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# **Learning in Governance**

## **Climate Policy Integration in the European Union**

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## 4 Learning in European Energy Policy

The RED (EU 2009a) remains one of the major flagship policies on renewable energy in the EU. Its main purpose was to increase the share of renewable energies in the EU to 20 percent by 2020, which has been widely achieved. It is one of the few existing examples of CPI at a large scale, as it integrates climate objectives into the core objective of providing energy (Rietig 2013). The RED emerged as part of the wider EU Climate Package of 2008–2009, which also included a reform of the Fuel Quality Directive (FQD) (EU 2009b), the European Emission Trading Scheme (Skjærseth and Wettstad 2010), and the Energy Efficiency Directive, and is linked to the EU's climate targets of reducing emissions from 1990 levels by 20 percent by 2020, as well as increasing energy efficiency by 20 percent (EC 2008a). The RED can be regarded as an overarching policy that combines the three aspects of electricity, biofuels, and heating and cooling. The Renewable Electricity Directive (EU 2001; Held, Ragwitz, and Haas 2006; Nylander 2001) and the Biofuels Directive (EU 2003a) form the basis for the RED, which as a third component also addresses heating and cooling. The FQD also influenced its policy development, which began in 1998 and concluded in 2009 (EU 1998, 2009b). The interdependency of biofuels as part of transport policy with the FQD resulted in different learning processes and offers a particularly interesting case to better understand the relevance of learning in policymaking.

Following the adoption of the 2009 RED, the EU began to negotiate climate change commitments for 2030, with related targets for renewable energies and energy efficiency, as well as attempting to reform the RED with regard to the negative climate and ILUC effects of food-crop-based biofuels. These follow-up negotiations throughout the 2010s resulted in a recasting of the RED in 2018 (EU 2018) and a limit on how first-generation biofuels can be counted toward countries' renewable energy targets (European Commission 2019). This was motivated by international commitments under

the Paris Agreement on climate change—that is, the need to implement international agreements (European Commission [EC] 30, see Appendix 2 for interview codes/references). The EU agreed on an overall renewable energy target of 32 percent for 2030 based on the individual legally binding targets for member states, with a review in 2023 to determine if the EU is on course to meet its commitments under the Paris Agreement (EU 2018). This approach mirrors the pledge-and-review, bottom-up approach of the Paris Agreement, in which countries pledge individual commitments that are subsequently reviewed at the international level (Falkner 2016). This very moderate reform illustrates the challenge of path dependencies and incremental changes arising from policies and points toward the crucial role of learning around the original 2009 RED (EC 29), and in particular its biofuels component. This discussion of the RED focuses on the biofuels controversy, in particular the key phase of the late 2000s and early 2010s. This time period is crucial to understand the moderate ambitions and modest outcomes of the 2018–2019 recast of the RED and the accompanying delegated act of the European Commission on indirect land use changes from first-generation, food-crop-based biofuels.

In the first section, I provide a brief overview of the development of the RED within wider sociopolitical shifts as a potential driver for learning. Learning in the electricity and heating/cooling components of the RED occurred predominantly on the individual level as policymakers involved in the legislative process gained additional knowledge and experience, resulting in factual and experiential learning that can be considered as part of any policymaking process (see Rietig 2018b for a detailed analysis). The second section of the chapter focuses on the biofuels controversy as a particularly interesting case of learning when underlying beliefs become contested as a result of new scientific knowledge.

### **The Development of the Renewable Energy Directive**

To improve energy security as concerns emerged following the oil shocks in the 1970s, the EU decided to explore so-called alternative energies through increasing research and development efforts (Member state [MS] 1, see Appendix 2 for interview codes/references). In the 1990s, the purpose of alternative energies was widened to a triple objective of economic development, energy security, and climate change. The European Commission subsequently “talked about the pillars of energy policy . . . , it contributed to climate policy, it generated jobs, and . . . contributed to the energy supply discussion so in that sense we all thought the arguments supporting renewables were

broader than pure climate change" (EC 8). Thus, improving climate mitigation and addressing environmental objectives were not primary objectives of renewable energies, but rather "added . . . on top" (EC 12). This triangle proved to be a magic formula, as it offered a good fit with domestic interests in the member states as it promised a range of cobenefits for energy policy and industrial policy, especially as the domestic nature of renewable energies reduced energy dependence (EC 2).

The European Commission was a key driver in promoting the use of renewable energies in Europe. After the oil shocks of the 1970s, a unit on Alternative Energies (later renamed Renewable Energies and Energy Efficiency) was established to promote the uptake of renewable energies. It prepared green and white papers setting out a renewable energy plan (EC 1996, 1997). This resulted in the development of the 2001 Renewable Electricity Directive (EU 2001), in which "the Community recognises the need to promote renewable energy sources as a priority measure given that their exploitation contributes to environmental protection and sustainable development. In addition this can also create local employment, have a positive impact on social cohesion, contribute to security of supply and make it possible to meet Kyoto targets more quickly" (EU 2001, Recital 1). Member states had to set national indicative targets (EU 2001, article 3), which resulted in political conflicts and compromises regarding countries' exact targets (Rowlands 2005; Verhaegen et al. 2007). There was a strong consensus among decision-makers and various stakeholders that the share of renewable energies as alternatives to fossil fuels should be increased, which subsequently facilitated the adoption of the directive. As a consequence, there was a consensus regarding actors' beliefs on normative policy objectives (i.e., policy design beliefs), but also distributive conflicts regarding the exact instruments and targets based on national interests. These can be regarded as beliefs on policy details.

