inter alia in the observation that a decarbonised economy will also require a massive increase in resource efficiency, in terms of reducing the overall throughput of energy-intensive sectors that form the resource base of the economy, as documented in D 3.2 and 3.3.
3. Empirical analysis of the framework conditions that are decisive for a fast uptake of new technologies, including the availability of finance, material resources, public and private infrastructure and public acceptance / consumer behaviour. These analyses, and recommendations deriving from them, are documented in Delieverables D 4.2, 4.3 and 4.5.
4. Recommendation on the design of policy instrument mixes that foster innovation and low carbon technologies key economic sectors, as documented in Deliverables D 6.1 and D 6.2.

Secure increased EU competitiveness on global markets.

The CECILIA2050 project sought to contribute to increased competitiveness of EU firms on global markets in two ways: first, describe radical innovation pathways in key economic sectors commensurate with the goal of decarbonisation, as well as examining policy instrument mixes on

their ability to lead key sectors onto those pathways, with the aim to deliver low-carbon technologies that significantly reduce emissions and give European producers a competitive edge on the growing global market for such technologies. In addition, the project also conducted empirical research to better understand of the adverse impacts that climate policies may have on established industries, especially in the short to medium term, and especially if countries outside the EU should not be pursue comparably ambitious climate policies. The research quantified the risk of possible adverse impacts on competitiveness and carbon leakage, it analysed options to contain these risks from an economic, legal and political angle, and looked into options to increase the efficiency of the EU instrument mix through enhanced international cooperation.

The relevant findings and research results are documented in the following items:

1. A quantitative modelling of radical innovation pathways needed in key economic sectors in order to significantly reduce emissions, documented in Deliverables D 3.2 and 3.3
2. Empirical analysis of the competitiveness and carbon leakage risks implied by current climate policies, documented in Deliverable D 2.2
3. Empirical analysis of the competitiveness and leakage risks implied by more ambitious EU climate policies in the future, under various assumptions on the evolution of international climate policy, as well as the discussion of options to address adverse impacts on competitiveness and leakage risks, including an analysis of the economic, political and legal feasibility of such options, documented in Deliverables D 5.2 and 5.3
4. Empirical analysis of the global effects of EU climate policies and the interrelations between EU efforts and efforts abroad, documented in Deliverable D 5.4.

Steps to bring about these impacts

The impacts of policy-relevant scientific research is achieved in many ways over the short and longer term, through the transmission of ideas and opinions from academia into the political process, through the movement of people and through the transfer of data and methods. Projects are able to influence these impacts by being excellent and relevant, by working through formal and informal networks and by communicating well. An essential component of this process is two-way communication: from the side of the researchers, the task is not only to present research findings in a way that connects to policy debates; but equally important to engage with stakeholders and political decision makers to understand their view of the political process, in order to frame the analysis to provide relevant answers to relevant questions, and to be able to connect research findings to the political debate. From this angle, and given the fact that the project's 2012 – 2015 duration coincided with a decisive period in the formulation of EU climate policies, ongoing exchange with practitioners and their involvement in the framing of the research (to the extent feasible) was of particular importance.

The CECILIA2050 has worked to maximise its impacts through the following activities and approaches:

1. **Excellent research:** The foundation for being relevant was to base all findings on high-quality science, using state-of-the-art methods and tools, keeping up to date with the cutting edge of research, based on solid and well-documented empirical data and

methods, evidenced in excellent publications. This was achieved, inter alia, by regular peer-review of project outputs prior to publication, and is evidenced by a good record of high-quality academic publications emanating from the project.

2. **Bridging academic methods and real-life requirements:** Out of the researchers who shaped CECILIA2050, several routinely work on the interface between policy and science, and are therefore well versed both in academic debate and discussions with policy makers and civil society. In the practical operation of the project, such exchange was achieved above all through the ongoing interaction with the Science and Policy Advisory Board: the comprised of 12 leading experts from European and Member States institutions, academia, business associations, environmental NGOs and trade unions. The Advisory Board met with members of the research consortium on five occasions to discuss the project progress, to provide strategic guidance to the project, to assist in framing part of the research questions, to provide a sounding board for testing key assumptions and (interim) results, and to help maximise the policy relevance and potential policy impact of the research. In addition, a number of Advisory Board members have reviewed draft project reports, and provided valuable feedback. Furthermore, a four project workshops (Brussels, Dublin, London and Prague) and two project conferences (both in Brussels), which were attended by a mix of academic researchers, policy makers, business stakeholders and civil society, provided room for debate between the research team and the policy community. Finally, smaller events including side events at UNFCCC conferences and meetings, an internal workshop at the European Environment Agency, and a project presentation at the German Federal Environment Agency helped to collect further insights to enhance the policy relevance of the research.
3. **Working across disciplines for relevant results:** From the outset, the project has sought to combine methods from economics, law, political science and other disciplines, and has brought together researchers with different background. In doing so, the project's ambition has been not only to identify possible solutions, but to also offer recommendations on how to implement them. This approach is exemplified, inter alia, in the legal and institutional analyses of existing climate policy (Deliverable D 2.3) and the forward-looking analysis of legal and institutional conditions for future climate change (contained in Deliverable 4.2). Other examples include the empirical analyses of the public acceptability of / public preferences for different climate policy instruments, as well as the simulation-based assessment of policy maker's preferences for different policy design options (both containted in Deliverable 4.5).
4. **Involvement of stakeholders in research:** This was achieved, in particular, through the Science and Policy Advisory Board referred to above, which had a strong role in aligning the framing of the research (to the extent possible within the limits of the Description of Work) with the policy debates. In several tasks, stakeholder input was an explicit part of, or even the basis for, empirical research – above all in the research on the political feasibility of different policy instruments (Task 4.9, documented in Deliverable D 4.5), which involved 22 stakeholders in a policy simulation exercise (in addition to a series of interviews, focus groups and an online survey). Stakeholder involvement through workshops and interviews also featured prominently in several other tasks, including Tasks 2.7 on Innovation, 4.2 on Institutional and Legal aspects or 4.4 on Finance. In

addition, policy makers and other stakeholders were involved as speakers and as participants in all public project events, above all the two project conferences, but also the smaller workshops and other events.

5. **Policy-relevant deliverables produced in readable formats:** In addition to the scientific output – contained in 47 substantive research reports, organised into 30 Deliverables, as well as17 journal articles and nine other academic publications – the main project results are also documented in a suite of six policy briefs. The CECILIA2050 Policy Brief series were published in tandem with the project progress, summarising key insights for an audience of policy makers and other stakeholders, and where possible relating them to current EU policy debates.
6. **National level outreach events:** At the end of the project (October 2015), a series of eight half-day events took place in Amsterdam, Berlin, Bilbao, London, Paris, Prague, Rome and Warsaw to disseminate project results in a country-specific way, and to stimulate discussion of how the findings relate to the national discussions.
7. **Personal networks with policymakers at EU and national levels:** Finally, in addition to the more formalised channels above, continuous engagement with EU and Member State policymakers formed the basis for the science-policy exchange, working to ensure the policy relevance of the research approach and outcomes, feeding information in both directions and ensuring that policy and research networks are made use of efficiently.

Main Dissemination Activities

The CECILIA2050 project facilitated the effective dissemination of its research results by using a variety of communication tools and activities. The dissemination strategy aimed particularly at targeting specific audiences and at making the results easy to access and to grasp. The latter was primarily achieved with the creation of a project website, which made the research reports as well as further information on the project, its members, and project related events publically available. In addition to this, the social media platform Twitter was used to distribute information about research results and project events to relevant climate policy stakeholders. In addition to rhe regular project reports, six Policy Briefs were published, presenting key results of different report packages in a brief and comprehensible manner, to make the research results of the project easy to grasp for policy makers, the media, and the broader public. Additional publications, including articles in peer reviewed journals, monographs and university papers were used as a means to communicate the results of the project to the scientific community. The publication of the research results in scientific publications was an important aspect of the dissemination strategy and aimed connecting the research to the ongoing scientific debate as well as advancing the state of the art and providing links for further research.

The dissemination strategy of the CECILIA2050 project also included the organisation of a number workshops and conferences. If possible the events were organised timely, to connect the current research results with the policy-making process and important political events. The mid-term conference of the CECILIA2050 project serves in this case as good example: it took place March 2013, shortly after the expected publication of the European Commission’s policy package on the 2030 targets and instruments. Senior officials from the European institutions, policy experts and other stakeholders from research institutions, NGOs, and the private sector attended the conference.

The event provided thus a opportune moment for presenting the research results from the first phase of the project to a larger audience, connecting them to the public debate, and eliciting feedback and inputs to inform the second phase of the project.

To ensure policy relevance and mobilise practitioners' knowledge, the project has been engaging with stakeholders in different ways throughout the project, particularly through workshops, dedicated events for stakeholder outreach and engagement, and through the continuous guidance of a Science and Policy Board of high-level experts. The CECILIA2050 project organised, or was represented at, the following workshops and events:

Dedicated CECILIA2050 Conferences and Workshops

Two major conferences and a number of dedicated project workshops was organised (or co-organised) by the CECILIA2050 project, targeting a mixed audience of policy makers, stakeholders, academia and think tanks. The flagship events of the project were the two project conferences: the mid-term conference (Brussels, March 2014) and the final conference of the project (Brussels, June 2015). Both of the one-day conferences presented (interim) results and insights from the project in several thematic sessions, and left ample space for discussion and feedback. Both conferences were opened by a keynote address from senior officials in DG Climate (Mr. Peter Vis / Mr. Damien Meadows), and both concluded with a panel of senior researchers, policy makers and other stakeholders. For both conferences, individual members of the CECILIA2050 Science and Policy Advisory Board were actively involved as speakers, commentators or panelists. In addition, the CECILIA2050 project was one of three FP7 projects featured prominently at the Scientific Conference Research for a Post-Carbon Future organised by the Ecologic Institute (Berlin, September 2014), which also included contributions from the projects POCACITO and MILESECURE.

In terms of workshops, a number of public workshops was organised throughout the project: an initial one-day policy workshop on the status and future of European climate policy (Brussels, February 2013), a two-day seminar jointly organised with the ENTRACTE project (Dublin, September 2013), a one-day workshop on long-term climate policy scenarios (London, October 2013), as well as a one-day workshop on future options for EU climate policies and their public acceptability (Prague, October 2014). All of these workshops targeted a mix of researchers and practitioners (policy makers and other stakeholders), both as speakers and as participants. Members of the CECILIA2050 Science and Policy Advisory Board contributed actively as speakers and panellists to three of the four workshops.

Finally, a suite of eight half-day dissemination workshops was held in October 2015 in the eight EU countries in which CECILIA2050 consortium partners are based. The events in Amsterdam, Berlin, Bilbao, London, Paris, Prague, Rome and Warsaw to disseminate project results in a country-specific way, and to stimulate discussion of how the findings relate to the national discussions.

Contributions to Other Events: Academic Dissemination

More academically-oriented dissemination included presentations at am international symposium on emissions trading (Beijing, October 2013), seminars on European Climate Policy at Johns Hopkins University, DC and Duke University, NC, policy sessions at the 14th World Congress of

Environmental & Resource Economists (Istanbul, July 2014) and at the 15th World Congress of Environmental & Resource Economists (Helsinki July 2015), and three sessions at the conference "Our Common Future under Climate Change" (Paris, July 2015). Furthermore, CECILIA2050 results were presented at presentations and lectures at the International Conference Governance of a Complex World 2014 (Turin, June 2014), at the Annual Conference of the Italian Regional Science Association (Padua, September 2014), at the Annual Conference of the Green Growth Knowledge Platform (Venice, January 2015), at the SENIX Conference (The Role of Social Sciences in a Low-Carbon Energy Mix) (Stockholm, May 2015), and at the Annual Conference of the European Sociological Association (Prague, August 2015). The full list of presentations, lectures, workshop contributions and other speaking engagements can be found in the table of dissemination activities.

Outreach to Policy Makers and Stakeholders

Dedicated outreach to policy makers and stakeholders included side events organised at UNFCCC Conferences (COP-18 in Doha, COP-19 in Warsaw and the June 2015 SBSTTA meetings in Bonn), project presentations and high-level discussions at the German Federal Environment Agency in (Dessau, February 2014), at the European Environment Agency (November 2014) and at DG Energy (Brussels, February 2015), a project presentation at the third European Environmental Evaluators Network Forum (Helsinki, April 2014) and oral contributions based on CECILIA2050 research at the high level conference "Looking Back at Ten Years of the EU ETS" (Florence, May 2015).

The implementation of the project was supported by a distinguished Science and Policy Advisory Board, comprised of 12 leading experts from European and Member States institutions, academia, business associations, environmental NGOs and trade unions. The Advisory Board has met on five occasions to discuss the project progress, to provide guidance on the direction of the research, and to help maximise the policy relevance and potential policy impact of the research. In addition, a number of Advisory Board members have reviewed draft project reports, and provided valuable feedback. Finally, Advisory Board members have had leading roles as speakers, panellists or commentators in the events organised by the CECILIA2050 project.

The project website is available at www.cecilia2050.eu and provides an up-to-date inventory of the research work published by the CECILIA2050 project, as well as documentation of all events.

In terms of dissemination and outreach, the most significant achievements were:

- The continuous, active and high-level involvement of the Science and Policy Advisory Board, representing a range of important relevant stakeholder constituencies, providing additional insights to the project and helping to ensure the policy relevance of its findings.
- Visual identity with high recognisability and applicability across all dissemination products
- Good name recognition among relevant policy stakeholders
- Successful conferences with good external participation, all partners present and several Board members, as well as several additional high-level external speakers
- Broad but targeted outreach via a range of activities and channels, reaching the target audience successfully

4.2 Use and dissemination of foreground

Section A

CECILIA2050 has placed particular emphasis on effective outreach and dissemination, facilitated by a variety of activities detailed in the respective Work Package (WP 7). The dissemination strategy was intended to a) target the specific audiences that the CECILIA2050 results should reach and b) facilitate communication of the results by making them easy to grasp and relate them to current policy debates.

The main target groups for dissemination activities was thus not the general public but rather relevant groups of climate policy stakeholders. These include public authorities and policy-makers, scientific experts in academia, think tanks and policy consultancy, and interest groups (both business and civil society) who are involved in the formulation, implementation, monitoring and evaluation of policies at the European, national, regional and local level.