A central motivation for European decision-makers' increased support for renewable energy was needed in order to deliver on the international climate change commitment and consequently reduce emissions. Two landmark events on the international level resulted in increased efforts by the EU and the European Commission in particular to promote the uptake of renewable energies. The first event was the Rio Earth Summit in 1992 by the United Nations Conference on Sustainable Development (UNCSD), which established the UNFCCC and increased the pressure on national agendas to reduce greenhouse gas emissions.

The EU played a leadership role in international climate negotiations (Schreuers and Tiberghien 2007) and wanted to be regarded as a role model

(Fouquet 2012, 1). This brought the need to save face by implementing domestically the ambitious commitments that the EU had pushed for on the international level. The second landmark event was the UNFCCC conference in Copenhagen in 2009, where countries tried to agree on a post-Kyoto climate treaty, which increased the time pressure and turned out to be an important driver for the quick adoption of the EU's Climate and Energy package even though the summit itself was regarded as a failure (EC 8).

The UNFCCC also contained an article on civil participation in implementation, thus pointing toward the importance of local governments and regional administrations to reduce emissions. As part of the implementation of the Framework Convention's articles on civil participation, the European Commission engaged with mayors across Europe and set up several networks to promote the uptake of renewable energies and energy efficiency measures on the local level from 1993 onward (Hildingsson, Stripple, and Jordan 2012). These networks included the Covenant of Mayors and the Greater London Energy Efficiency Network. Furthermore, the European Commission set up programs to promote the uptake of renewable energy and raise awareness among citizens, companies, and member states (ALTENER), as well as energy efficiency (ENERGY CITY and FEDEREN) with seed funds. It encountered widespread support, "it was very enthusiastic, a lot of people were really enjoying it, it was really dynamic . . . because it's a positive message. So local authorities have been very keen to enter into this concept" (EC 1).

The European Council meeting in March 2006 set the overall rationale for developing a renewable energy strategy that would contribute to the overarching objectives of addressing security of supply, climate change, accelerating the uptake of renewables, and the importance of improving transparency and integration of the energy market (European Council 2006a, 13–15). As heating remained widely unaddressed, the European Commission, together with a number of environmental organizations and actors from the EU member states, lobbied the European Parliament to introduce the topic into discussions at the European Parliament (EC 1; EC 4). Subsequently, the European Parliament requested the European Commission to develop a proposal for a directive that would include the aspects of heating and cooling (European Parliament 2006). This European Parliament's resolution also specified the policy measures that it expected the European Commission to propose (European Parliament 2006, I). European Commission subsequently produced the Renewable Energy Road Map (EC 2007a) with renewables targets that would be adopted at the March 2007 European Council meeting (European Council 2007; EC 2).

In the Renewable Energy Road Map, the European Commission proposed setting a legally binding target to achieve a share of 20 percent of the overall energy mix from renewable energy sources, including a mandatory minimum target for biofuels of 10 percent share in 2010, which would require a new directive, as the regulatory framework would need to be strengthened substantially (EC 2007a, 2007b). The Renewable Energy Road Map of January 2007, therefore, had a significant impact on the decisions reached by the European Council and the subsequent proposal of the RED put forward by the European Commission (Rietig 2018b).

The European Commission was a key driver behind the renewable energy targets. It acted as a key policy entrepreneur in using the 2008–2009 window of opportunity opened by a favorable economic situation and deadline pressure of the emerging economic crisis and the international climate change negotiations. The European Commission has been identified as an important policy entrepreneur in other areas, such as the European Emission Trading Scheme (EU 2003b; Skjærseth and Wettestad 2010; Wettestad 2005) and social policy (Wendon 1998). It set up and promoted the networks that facilitated and supported the uptake of renewable energies on the local level and paved the way for the RED by raising the profile of renewable energy in the European Parliament and the European Council and further requests to develop a climate strategy beyond 2020, reaching toward 2050 (European Council 2005).