To reach these desired audiences, CECILIA2050 dissemination activities has

a) Specifically invited members of these relevant audiences to project events (building on the engagement with the broader policy community and national partner networks),
b) Made the events themselves enticing to attend (by placing an emphasis on high-level speakers, and by aligning the conference / workshop agenda with current policy debates)
c) Using a multitude of channels (such as including different types of events, some of them geared towards particular groups of stakeholders, e.g. academic events at scientific conferences or targeted outreach to stakeholders through side events at UNFCCC meetings)
d) Choosing locations and timing of project events to facilitate participation.

The latter can mean taking the events to the stakeholders, such as through a series of events in Member State capitals, or through in-house workshops and presentations at relevant institutions – including in this case the European Environment Agency, the German Environment Agency or DG Energy.

The following types of events were implemented during the project, differing in function and format:

- The flagship events were two one-day conferences, both staged in Brussels to give the project visibility and help reach a larger, relevant audience: the mid-term conference (March 2014) and the final conference of the project (June 2015). Both conferences presented (interim) results and insights from the project in several thematic sessions, and left ample space for discussion and feedback. Both conferences were opened by a keynote address from senior officials in DG Climate (Mr. Peter Vis / Mr. Damien Meadows), and both concluded with a panel of senior researchers, policy makers and other stakeholders.
- In addition, the CECILIA2050 project was one of three FP7 projects featured prominently at the Scientific Conference Research for a Post-Carbon Future organised by the Ecologic Institute (Berlin, September 2014), which also included contributions from the projects POCACITO and MILESECURE. In addition, CECILIA2050 also contributed to the final

conference of the ENTRACTE project, and was presented (by DG RTD) at the CARISMA kick-off event.

- Four public project workshops were organised throughout the project: an initial one-day policy workshop on the status and future of European climate policy (Brussels, February 2013), a two-day seminar jointly organised with the ENTRACTE project (Dublin, September 2013), a one-day workshop on long-term climate policy scenarios (London, October 2013), as well as a one-day workshop on future options for EU climate policies and their public acceptability (Prague, October 2014). All of these workshops targeted a mix of researchers and practitioners (policy makers and other stakeholders), both as speakers and as participants. Members of the CECILIA2050 Science and Policy Advisory Board contributed actively as speakers and panellists to three of the four workshops.
- A suite of eight half-day dissemination workshops was held in October 2015 in the eight EU countries in which CECILIA2050 consortium partners are based. The events in Amsterdam, Berlin, Bilbao, London, Paris, Prague, Rome and Warsaw to disseminate project results in a country-specific way, and to stimulate discussion of how the findings relate to the national discussions.
- Dedicated outreach to policy makers and stakeholders included side events organised at UNFCCC Conferences (COP-18 in Doha, COP-19 in Warsaw and the June 2015 SBSTTA meetings in Bonn), a project presentation at the third European Environmental Evaluators Network Forum (Helsinki, April 2014) and oral contributions based on CECILIA2050 research at the high level conference "Looking Back at Ten Years of the EU ETS" (Florence, May 2015).
- Targeted outreach to key institutions took place in the form of project presentations and high-level discussions at the German Federal Environment Agency in (Dessau, February 2014) and at DG Energy (Brussels, February 2015), as well as an in-house workshop at the European Environment Agency (November 2014) with the participation of several senior staff and the EEA Director, Hans Bruyninckx. A planned workshop at the OECD was envisaged for the summer of 2015, but in the end was not realised due to difficulties in scheduling.

The implementation of the project was supported by a distinguished Science and Policy Advisory Board, comprised of 12 leading experts from European and Member States institutions, academia, business associations, environmental NGOs and trade unions. The Advisory Board has met on five occasions to discuss the project progress, to provide guidance on the direction of the research, and to help maximise the policy relevance and potential policy impact of the research. In addition, a number of Advisory Board members have reviewed draft project reports, and provided valuable feedback. Finally, Advisory Board members have had leading roles as speakers, panellists or commentators in the events organised by the CECILIA2050 project. In addition to their contributions into the project, they also served as multipliers to distribute CECILIA2050 findings within their respective organisations and networks, including the EEA, OECD, IEA, and the Commission DGs Energy and Climate.

To enhance accessibility of the project's outputs, CECILIA2050 has taken particular care to make its communication products concise (for written material) and use visual elements where possible (producing info graphics for key results, which can be used in reports and presentations alike).

Furthermore, in the context of the national outreach events, key findings were translated into other languages.

In terms of products other than meetings, the consortium used the following methods to disseminate its results:

- To enhance recognition of the project, a visual identity for the project was developed, including a project logo, a colour scheme and graphical elements. The visual identity formed the basis for the design of all project materials (website, scientific deliverables, presentation slides, project flyer, policy briefs, conference announcements / agenda and other documents).
- Through the project website at www.cecilic2050.eu, which provided access to all published results, as well as essential information on the project and its progress, the consortium partners and on past and upcoming events;
- A project flyer and a set of powerpoint slides with the main content of the project, including several infographics and other visual elements. The slide set was updated on different occasions and made available to the consortium partners to incorporate in their presentations.
- A total of six policy briefs, highlighting main results of the different work packages in an accessible format and language, and linking the findings to current policy debates. Policy briefs were made available in digital form on the project website, and also as printed hard copies for distribution at the project conferences and public project workshops.

In terms of dissemination to academic audiences, the CECILIA2050 project was well represented at a number of scientific conferences and events, either through lectures or presentations, or through sessions and side events. This included presentations at am international symposium on emissions trading (Beijing, October 2013), seminars on European Climate Policy at Johns Hopkins University, DC and Duke University, NC, policy sessions at the 14th World Congress of Environmental & Resource Economists (Istanbul, July 2014) and at the 15th World Congress of Environmental & Resource Economists (Helsinki July 2015), and three sessions at the conference "Our Common Future under Climate Change" (Paris, July 2015). Furthermore, CECILIA2050 results were presented at presentations and lectures at the International Conference Governance of a Complex World 2014 (Turin, June 2014), at the Annual Conference of the Italian Regional Science Association (Padua, September 2014), at the Annual Conference of the Green Growth Knowledge Platform (Venice, January 2015), at the SENIX Conference (The Role of Social Sciences in a Low-Carbon Energy Mix) (Stockholm, May 2015), and at the Annual Conference of the European Sociological Association (Prague, August 2015). The full list of presentations, lectures, workshop contributions and other speaking engagements in which CECILIA2050 results were presented (50 in total) can be found in the table of dissemination activities.

The main scientific output from the CECILIA2050 project are the 47 substantive research reports (in additions to 7 more technical / organisational reports, such as conference proceedings). These documents are organised into 30 Deliverables, all of which have been completed, officially submitted and (with the exception of three internal, purely organisational reports) published on the CECILIA2050 website

In addition, the research results of the CECILIA2050 project have given rise to 17 publications in peer-reviewed journals, two book chapters, one scientific monograph and six theses or dissertations.

A particular feature in this regard is a planned special issue of the journal “Climate Policy”, which (pending the outcome of the peer review process) will be comprised entirely of articles based on CECILIA2050 research. Ten papers for this special edition have been submitted, and if accepted, will be published as a special issue in 2016.

Section B

Beyond scientific publications (referred to above), there is no exploitable foreground coming out of the CECILIA2050 project. In terms of scientific publications, the most notable activity is the special issue of the journal “Climate Policy”. The special issue, comprised of up to 10 articles coming out of the CECILIA2050 project, will also serve as the flagship (academic) output from the project. In this function, it has replaced earlier considerations about a book coming out of the project: after internal discussion in the project consortium, the consortium decided not to pursue this option, and instead to focus its efforts on the special edition.

Section A (public)

TEMPLATE A1: LIST OF SCIENTIFIC (PEER REVIEWED) PUBLICATIONS, STARTING WITH THE MOST IMPORTANT ONES										
NO.	Title	Main author	Title of the periodical or the series	Number, date or frequency	Publisher	Place of publication	Year of publication	Relevant pages	Permanent identifiers[2] (if available)	Is/Will open access[3] provided to this publication?
1	Emissions Trading in the Climate Policy Mix - Understanding and Managing Interactions with Other Policy Instruments	Benjamin Görlach	Energy and Environment	Vol. 25/Issue 3-4		United Kingdom	2014	pp. 733-750		No
2	Local air pollution and global climate change taxes: a distributional analysis for the case of Spain	Garcia-Muros, X., Burguillo.M, Gonzalez-Eguino.M and Romero-Jordán.D	Journal of Environmental Planning and Management				Submitted	-		-
3	Industrial and terrestrial carbon leakage under climate policy fragmentation	Mikel González-Eguino, Iñigo Capellán-Pérez, Iñaki Arto, Alberto	Climate Policy	Special Issue			Submitted	-		-

[2] A permanent identifier should be a persistent link to the published version full text if open access or abstract if article is pay per view) or to the final manuscript accepted for publication (link to article in repository).

[3] Open Access is defined as free of charge access for anyone via Internet. Please answer "yes" if the open access to the publication is already established and also if the embargo period for open access is not yet over but you intend to establish open access afterwards.

		Ansuategi and Anil Markandya								
4	Scenarios for a 2 °C world: a trade-linked input–output model with high sector detail	Koning, A. de, G. Huppes, S. Deetman and A. Tukker	Climate Policy	Vol 15, issue ISSN: 1469-3062 (Print) 1752-7457 (Online)			09. Feb 15	*pp. 1-17*		No
5	Public Acceptability of Climate Change Mitigation Policies: A Three-Country Stated Preference Study	Milan Ščasný, Iva Zvěřinová, Mikolaj Czajkowski, Eva Kyselá, Katarzyna Zagórska	Climate Policy	16/special issue - to be specified			February 2016	-		No
6	Spill or leak? Carbon leakage with international technology spillovers: A CGE analysis	R.Gerlagh and O.Kuik	Energy Economics	45			Sep 14	pp. 381-388		No
7	Policy instruments to mitigate the adverse effects on competitiveness and leakage for the European Union	Alessandro Antimiani; Costantini, Valeria; Paglialunga, Elena; and Kuik, Onno	Ecological Economics				To be submitted			-
8	Future inequality in the global distribution of per-capita CO2 emissions under the IEA scenarios: simulations based on the GDynE model	Lorena Remuzgo and Onno Kuik	Environmental Science and Policy				Submitted			-
9	Brazilian competitiveness of energy-intensive and trade-exposed industrial	Flavio Tosi Feijó and Onno Kuik	International Environmental Agreements:				To be submitted			Yes

	sectors vis-à-vis the adoption of border carbon adjustments bythe EU: an approach using the GTAP-EP model		Politics, Law and Economics							
10	Seeking Optimality in Designing Policies for Climate Change Mitigation in the Agri-food Sector: Evidence from Western Europe	Agni Kalfagianni and Onno Kuik	Climate Policy				To be submitted			-
11	Reaping the Carbon Rent : Abatement and Overallocation Profits in the European Cement Industry, Insights from an LMDI Decomposition Analysis	Branger, F, P Quirion	Energy Economics	47			2015	pp. 189-205		No
12	Towards a Green Economy through Innovations: the Role of Union Involvement	Antonioli D Mazzanti M	Ecological Economics	Under review			submitted November 6 2015			-
13	Analysing the interactions of energy and climate policies in a broad policy 'optimality' framework: the Italian case study	Antonioli D Mazzanti M Gilli M D'Amato A Borghesi S Nicolli F	Journal of Integrative Environmental Sciences	Volume 11, Issue 3-4, October 2014			2014	pp. 205-224		No
14	Carbon abatement, sector heterogeneity and policy responses: evidence on induced eco innovations in the EU	Antonioli D Mazzanti Crespi F M D'Amato A Borghesi S Silvestri F	Environmental science and policy	Volume 54, December 2015			2015	pp. 377-388		No
15	Environmental innovation	Mancinelli S	Empirica	November			2015	pp 709-735		No

	adoption, sector upstream/downstream integration and policy. Evidence from the EU	Marin G Nicolli F Mazzanti M		2015, Volume 42, Issue 4						
16	Do bilateral trade relationships influence the distribution of CDM projects?	Costantini V Sforna G	Climate Policy	Volume 14, Issue 5, 2014			2014	pp. 559-580		No
17	Ambitious climate policy through centralization? Evidence from the European Union	Bausch, C; Görlach, B; Mehling, M	Climate Policy	Special Issue			To be Submitted			
18	Climate Policy Instrumentation in Spain	*Mikel González-Eguino, Anil Markandya, and Luis Rey*	Delivering Energy Policy in the EU and US: A Multi-Disciplinary Reader		Edinburgh University Press	Scotland, UK				
19	The sun also rises: policy instruments to mitigate the adverse effects on competitiveness and leakage	Costantini, Valeria; Paglialunga, Elena; and Kuik, Onno	. SEEDS Working Paper	No. 9/2015	SEEDS	Ferrara, italy	2015			Yes
20	Electricity consumption in the Czech households	Iva Zvěřinová				Prague, CZ	2017			Yes
21	Social Acceptability of Environmental Policies	Eva Kyselá				Prague, CZ	2017			Yes
22	The political feasibility of reforming the EU Emission Trading Scheme	Henriette Walz				Amsterdam, NL	Jul 14			Yes
23	Political feasibility of climate policy instruments for achieving the EU long term emission reduction targets	Irini Dimitriou				Amsterdam, NL	Aug 14			Yes

24	L'efficacité énergétique dans le secteur résidentiel français: analyse des déterminants d'investissement et des politiques publiques	Nauleau M.L.				Paris	19.05.2015			Yes
25	Impact des politiques climatiques sur les industries énergie-intensives	Branger F.				Paris	30.06.2015			Yes
26	Decarbonising the EU Energy System - Beyond Carbon Pricing	Paul Drummond, Steve Pye, Paul Deane	Hot Energy Topics	1	INSIGHT-E	London	24/08/2015			Yes

TEMPLATE A2: LIST OF DISSEMINATION ACTIVITIES								
NO.	Type of activities[4]	Main leader	Title	Date/Period	Place	Type of audience[5]	Size of audience	Countries addressed
1	Organisation of Workshops	BC3 BASQUE CENTRE FOR CLIMATE CHANGE - KLIMA ALDAKETA IKERGAI	Workshop on CGE models. Trade and Climate Policy Analysis with GAMS and MPSGE	23.09.2012	Essen, DE	Scientific community (higher education, Research)	20	EU28
2	Oral presentation to a wider public	ECOLOGIC INSTITUT gemeinnützige GmbH	Presentation at UNFCCC COP18 Side Event: The EUs 2050 targets: a challenge to the research community	03.12.2012	Doha, QA	Scientific community (higher education, Research) - Industry - Civil society - Medias	80	EU28
3	Organisation of Workshops	ECOLOGIC INSTITUT gemeinnützige GmbH	Towards an Optimal EU Climate Policy?	20.02.2013	Brussels, BE	Scientific community (higher education, Research) - Civil society - Policy makers	25	EU28
4	Oral presentation to a wider public	ECOLOGIC INSTITUT gemeinnützige GmbH	Presentation at Hopkins University's monthly lecture series "How to transform Europe into a low-carbon economy by 2050. Climate and energy policy	26.04.2013	Washington, DC	Scientific community (higher education, Research)		EU28, USA

[4] A drop down list allows choosing the dissemination activity: publications, conferences, workshops, web, press releases, flyers, articles published in the popular press, videos, media briefings, presentations, exhibitions, thesis, interviews, films, TV clips, posters, Other.