Germany, France, and the United Kingdom (UK) also advocated a European climate strategy, resulting in the 2007 European Council reaching conclusions on a 20-20-20 target. This target was to be achieved by 2020 and contained the three sub-targets of reducing greenhouse gas emissions by 20 percent (compared to 1990 levels), increasing in the share of renewable energies in the EU to 20 percent and improving energy efficiency by 20 percent (EC 2009; European Council 2007, 2008). German chancellor Angela Merkel, who held the presidency of the European Council meeting, advocated the importance of a European climate strategy. Together with the European Commission president Manuel Barroso, she convinced British prime minister Tony Blair and French president Nicolas Sarkozy to agree to the proposal (EC 3; MS 8). Blair was advised by his administration not to support the decision, given that the UK at that time were getting less than 2 percent of their energy from renewable sources and would most likely not be able to deliver on their corresponding renewable energy target by 2020 (MS 8). However, given that this was his last European Council meeting before the end of his term and he was alone with the other heads of state while making the decision, he agreed to the 20 percent overall European

target on increasing the share of renewable energy in the EU (MS 8). The UK's support meant that they were not mobilizing other member states to block the policy proposal, further facilitating the open window of opportunity. There was also strong support from Barroso, as "this was one of the key policy areas where there was a clear European dimension . . . [requiring European action,] and it was a chance for the EU to take the lead in terms of broader European cohesion and cooperation" (EC 8).

A number of factors resulted in an unusually quick adoption of the RED. These included strong political support for the overall climate package, deadline pressure to present an ambitious European climate policy at the upcoming UNFCCC summit in Copenhagen in 2009 so the EU could live up to its Kyoto Protocol commitments and its image as a leader in the area of climate change, and the closing window of opportunity due to effects from the worldwide financial and economic crisis (EC 2; EC 3). Nevertheless, the question of how the target should be achieved sparked a major controversy, especially with regard to the role of biofuels in transport and the burden-sharing agreement between member states (EC 6; EP 2).

The biofuels aspect merits further attention, as it indicates alternative explanations to learning as a result of defensive avoidance among actors who were reluctant to reflect on the other groups' positions (Janis and Mann 1977). Key reasons for this controversy were contested scientific knowledge at the time of policymaking, path dependency and policy lock-ins, and incremental steps to correct policy outcomes made under scientific uncertainty after the evidence pointed toward policy failure. The policy development can also be seen as an incremental experiential learning process on biofuels policy from first- to third-generation biofuels that allow competitive advantages later (as argued by Dunlop 2010, 356). The side effect of this approach, however, was a further lock-in effect into first-generation biofuel technologies that cannot easily be substituted with second- or third-generation biofuel technologies because these are fundamentally different and benefit different industries (e.g., food-crop-based first-generation biofuels predominantly benefit farmers, while using algae in seawater farms as third-generation biofuels benefits entirely different actors).

The progress in terms of limiting the negative effects of food-crop-based first-generation biofuels on ILUC remained limited beyond 2020, as only accounting rules were changed how countries can count high-risk ILUC food-crop-based biofuels toward their renewable energies in transport target (a cap was set for 2019, which decreases into the 2020s). It does not limit the actual use of first-generation biofuels, however, as countries are permitted to import and use food-crop-based biofuels and a distinction is made between high-risk

ILUC toward high-carbon stock areas (e.g., using forests or peat lands for agricultural production) and low-risk areas. This follows a cap of 7 percent of food-crop-based biofuels to limit their further growth in the ILUC directive of 2015 for the period until 2020 (EU 2015).

The remainder of this chapter focuses on the origins of the biofuel debate, which is the most controversial aspect of the RED. It is also linked to the FQD (EC 2009), the reform proposal on ILUC (EC 2012), the actual reform on ILUC (EU 2015), and the recast RED (EU 2018). The latter contains revised sustainability criteria, as well as the delegated act of the European Commission (2019), which limits how countries can count food-crop-based biofuels grown in high-risk areas for ILUC toward their nonbinding targets for renewable energies in transport. With this more detailed analysis, I provide insight into the relevance of scientific consensus and illustrate how disagreements between coalitions of policymakers affect learning and policy outcomes.

### The Origin of Biofuels Policy

The biofuels component emerged from actions by different directorate generals between 2003 and 2009, with a less clear-cut focus on climate mitigation as the other two aspects of the RED. The multiple-purpose character of biofuels was a key reason why different coalitions formed after its relevance for climate mitigation became contested. The resulting biofuels controversy was not resolved until 2015, when the ILUC reform limited the amount of first-generation biofuels that could be counted toward countries' binding targets of renewable energy in transport to 7 percent (allowing an increase from the current level of 5 percent) and required additional biofuels to be from nonfood-crop sources such as waste (second generation). This was watered down subsequently in 2018 and 2019 by removing individual binding targets for member states. The recast RED introduces a cap moving into the 2020s of how much first-generation biofuel countries can count as renewable energy in transport under their voluntary commitments.