[5] A drop down list allows choosing the type of public: Scientific Community (higher education, Research), Industry, Civil Society, Policy makers, Medias, Other ('multiple choices' is possible).

			for the long-term. Experience from Europe, implications for the US?"					
5	Organisation of Workshops	ECOLOGIC INSTITUT gemeinnützige GmbH	Joint CECILIA2050-ENTRACTE Workshop on Future Climate Policy Scenarios	01.07.2013	Berlin, DE	Scientific community (higher education, Research)	25	EU28
6	Oral presentation to a scientific event	ECOLOGIC INSTITUT gemeinnützige GmbH	ENTRACTE - CECILIA2050 Joint Climate Workshop ENTRACTE CECILIA Joint Climate Workshop	12.09.2013	Dublin, IE	Scientific community (higher education, Research)		EU28
7	Oral presentation to a scientific event	ECOLOGIC INSTITUT gemeinnützige GmbH	Presentation at the international symposium on emission trading schemes: "Emissions Trading in the Climate Policy Instrument Mix. Interaction with other policy instruments and implications for the optimality of climate efforts"	11.10.2013	Beijing, CHN	Scientific community (higher education, Research)		EU28
8	Organisation of Workshops	ECOLOGIC INSTITUT gemeinnützige GmbH	COP19 side event: Optimising climate policy - EU experience & industrial innovation	18.11.2013	Warsaw, PL	Scientific community (higher education, Research) - Industry - Civil society - Policy makers - Medias	30	EU28
9	Organisation of Workshops	ECOLOGIC INSTITUT gemeinnützige GmbH	COP19 side event: Triggering Innovation for Decarbonisation	20.11.2013	Warsaw, PL	Scientific community (higher education, Research) - Industry - Civil society - Policy makers - Medias	30	EU28
10	Organisation of Workshops	BC3 BASQUE CENTRE FOR CLIMATE CHANGE - KLIMA ALDAKETA IKERGAI	Presentation at the Universitat Rovira i Virgili. Workshop on Economics of Energy Efficiency. "Local air pollution and global climate change taxes: a distributional analysis"	12.12.2013	Reus, ES	Scientific community (higher education, Research)	30	EU28

11	Organisation of Conference	ECOLOGIC INSTITUT gemeinnützige GmbH	EU Climate Policy Beyond 2020 - taking stock and looking forward	06.03.2014	Brussels, BE	Scientific community (higher education, Research) - Industry - Civil society - Policy makers - Medias	70	EU28
12	Organisation of Workshops	UNIVERSITEIT LEIDEN	Copernicus Lectures on Climate Policy and Resource constraints	01.04.2014	Ferrara, IT	Scientific community (higher education, Research)		EU28
13	Oral presentation to a scientific event	ECOLOGIC INSTITUT gemeinnützige GmbH	Presentation at 3rd EEEN Forum	29.04.2014	Helsinki, FI	Scientific community (higher education, Research)		EU28
14	Interviews	STICHTING VU-VUMC	On the barriers and opportunities of EU climate policy instrumentation	14.05.2014	Brussels, BE	Scientific community (higher education, Research)		EU28
15	Oral presentation to a scientific event	ECOLOGIC INSTITUT gemeinnützige GmbH	Climate Strategies Workshop	26.05.2014	Paris, FR	Scientific community (higher education, Research)		EU28
16	Oral presentation to a wider public	ECOLOGIC INSTITUT gemeinnützige GmbH	Bonn June Climate Conference 2014, Climate Action Network Side Event	13.06.2014	Bonn, DE	Scientific community (higher education, Research)		EU28
17	Oral presentation to a wider public	ECOLOGIC INSTITUT gemeinnützige GmbH	Bonn June Climate Conference 2014, Climate Action Network Side Event	16.06.2014	Bonn, DE	Scientific community (higher education, Research)		EU28
18	Oral presentation to a scientific event	UNIVERSITA DEGLI STUDI DI FERRARA	International Conference Governance of a Complex World 2014	18.06.2014	Turin, IT	Scientific community (higher education,		EU28

						Research) - Civil society - Policy makers		
19	Oral presentation to a scientific event	ECOLOGIC INSTITUT gemeinnützige GmbH	Policy session at 5th World Congress of Environmental and Resource Economists: The Role of Carbon Pricing in the Future EU Climate Policy	01.07.2014	Istanbul, TR	Scientific community (higher education, Research) - Civil society - Policy makers		EU28
20	Oral presentation to a scientific event	UNIVERSITA DEGLI STUDI DI FERRARA	AISRE Conference - Italian Regional Science Association	11.09.2014	Padua, IT	Scientific community (higher education, Research) - Civil society - Policy makers		EU28
21	Organisation of Conference	ECOLOGIC INSTITUT gemeinnützige GmbH	"Research for a Post-Carbon Future Ecologic Institute Scientific Conference"	17.09.2014	Berlin, DE	Scientific community (higher education, Research) - Industry - Civil society - Policy makers - Medias	100	EU28
22	Organisation of Workshops	STICHTING VU-VUMC	A policy exercise on the future of the EU ETS	16.10.2014	Brussels, BE	Scientific community (higher education, Research)	25	EU28
23	Organisation of Workshops	UNIVERZITA KARLOVA V PRAZE	Future Options for EU Climate Policies and their Public Acceptability	22.10.2014	Prague, CZ	Scientific community (higher education, Research) - Civil society - Policy makers	40	EU28
24	Organisation of Workshops	ECOLOGIC INSTITUT gemeinnützige GmbH	Options for the EUs future climate policy	12.11.2014	Copenhagen	Policy makers		EU28
25	Organisation of Workshops	UNIVERSITA DEGLI STUDI DI FERRARA	Workshop seminars at Paris XI - Telecome Business school - on Eco innovations	21.11.2014	Paris, FR	Scientific community (higher		EU28