DG Agri was working on a biofuels strategy that resulted from the implementation of CAP reform, which included not only greening measures, but also reducing subsidies in the sugar sector (ENGO 1; European Council 2006a; Sharman and Holmes 2010):

It all started with the sugar reform. . . . [Biofuels were] a new outlet for the sugar beet industry basically but they were going to get less money from the agricultural policy so developing biofuels was a way to compensate for that basically and if you look at documents from that time, like the first communications and so on



you really see that that's what they say and they don't even mention [climate objectives], or only in passing. . . . In the EU it was the agricultural policy that was the main driver [for biofuels]. (EC 12)

ENGOs pointed out that biofuels were used by the European Commission as a side payment or bargaining chip to win the support of the agricultural lobby for the sugar reform of the CAP. DG Agri “put together this Cabinet-level working group that was basically addressing biofuels as part of the response to the sugar reform that the Commission was pushing through” (EC 9):

Commissioner Mariann Fischer-Bohl, who was wrapping up the sugar reform, which was one of the reforms she actually had to do, so she had huge opposition from the farm lobby, and she found the magic way of sugar coating, the deal of saying “we lower your guaranteed price of sugar, but don't worry, you'll make lots of money through biofuels, and there will be a bright new future, and there will be lots of subsidies coming from that direction.” (ENGO 1)

DG Env developed the FQD (EU 2009b) between 2005 and 2007. In parallel, DG Energy explored in the biomass action plan (EC 2005) how the use of biomass could be improved, but “what it ended up being was very much a sort of selling job on why we needed more biofuels in transport, rather than looking at where it would be optimal to use biomass” (EC 9). A further policy development process that was running in parallel were discussions regarding the carbon dioxide emission standards of cars. Two directorate generals within the European Commission, as well as a number of actors ranging from the member states to the agricultural lobby and auto industry, pushed for a more reliable biofuels target to be more far-reaching than the current voluntary target of 5.75 percent (EC 10; ENGO 1; EU 2003a), while “at that point it was specifically biofuels and not renewables in transport” (EC 11) and “it got changed . . . in the process to renewables in transport” only later (EC 12).

When the European Council asked the Commission to develop a policy package to deliver on the 2020 20-20-20 Strategy, it also included a target for a 10 percent share of biofuels (European Council 2007, 21; EC 2008b). The targets, however, were based more on political objectives than on scientific data (Sharman and Holmes 2010):

It was biofuels at the beginning and I think what happened is that was before they had assessed [different targets]. . . . It was a bit random to be honest. They said “Oh, well let's have something in the middle like 10 percent” and I think it also suited much of the modeling exercises [DG Energy/DG Agri] did to see how they could reach the renewables target. (EC 12)

The timing of this discussion was crucial. They were initiated at a time when there was a lack of scientific data on the carbon emission performance of biofuels and environmental impact assessments that took the widespread use of food-crop-based biofuels into account and their effects on ILUC to agricultural land where crops for biofuel production replaced food crops. A shared assumption was that

in 2003 it was fairly clear that there were clear greenhouse gas savings from nearly every process in biofuels and the consensus seemed to be that the indirect land use changes were insignificant, so that was 2003. I guess by the time we were drafting the directive that had changed completely. . . . The anti-biofuels arguments . . . certainly occupied us thoroughly from 2007 onwards. (EC 8)

### **Emerging New Scientific Evidence on the Climate Performance of Biofuels**

Two groups can be differentiated in the negotiation process of the biofuels component. Members of the coalition that focused on economic development came predominantly from the directorate generals for Energy, Agriculture, and Trade within the European Commission, the biofuels industry, automotive industry, and conservative-leaning parties in the European Parliament, as well as from several EU member-states. Their focus was on the triple benefit of biofuels—increasing energy security, improving (rural) economic development and, as a side benefit, mitigating climate change in the transport sector. Their primary objective and policy design beliefs, however, were focused on the economic benefits of biofuels. This coalition was in charge of the biofuels target as part of the RED.

The second interest group was the environment-focused coalition. Members of this coalition came predominantly from the DG Env in the European Commission, the Green Alliance in the European Parliament, environmental and social NGOs, and a number of EU member-states. It was led by Cabinet/DG Env of the European Commission, which was in charge of the FQD.

The coalition focused on economic development designed the biofuel aspects of the RED based on the assumption that first-generation biofuels would address all three objectives. The European Council's decision of a mandatory target of 10 percent biofuels/renewable energies in transport resulted in a lock-in into that target. However, new scientific evidence was introduced into the debate between 2007 and 2010, which pointed toward an emerging understanding that the carbon footprint performance of biofuels was more mixed than previously thought, especially with regard to food-crop-based first-generation biofuels, which showed a worse carbon footprint than most fossil fuels (Fargione et al. 2008; Melillo et al. 2009;

Searchinger et al. 2008). It also suggested a competition between food-crop-based biofuels such as maize and sugar, especially from biodiesel and food production for humans. This contributed to rising food prices in the developing world and a food versus fuel discussion that gained prominence in the media through social NGOs (Keyzer, Merbis, and Voortman 2008; Kullander 2010; Runge and Senauer 2007). These new findings challenged the relatively stable consensus that renewable energies were normatively good (Rietig 2019a). Yet until then, even the environment-focused coalition had been either indifferent to or in support of biofuels:

The negative reaction first came from the social NGOs, and it took several years for environmental NGOs to take notice and to talk about the problem while saving face. Because it is also not possible that you are pushing for an ambitious target and two years later you are saying that the target is causing a problem. So they needed a few years and a few changes in personnel and terminology to explain themselves, but others who were not implicated in the early push in favor of biofuels, they were much quicker to react. (EC 10)

Until the new scientific evidence emerged, there was a consensus in the policy design and policy detail beliefs among most of the key actors that biofuels as a component of renewable energy were a suitable policy instrument to address climate change. Thus, new scientific evidence challenged the underlying policy design and policy detail beliefs that had formed between the 1970s and 1990s as a form of long-term constructivist learning. DG Energy and other actors primarily concerned with economic development acknowledged this new data but questioned the effect of biofuels on food prices:

[Biofuels] have the highest criteria . . . to meet before they can be used. Everyone talks about using palm oils for biofuels, nobody cares that palm oil is used in our toothpaste, in cosmetics, in medicine, in lubricants and everything. And basically an only small fraction of about 3 percent ends up as biofuels. And everybody wants sustainability criteria for biofuels, but nobody cares about what happens to the rest. (EC 4)

Another key actor from the economy-focused coalition within the European Commission criticized a perceived overemphasis on the biofuels aspect, insofar as

the timing was such that all sorts of practically everything was bad in the world was being blamed on biofuels. . . . The fact that EU biofuels demand was so trivial and barely significant didn't matter at all. People just saw high food prices and EU demand and said that it was EU energy policy driving all of this. (EC 8)

This resulted in conflict between the two coalitions with differing policy detail beliefs, which became evident as soon as the universally positive

image of biofuels as renewable energy became contested. In particular, the environment-focused actors, such as environmentally minded departments within the European Commission, the EU member-states, and ENGOs, reflected on the new scientific evidence and subsequently changed their policy design beliefs on the climate performance of biofuels:

It was also the scientific community that was having different ideas and giving contradictory advice, so that certainly did not help in giving policymakers a clear signal, and that was giving room to different lobbies to go for their own interests. So from a political perspective you had the agricultural lobby in favor, you had more the environmentalists being more concerned about the issues, but science was in a way not giving a clear signal to either of the two, and that caused a difficult discussion where the Commission [DG Energy] was quite dominant, because there was a lot of arguments going back and forth, and if the science is not very clear, then it is the Commission who can play around with that. (EP 4)

### **Shared and Competing Beliefs of the Coalitions**

The controversy between the environment- and the economy-focused coalitions was based on diverging deeper, policy design, and policy detail beliefs related to the new scientific evidence. Actors shared the wider policy design beliefs that carbon dioxide emissions needed to be reduced to mitigate climate change, but they had very different perspectives on the policy details of exactly how this should be achieved and how scientific evidence should be interpreted. The cabinets/DGs involved could not find a common language to respond to the media debate during the drafting process in 2007–2008, as there was a lack of consensus within the European Commission regarding these policy detail beliefs:

[The food versus fuel debate] took off during the year when we were drafting the Directive. And during that year, because there were different views inside the Commission, it was not possible for the Commission to externally express any opinion or even any scientific response to the statements that were being made. (EC 5)

The food versus fuel debate also affected the effectiveness of policymaking within the European Commission given the need to respond:

The experience was rough and the timing [of the food versus fuel debate in 2007/08] was unfortunate. At one point I think two thirds of [the Renewable Energy] . . . Unit were occupied with bio-energy discussions and sustainability discussions so it took up a vast amount of effort and resources. (EC 8)

The coalitions disagreed about the biofuel component across the European institutions, mostly due to different underlying deeper and policy

design beliefs. Similar to other policy areas in the EU and the US, each coalition included both governmental and nonnational representatives (Baumgartner 2007). These two groups had characteristics similar to Sabatier's advocacy coalitions (Sabatier 1988, 1998; Weible and Sabatier 2009), where coalitions with competing beliefs and policy objectives engage within an issue-related policy subsystem such as biofuels policy. The RED coalitions used different strategies to win over the other coalition and achieve decisions by governmental authorities that were in line with their underlying beliefs. The two coalitions used these strategies to align the policy outcome with their beliefs on the importance of acting on climate change (deeper beliefs), what overall policy approach should be taken (policy design beliefs), and exactly how the policy instruments should be designed (policy detail beliefs), whereby the scientific knowledge affected their positions differently. The key change compared to learning in the overall RED was the introduction of new scientific data in 2007–2008 that resulted in contested scientific evidence regarding first-generation biofuels' positive or negative contribution to climate mitigation. The biofuels controversy can be seen as a reaction to developments in the sociopolitical landscape: the introduction of new but contradictory scientific evidence and the overall negative public reaction to the discrepancy between the new evidence and the policy development.