						education, Research)		
26	Oral presentation to a wider public	UNIVERZITA KARLOVA V PRAZE	Presentation (What makes climate change mitigation policies acceptable by public? A review of influential factors) at Conference of the Green Growth Knowledge Platform	29.01.2015	Venice, IT	Scientific community (higher education, Research) - Policy makers	25	EU28
27	Oral presentation to a wider public	ECOLOGIC INSTITUT gemeinnützige GmbH	Project presentation at DG ENERGY	12.02.2015	Brussels, BE	Policy makers		EU28
28	Oral presentation to a scientific event	ECOLOGIC INSTITUT gemeinnützige GmbH	ENTRACTE workshop: "Policy Interactions and Overlapping Policies"	17.02.2015	Milan, IT	Scientific community (higher education, Research)		EU28
29	Interviews	STICHTING VU-VUMC	Interviews with stakeholders on EU ETS reform	01.05.2015	Germany, Poland, UK, Belgium	Scientific community (higher education, Research) - Industry - Civil society - Policy makers	21	Germany, Poland, UK, Belgium
30	Oral presentation to a wider public	ECOLOGIC INSTITUT gemeinnützige GmbH	Conference: "Looking Back at Ten Years of the EU ETS: Lessons Learnt and Future Perspectives"	21.05.2015	Florence, IT	Scientific community (higher education, Research) - Civil society - Policy makers		EU28
31	Oral presentation to a wider public	UNIVERZITA KARLOVA V PRAZE	Presentation (Public Acceptability of Climate Change Mitigation Policies: A Stated Preference Study) at SENIX Conference (The Role of Social Sciences in a Low-Carbon Energy Mix) organized by Karita Research AB and Swedish Energy Agency	24.05.2015	Stockholm, SE	Scientific community (higher education, Research) - Industry - Policy makers	20	EU28
32	Oral presentation to a wider public	ECOLOGIC INSTITUT gemeinnützige GmbH	Side event "Improving Europe's Climate Policy Toolbox to Reach the 2050 Low-Carbon Targets: Insights from the CECILIA2050	09.06.2015	Bonn, DE	Scientific community (higher education,		EU28

			Project" at Bonn Climate Change Conference (SB42)			Research) - Civil society - Policy makers		
33	Oral presentation to a scientific event	UNIWERSYTET WARSZAWSKI	Policy sessions at Annual Conference of the European Association of Environmental and Resource Economists	24.06.2015	Helsinki, FI	Scientific community (higher education, Research)	50	EU28
34	Organisation of Conference	ECOLOGIC INSTITUT gemeinnützige GmbH	Final Project Conference "EU Climate Policy Beyond 2020 Options for a Low-Carbon Future"	30.06.2015	Brussels, BE	Scientific community (higher education, Research) - Industry - Civil society - Policy makers - Medias	100	EU28
35	Organisation of Workshops	STICHTING VU-VUMC	Parallel Session 3339 "Effective design and implementation of EU climate policy" at the Our Common Future Under Climate Change Conference	09.07.2015	Paris, FR	Scientific community (higher education, Research) - Civil society - Policy makers		EU28
36	Oral presentation to a wider public	ECOLOGIC INSTITUT gemeinnützige GmbH	Presentation at parallel session 3336 "Post-2030 Decarbonisation pathways in Europe" at Our Common Future Under Climate Change Conference	09.07.2015	Paris, FR	Scientific community (higher education, Research) - Civil society - Policy makers		EU28
37	Oral presentation to a wider public	UNIVERSITEIT LEIDEN	Presentation at parallel session 4409 (b) "Climate Governance: Driving Societal Transformations" at Our Common Future Under Climate Change Conference	10.07.2015	Paris, FR	Scientific community (higher education, Research) - Civil society - Policy makers		EU28
38	Oral presentation to a wider public	UNIVERSITY COLLEGE LONDON	Presentation at parallel session 4409 (b) "Climate Governance: Driving Societal Transformations" at Our Common Future Under Climate Change Conference	10.07.2015	Paris, FR	Scientific community (higher education, Research) - Civil		EU28

						society - Policy makers		
39	Oral presentation to a scientific event	UNIVERSITA DEGLI STUDI DI FERRARA	DRUID Society annual Conference	15.07.2015	Rome, IT	Scientific community (higher education, Research) - Civil society - Policy makers		EU28
40	Oral presentation to a wider public	UNIVERZITA KARLOVA V PRAZE	Presentation (Effectiveness and acceptability of climate change mitigation policies: the role of trust) at ESA Conference (European Sociological Association)	25.08.2015	Prague, CZ	Scientific community (higher education, Research)	30	EU28
41	Oral presentation to a scientific event	UNIVERSITY COLLEGE LONDON	Policy Instruments for the Transformation to a Low-Carbon Energy System in the UK	18.09.2015	Oxford, GB	Scientific community (higher education, Research)	25	UK
42	Oral presentation to a wider public	UNIVERZITA KARLOVA V PRAZE	Presentation (Public Acceptability of Climate Change Mitigation Policies: A Stated Preference Study) at PRVOUK Environmental Research Conference organized by the Charles University in Prague	23.09.2015	Prague, CZ	Scientific community (higher education, Research)	20	EU28
43	Organisation of Workshops	UNIWERSYTET WARSZAWSKI	CECILIA2050 results presented in the context of public sector issues and public finances in Poland	25.09.2015	Sulejów, PL	Scientific community (higher education, Research) - Civil society - Policy makers	50	EU28
44	Oral presentation to a wider public	UNIVERSITEIT LEIDEN	Symposium Routes Towards Sustainability. Sustainable cities under different stategies for climate policy instrumentation	28.09.2015	Curitiba, BR	Scientific community (higher education, Research) - Civil society - Policy makers		EU28

45	Organisation of Workshops	SOCIETE DE MATHEMATIQUES APPLIQUEES ET DE SCIENCES HUMAINES	Final CECILIA2050 event	13.10.2015	Paris, FR	Scientific community (higher education, Research)	30	EU28
46	Organisation of Workshops	UNIVERSITA DEGLI STUDI DI FERRARA	Key insights from the CECILIA2050 project	16.10.2015	Rome, IT	Scientific community (higher education, Research) - Civil society - Policy makers	25	EU28
47	Organisation of Workshops	UNIWERSYTET WARSZAWSKI	EU Climate Policies Towards a Low-Carbon Economy	23.10.2015	Bilbao, ES	Scientific community (higher education, Research) - Industry - Civil society - Policy makers	20	EU28
48	Organisation of Workshops	UNIVERSITY COLLEGE LONDON	UK Low-Carbon Energy Policy Filling the Policy Holes	27.10.2015	London, GB	Scientific community (higher education, Research) - Policy makers	30	GB
49	Organisation of Workshops	UNIVERZITA KARLOVA V PRAZE	Pathways to deep decarbonization in the Czech Republic	27.10.2015	Prague, CZ	Scientific community (higher education, Research) - Civil society - Policy makers	40	CZ
50	Oral presentation to a wider public	UNIVERZITA KARLOVA V PRAZE	Presentations (Acceptability of CC mitigation policies; Modelling impacts of energy system scenarios: TIMES) at workshop - Transfer of Czech know-how: Enhancing capacities of Moldova public authorities in management and restoration of natural ecosystems under climate risks	12.11.2015	Prague, CZ	Scientific community (higher education, Research) - Policy makers	10	MD

Section B (Confidential[6] or public: confidential information to be marked clearly)
Part B1

The applications for patents, trademarks, registered designs, etc. shall be listed according to the template B1 provided hereafter.

The list should, specify at least one unique identifier e.g. European Patent application reference. For patent applications, only if applicable, contributions to standards should be specified. This table is cumulative, which means that it should always show all applications from the beginning until after the end of the project.