There was a shared policy design belief among stakeholders and decision-makers that alternatives to fossil fuels should play a larger role in the European energy mix. However, the policy detail beliefs (i.e., the exact means of achieving this policy objective) became contested. The negotiations were more based on political horse-trading and policy-based evidence gathering (Sharman and Holmes 2010) than on scientific evidence (EC 6; EC 9; EC 12). The economy-focused coalition widely regarded biofuels as a desirable alternative to fossil fuels from an energy security, economic development, and increasingly climate mitigation perspective until 2008 (EC 1; MS 1; MS 4; MS 7; MS 8).

However, actors that were deeply involved in promoting all renewable energies as desirable policy instruments to address climate change did not explicitly change their policy detail beliefs. Some reflected on the evidence and decided to ignore it, thus engaging in defensive avoidance (Bouckenooghe et al. 2007; Janis and Mann 1977), which was facilitated by groupthink (Janis 1972) as they were in the driver's seat of negotiating the details of the legislative proposal (Rietig 2018a). It is important to recognize that the economy-focused coalition did not have the luxury of reflecting on the new evidence in order to change its position. Instead, actors entered

defensive avoidance (Janis and Mann 1977) to avoid having to reflect on the scientific evidence. The option of reflecting on the new evidence and changing its position was closed as the scientific debate shifted toward a consensus on the negative impacts of biofuels *after* the economy-focused coalition succeeded in gaining a political mandate for the 10 percent target in the European Council in 2007, so it was locked into a position that was difficult to change without losing face (Rietig 2018b):

What was also very clear that from the Commission's [cabinet/DG Energy's] perspective, they were already married to their 10 percent target so to say, so they didn't want a too fundamental discussion on the targets, because that was the basis of the RED, and they were afraid that if this discussion on the biofuels was getting too loud, it would also be fundamentally in the discussion whether the targets should be dropped or not. And therefore the European Commission was also very much pushing of keeping these targets and trying to downplay the scientific debate there. (EP 5)

While the environment-focused coalition understood scientific evidence from a positivist point of view, key actors in the economy-minded coalition pointed toward the competing scientific findings and the lack of scientific consensus between scientists from their triple-purpose food/energy security, economic development, and climate change perspective (EC 5; EC 9; EC 28; EP 5). Therefore, the scientific studies provided were viewed through a political lens in support of the political objectives that coincided with the interests of the industry and the agricultural lobby, as well as of many policymakers in the EU member-states, who had a high regard for rural development and energy security:

There was also a debate on what to do with the specific target of the transport sector, and interestingly this was a kind of classical political deadlock we had there, because the politicians already agreed to come forward with a 10 percent target on renewables for transport, and politically it was already impossible to give up that target, that would have been seen as a loss of face, you know these kind of political issues that sometimes become more important than scientific arguments. (EP 4)

The different framing of biofuels subsequently offered the opportunity for power games to be played among the interest groups (Saurugger 2013). The lack of a clear scientific consensus either in favor or against biofuels opened the space for the interpretation of scientific studies in favor of political objectives (Weible 2008), what exacerbated the controversy:

There was this study by Tim Searchinger in early 2008 and we started the discussion inside [DG Energy of] the Commission about what we should do and so

on. . . . It was very difficult for the Commission as a body to take into account the new scientific evidence because it questioned the legitimacy of the policy basically. (EC 12)

The political use of scientific evidence (Weible 2008) in support of pre-determined political positions became particularly strong once the science was contested, and as a result of the lack of scientific consensus clearly pointing in one direction, the controversy worsened (Sarewitz 2004). The biofuels industry took advantage of this disagreement to introduce its own studies and evidence, using as the basis of their calculations “different factors for ILUC which funnily enough gave biodiesel quite a low ILUC factor . . . that certainly came out of nowhere (MS 11). This was confirmed by an observer from a large EU member-state:

These governmental agencies are making a lot of scientific studies, as do we with our research projects, and then we pull a few numbers out that support our argumentation. And it has been confirmed that these studies are a good basis for [DG Energy’s and] the Commission’s argumentation to defend its proposal. (MS 4)

The proposal put forward by the European Commission for revising the biofuel aspects of the 2009 RED to take into account ILUC (EC 2012) indicates limited learning on the individual level, but to a lesser extent on the organizational level, as the ongoing negotiation deadlock between the coalitions illustrates. Changes in policy detail beliefs would have meant to take a stronger precautionary approach toward the use of biofuels and not simply to limit the amount of first-generation biofuels that can be counted toward the 10 percent target on renewable energies in transport. Instead, phasing first-generation biofuels out and only accepting sustainable biofuels would have evidenced changes in beliefs (as emphasized by ENGO 1; ENGO 2; ENGO 3; MS 7). Members of the economy-minded coalition did not change their deeper beliefs to acknowledge the overall planetary boundaries and negative environmental consequences of the dominant neoliberal economic development model. The reform of the de facto biofuels target remained incremental by limiting the future growth of food-crop-based biofuels to the existing share of 5 percent (EC 2012) and incentives for electric cars to move beyond biofuels to other forms of renewable energy in transport. The following quote illustrates that the expectation of some members of the environment-minded coalition for learning would have been a shift in deeper beliefs that should also be reflected in the policy proposals:

This is where I think we have failed to learn certain lessons. Because if you look at the biofuels debate, yes, we have ILUC, we have certification, there is a certain recognition that we cannot use food crops biofuels, but this is where it generally

stops. And wherever you go, you hear that “yes, we have to do second generation, which will be based on cellulosics, that is the next step.” But people are not questioning if that is going to be the best thing. (EC 10)

The proposed changes to the directives indicate that there was no overall shift in deeper beliefs that would be reflected in the policy design and policy detail beliefs, such as proposing more substantial safeguards to the use of biofuels than accounting rules dictated in the form of the Sustainability Criteria shared by the RED and the FQD. Thus, none of the coalitions changed their deeper beliefs. Both continued to hold the same policy design beliefs that the problem of climate change needed to be addressed by reducing emissions and that renewable energies were a desirable policy overall to achieve this. We did, however, observe what appears to be a change in policy detail beliefs among the economy-focused coalition, as they allowed the European Commission to propose a modification to the RED.

### **Constructivist Learning or Factual and Experiential Learning?**

Key actors pointed out that there was a difference in the RED between the ways in which policy officers as experts and higher-level civil servants such as heads of units, directors, and politicians learned (EC 2; EC 3; EC 4; EC 7; EC 14). Experts engaged deeply with the available academic literature and scientific studies in the policy field. The steepness of the learning curve depended on their previous knowledge. The higher-level civil servants and politicians learned predominantly from being involved in the policymaking process and attending meetings. Most had no deep expertise in the specific policy area but rather took on the role of managers, thus learning facts by being involved in the process:

So when the industry comes to talk, they come to [the head of unit at the European Commission], and he always has an expert next to him. So he would give the general position and leave the specifics to the experts. If you do this a few times, you learn it. . . . So you have some people who are trained, you need a good briefing, and you need to trust your people. And the moment you have that, it goes well because you participate in the meetings, you hear the NGOs and the industry speak, you hear what positions your technical and policy guy gives, and of course they are not stupid, so if you are interested in your job, you learn. So for all of them, there is a learning process. They have to be involved. (EC 4)

This form of experiential learning on the individual level by being involved in discussions was confirmed by another technical expert:



I guess to some extent once the subject matter becomes quite technical then the head of unit is happy for their expert task officer to play a role because they don't necessarily know the material so sufficiently to be familiar with all the ins and outs and all the arguments so sometimes it has to happen because it's technically complicated. (EC 8)

Yet it was problematic when top-level decision-makers relied only on the information they received from their experts, as it had been filtered in the process of summarizing complex technical issues into briefing notes or short overview presentations (EC 4; EC 9; EC 12). Especially if there was no scientific consensus, technical experts may have been tempted for personal or political reasons to provide information that was biased in favor of one side. This carries the possibility that higher-level decision-makers learned only what they were taught (Bomberg 2007; Haas 2000). This may have been unintentional, especially when the value-laden character of science is taken into account (Jasanoff 1990, 2004).

But even among those who could be considered experts with detailed technical knowledge on specific subelements, experiential learning on the individual level occurred due to their continued involvement in the negotiation process and debates among the competing coalitions:

Also having to argue about it year after year. Those experts who were involved in this, they just could not but learn from each other. I learned a lot from it and I realized issues that I did not consider as important before are important and some were confirmed, some were not, so it is an interesting exercise that will make an impact. The problem here is how you can make others accept what you have learned. That is a more difficult thing because you have to go through this process to appreciate certain factors, and it is very difficult to communicate this in a simplistic fashion to hierarchy or to outside stakeholders, because it is not so trivial. And this is why still so many people deny certain things. (EC 10)

This type of experiential and factual learning on the individual level, however, remains the rather normal learning that automatically occurs in any policymaking process. Of course, individuals accumulate information and experience by being involved. Yet as they need to defend their policy detail beliefs in discussions with the other coalition, actors look for evidence to support their arguments, examine the issue from different angles, and thereby also reflect on their own policy detail beliefs. While there is no conclusive evidence that the actors involved changed their policy detail beliefs (which would be constructivist learning), they did acquire more knowledge by looking for supporting arguments and evidence and also learned by being involved in the process and tried to improve their strategies in influencing the policymaking process. There is insufficient evidence

supporting the conclusion that individuals within the economy-focused coalition changed their beliefs. However, even if they wanted to, their path-dependent lock-in to the 10 percent target would have meant losing face, which was avoided by entering defensive avoidance (EC 4; EC 12):

I think the whole thing had gotten really emotional. . . . I also think there was this sort of psychological mechanism of denial, you know, that you don't want to admit a piece of evidence that goes against what you really think is right. (EC 12)