TEMPLATE B1: LIST OF APPLICATIONS FOR PATENTS, TRADEMARKS, REGISTERED DESIGNS, ETC.					
Type of IP Rights[7]:	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Application reference(s) (e.g. EP123456)	Subject or title of application	Applicant (s) (as on the application)

[6] Note to be confused with the "EU CONFIDENTIAL" classification for some security research projects.

[7] A drop down list allows choosing the type of IP rights: Patents, Trademarks, Registered designs, Utility models, Others.

Part B2
Please complete the table hereafter:

Type of Exploitable Foreground[8]	Description of exploitable foreground	Confidential Click on YES/NO	Foreseen embargo date dd/mm/yyyy	Exploitable product(s) or measure(s)	Sector(s) of application[9]	Timetable, commercial or any other use	Patents or other IPR exploitation (licences)	Owner & Other Beneficiary(s) involved
	Ex: New supercond uctive Nb-Ti alloy			*MRI equipment*	*1. Medical 2. Industrial inspection*	*2008 2010*	*A materials patent is planned for 2006*	*Beneficiary X (owner) Beneficiary Y, Beneficiary Z, Poss. licensing to equipment manuf. ABC*

In addition to the table, please provide a text to explain the exploitable foreground, in particular:

- Its purpose
- How the foreground might be exploited, when and by whom
- IPR exploitable measures taken or intended
- Further research necessary, if any
- Potential/expected impact (quantify where possible)

The CECILIA2050 project put an emphasis on the effective dissemination of its research results, facilitated by a variety of activities. The dissemination strategy aimed particularly at targeting specific audiences and at making the results easy to access and to grasp. The latter was primarily achieved with the creation of a project website, which made the research reports as well as further information on the project, its members, and project related events publically available. In addition to this, the social media platform Twitter was used to distribute information about research results and events to relevant climate policy stakeholders. To make the research results of the project easy to grasp six Policy Briefs were published that presented key results of different report packages in a brief way.

[19] A drop down list allows choosing the type of foreground: General advancement of knowledge, Commercial exploitation of R&D results, Exploitation of R&D results via standards, exploitation of results through EU policies, exploitation of results through (social) innovation.
[9] A drop down list allows choosing the type sector (NACE nomenclature) : http://ec.europa.eu/competition/mergers/cases/index/nace_all.html

The main target groups for dissemination activities will thus not be the general public but relevant groups of climate policy stakeholder. These include public authorities, policymakers, scientific experts and interest groups involved in the formulation, implementation, monitoring and evaluation of policies at the European, national, regional and local level.

4.3 Report on societal implications

Replies to the following questions will assist the Commission to obtain statistics and indicators on societal and socio-economic issues addressed by projects. The questions are arranged in a number of key themes. As well as producing certain statistics, the replies will also help identify those projects that have shown a real engagement with wider societal issues, and thereby identify interesting approaches to these issues and best practices. The replies for individual projects will not be made public.

A General Information *(completed automatically when **Grant Agreement number** is entered.*	
Grant Agreement Number:	
Title of Project:	
Name and Title of Coordinator:	

B Ethics	
1. Did your project undergo an Ethics Review (and/or Screening)? • If Yes: have you described the progress of compliance with the relevant Ethics Review/Screening Requirements in the frame of the periodic/final project reports? Special Reminder: the progress of compliance with the Ethics Review/Screening Requirements should be described in the Period/Final Project Reports under the Section 3.2.2 *'Work Progress and Achievements'*	***0Yes 0No***
2. Please indicate whether your project involved any of the following issues (tick box) :	***YES***
RESEARCH ON HUMANS	
• Did the project involve children?	
• Did the project involve patients?	
• Did the project involve persons not able to give consent?	
• Did the project involve adult healthy volunteers?	
• Did the project involve Human genetic material?	
• Did the project involve Human biological samples?	
• Did the project involve Human data collection?	
RESEARCH ON HUMAN EMBRYO/FOETUS	
• Did the project involve Human Embryos?	
• Did the project involve Human Foetal Tissue / Cells?	
• Did the project involve Human Embryonic Stem Cells (hESCs)?	
• Did the project on human Embryonic Stem Cells involve cells in culture?	
• Did the project on human Embryonic Stem Cells involve the derivation of cells from Embryos?	
PRIVACY	
• Did the project involve processing of genetic information or personal data (eg. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?	
• Did the project involve tracking the location or observation of people?	
RESEARCH ON ANIMALS	
• Did the project involve research on animals?	
• Were those animals transgenic small laboratory animals?	
• Were those animals transgenic farm animals?	
• Were those animals cloned farm animals?	

• Were those animals non-human primates?	
RESEARCH INVOLVING DEVELOPING COUNTRIES	
• Did the project involve the use of local resources (genetic, animal, plant etc)?	
• Was the project of benefit to local community (capacity building, access to healthcare, education etc)?	
DUAL USE	
• Research having direct military use	0 Yes 0 No
• Research having the potential for terrorist abuse	

C Workforce Statistics

3. Workforce statistics for the project: Please indicate in the table below the number of people who worked on the project (on a headcount basis).

Type of Position	Number of Women	Number of Men
Scientific Coordinator		
Work package leaders		
Experienced researchers (i.e. PhD holders)		
PhD Students		
Other		

4. How many additional researchers (in companies and universities) were recruited specifically for this project?	
Of which, indicate the number of men:	

D Gender Aspects

5. Did you carry out specific Gender Equality Actions under the project?

○ Yes
○ No

6. Which of the following actions did you carry out and how effective were they?

	Not at all effective				Very effective
❑ Design and implement an equal opportunity policy	○	○	○	○	○
❑ Set targets to achieve a gender balance in the workforce	○	○	○	○	○
❑ Organise conferences and workshops on gender	○	○	○	○	○
❑ Actions to improve work-life balance	○	○	○	○	○

○ Other:

7. Was there a gender dimension associated with the research content – i.e. wherever people were the focus of the research as, for example, consumers, users, patients or in trials, was the issue of gender considered and addressed?

○ Yes- please specify

○ No

E Synergies with Science Education

8. Did your project involve working with students and/or school pupils (e.g. open days, participation in science festivals and events, prizes/competitions or joint projects)?

○ Yes- please specify

○ No

9. Did the project generate any science education material (e.g. kits, websites, explanatory booklets, DVDs)?

○ Yes- please specify

○ No

F Interdisciplinarity

10. Which disciplines (see list below) are involved in your project?

○ Main discipline[10]:
○ Associated discipline[10]:
○ Associated discipline[10]:

G Engaging with Civil society and policy makers

11a Did your project engage with societal actors beyond the research community? *(if 'No', go to Question 14)*

○ Yes
○ No

11b If yes, did you engage with citizens (citizens' panels / juries) or organised civil society (NGOs, patients' groups etc.)?

○ No
○ Yes- in determining what research should be performed
○ Yes - in implementing the research
○ Yes, in communicating /disseminating / using the results of the project

[10] Insert number from list below (Frascati Manual).

11c In doing so, did your project involve actors whose role is mainly to organise the dialogue with citizens and organised civil society (e.g. professional mediator; communication company, science museums)?	○ ○	Yes No

12. Did you engage with government / public bodies or policy makers (including international organisations)

- ○ No
- ○ Yes- in framing the research agenda
- ○ Yes - in implementing the research agenda
- ○ Yes, in communicating /disseminating / using the results of the project

13a Will the project generate outputs (expertise or scientific advice) which could be used by policy makers?

- ○ Yes – as a **primary** objective (please indicate areas below- multiple answers possible)
- ○ Yes – as a **secondary** objective (please indicate areas below - multiple answer possible)
- ○ No

13b If Yes, in which fields?

Agriculture		Energy		Human rights	
Audiovisual and Media		Enlargement		Information Society	
Budget		Enterprise		Institutional affairs	
Competition		Environment		Internal Market	
Consumers		External Relations		Justice, freedom and security	
Culture		External Trade		Public Health	
Customs		Fisheries and Maritime Affairs		Regional Policy	
Development Economic and Monetary Affairs		Food Safety		Research and Innovation	
		Foreign and Security Policy		Space	
Education, Training, Youth		Fraud		Taxation	
Employment and Social Affairs		Humanitarian aid		Transport	

13c If Yes, at which level?

- ○ Local / regional levels
- ○ National level
- ○ European level
- ○ International level

H Use and dissemination

14. How many Articles were published/accepted for publication in peer-reviewed journals?	
To how many of these is open access[11] provided?	
How many of these are published in open access journals?	
How many of these are published in open repositories?	
To how many of these is open access not provided?	
Please check all applicable reasons for not providing open access:	
❑ publisher's licensing agreement would not permit publishing in a repository ❑ no suitable repository available ❑ no suitable open access journal available ❑ no funds available to publish in an open access journal ❑ lack of time and resources ❑ lack of information on open access ❑ other[12]: ……	

15. How many new patent applications ('priority filings') have been made? *("Technologically unique": multiple applications for the same invention in different jurisdictions should be counted as just one application of grant).*		
16. Indicate how many of the following Intellectual Property Rights were applied for (give number in each box).	Trademark	
	Registered design	
	Other	
17. How many spin-off companies were created / are planned as a direct result of the project?		
Indicate the approximate number of additional jobs in these companies:		

18. Please indicate whether your project has a potential impact on employment, in comparison with the situation before your project:

❑ Increase in employment, or	❑ In small & medium-sized enterprises
❑ Safeguard employment, or	❑ In large companies
❑ Decrease in employment,	❑ None of the above / not relevant to the project
❑ Difficult to estimate / not possible to quantify	

19. For your project partnership please estimate the employment effect resulting directly from your participation in Full Time Equivalent (*FTE = one person working fulltime for a year*) jobs:	*Indicate figure:*

[11] Open Access is defined as free of charge access for anyone via Internet.
[12] For instance: classification for security project.

Difficult to estimate / not possible to quantify	❑

I Media and Communication to the general public

20. As part of the project, were any of the beneficiaries professionals in communication or media relations?

○ Yes ○ No

21. As part of the project, have any beneficiaries received professional media / communication training / advice to improve communication with the general public?

○ Yes ○ No

22 Which of the following have been used to communicate information about your project to the general public, or have resulted from your project?

❑	Press Release	❑	Coverage in specialist press
❑	Media briefing	❑	Coverage in general (non-specialist) press
❑	TV coverage / report	❑	Coverage in national press
❑	Radio coverage / report	❑	Coverage in international press
❑	Brochures /posters / flyers	❑	Website for the general public / internet
❑	DVD /Film /Multimedia	❑	Event targeting general public (festival, conference, exhibition, science café)

23 In which languages are the information products for the general public produced?

❑	Language of the coordinator	❑	English
❑	Other language(s)		

***Question F-10*:** Classification of Scientific Disciplines according to the Frascati Manual 2002 (Proposed Standard Practice for Surveys on Research and Experimental Development, OECD 2002):

FIELDS OF SCIENCE AND TECHNOLOGY

1. NATURAL SCIENCES

1.1 Mathematics and computer sciences [mathematics and other allied fields: computer sciences and other allied subjects (software development only; hardware development should be classified in the engineering fields)]

1.2 Physical sciences (astronomy and space sciences, physics and other allied subjects)

1.3 Chemical sciences (chemistry, other allied subjects)

1.4 Earth and related environmental sciences (geology, geophysics, mineralogy, physical geography and other geosciences, meteorology and other atmospheric sciences including climatic research, oceanography, vulcanology, palaeoecology, other allied sciences)

1.5 Biological sciences (biology, botany, bacteriology, microbiology, zoology, entomology, genetics, biochemistry, biophysics, other allied sciences, excluding clinical and veterinary sciences)

2 ENGINEERING AND TECHNOLOGY

2.1 Civil engineering (architecture engineering, building science and engineering, construction engineering, municipal and structural engineering and other allied subjects)

2.2 Electrical engineering, electronics [electrical engineering, electronics, communication engineering and systems, computer engineering (hardware only) and other allied subjects]

2.3. Other engineering sciences (such as chemical, aeronautical and space, mechanical, metallurgical and materials engineering, and their specialised subdivisions; forest products; applied sciences such as

geodesy, industrial chemistry, etc.; the science and technology of food production; specialised technologies of interdisciplinary fields, e.g. systems analysis, metallurgy, mining, textile technology and other applied subjects)

3. MEDICAL SCIENCES

3.1 Basic medicine (anatomy, cytology, physiology, genetics, pharmacy, pharmacology, toxicology, immunology and immunohaematology, clinical chemistry, clinical microbiology, pathology)

3.2 Clinical medicine (anaesthesiology, paediatrics, obstetrics and gynaecology, internal medicine, surgery, dentistry, neurology, psychiatry, radiology, therapeutics, otorhinolaryngology, ophthalmology)

3.3 Health sciences (public health services, social medicine, hygiene, nursing, epidemiology)

4. AGRICULTURAL SCIENCES

4.1 Agriculture, forestry, fisheries and allied sciences (agronomy, animal husbandry, fisheries, forestry, horticulture, other allied subjects)

4.2 Veterinary medicine

5. SOCIAL SCIENCES

5.1 Psychology

5.2 Economics

5.3 Educational sciences (education and training and other allied subjects)

5.4 Other social sciences [anthropology (social and cultural) and ethnology, demography, geography (human, economic and social), town and country planning, management, law, linguistics, political sciences, sociology, organisation and methods, miscellaneous social sciences and interdisciplinary , methodological and historical S1T activities relating to subjects in this group. Physical anthropology, physical geography and psychophysiology should normally be classified with the natural sciences].

6. HUMANITIES

6.1 History (history, prehistory and history, together with auxiliary historical disciplines such as archaeology, numismatics, palaeography, genealogy, etc.)

6.2 Languages and literature (ancient and modern)

6.3 Other humanities [philosophy (including the history of science and technology) arts, history of art, art criticism, painting, sculpture, musicology, dramatic art excluding artistic "research" of any kind, religion, theology, other fields and subjects pertaining to the humanities, methodological, historical and other S1T activities relating to the subjects in this group]

2. FINAL REPORT ON THE DISTRIBUTION OF THE EUROPEAN UNION FINANCIAL CONTRIBUTION

This report shall be submitted to the Commission within 30 days after receipt of the final payment of the European Union financial contribution.

Report on the distribution of the European Union financial contribution between beneficiaries

Name of beneficiary	Final amount of EU contribution per beneficiary in Euros
1.	
2.	
n	
Total	