Another aspect of defensive avoidance that occurred in the Council discussions regarding a policy reform of the ILUC was the fact that in the meantime, EU member-states invested in an industry focusing on first-generation biofuels. Changes to the RED thus came with significant economic cost and loss of trust in policymaking:

Like especially I think the Central and Eastern European countries, they haven't had the same boom in . . . wind, but biofuels—they've done really well in so I think it's quite frustrating then to have the rug sort of swept out from under their feet. . . . I don't think they really recognize the need to change their direction. (MS 11)

Members of the economy-focused coalition, however, changed the way they behaved in the negotiations in a manner that could easily be confused with constructivist learning. This type of experiential learning about how to best protect deeper beliefs by optimizing political tactics is frequently referred to as political learning in the literature (e.g., Gross Stein 1994; Holbrook 2007; May 1992; Nadeau, Niemi, and Amato 1995). However, this kind of experiential learning is to be expected in any policymaking process. The economy-focused coalition were careful to acknowledge the need to address ILUC between the adoption of the RED (EU 2009a) and the ILUC proposal (EC 2012):

Yes, [there was reflection and learning in DG Energy at the Commission]. I think the argument has become a bit more nuanced, a bit more aware of the complexity and the sensitivity of it all. . . . It's clear now that we had a huge increase in world food prices in 2008–2009, which was triggered by a range of bad harvests, bad weather, and rapidly growing food demand. Food prices came down again so in that sense the absence of the correlation with EU biofuels demand is there. (EC 8)

Also:

We learned a lot more about the land use stuff in the years after than we did at that time, so I could not really say that I learned it in the period that I was talking about. (EC 5)

A key actor reflected during an interview on lessons learned from being involved in the biofuels controversy and how it could have been managed differently to reduce the level of conflict:

Hindsight is useful. We took a very sectorial approach to dealing with the biofuels issue. It's quite complicated, which made it difficult for people to understand and created quite a bit of hostility. I think it would have been better to take a much broader approach to the idea of sustainability in agriculture and forestry rather than focus purely on biomass in energy. (EC 8)

However, this change in tactics to acknowledge the necessity to address ILUC in the area of biofuels (EC 5; ENGO 1) was a result of experiential learning rather than constructivist learning based on changing underlying beliefs. By being involved in the negotiation process between two coalitions, actors also learned that "you have to give things and you can't just say no and defend everything. Then the things that you do defend are more credible" (EC 5). Consequently, a shift in the negotiation position can also be the result of experiential learning on how to play negotiation tactics better under the involvement of long-term considerations or the protection of deeper beliefs and important policy design and policy detail beliefs. This point is illustrated by the observation of a member of the competing environment-focused coalition that "the fact that many people have realized that they won't simply convince public opinion has also contributed that it is better to come up with some corrections, amendments or improvements" (EC 10). Thus, there was also overall support within the European Commission for a correction of the RED on the ILUC aspects:

On the ILUC side the whole impact of the first generation feedstock and the potential for bad practice and higher emissions coming from that process has meant that there has been an overall agreement to try to limit the use we make of first generation in preference of second generation so that's the key element of the ILUC proposal I guess is that we're proposing to cap first generation and then provide extra incentives for second generation because they are generally better and more reliably sustainable than 1st generation so in that sense there's a bit more clarity but not complete clarity on the issues, on the evidence, on the complexity of the relationships and that's, I think, the ILUC proposal shows progress compared to the discussions of the renewables directive and the sustainability criteria there. (EC 8)

Public opinion may have been a major outside motivation for policy-makers to reconsider their policies. Especially in the case of biofuels, where the public debate and public criticism regarding the indirect land use factors remained and was further underpinned by an emerging scientific consensus toward the mixed climate performance of biofuels and their negative impact on food security (EC 28; Keyzer et al. 2008; Kullander 2010), there was considerable pressure on the economy-focused coalition to make concessions regarding ILUC. This, however, does not automatically mean

that the coalition changed their policy detail beliefs. It may have just been a tactical move based on public or political pressure or their gaining experience regarding the unintended consequences of the original policy by observing its effects over several years:

And because of the complexity of all this, there was an increasing realization, but with [DG Energy] as well, they learned to be more careful with certain things because higher prices can undermine a policy and it's not necessarily good, if you get too much, at some point it may come back and haunt you. I think people have become more considerate about unintended consequences. Much of the ILUC discussion was about that thing in that sense. . . . So it's not just to get the right numbers in the model, but also more fundamental discussions about population growth, future demands and so on. It made people think in a more nuanced way, so there was some kind of learning effect from the Renewable Energy Directive in the ILUC discussions. (EC 11)

There is also evidence for experiential learning on policy instruments, resulting in better familiarity with the implications of the various instruments available in biofuels policy:

There's been a lot of learning in terms of the different instruments that were used and that's one of the things that will be coming out in [the next Commission] guidance, the need for much greater flexibility in market responsiveness of instruments to be able to reflect things like the reduction in costs . . . from the scaling up of industrial activity producing renewables. (EC 8)

The environment-focused coalition did not only change their policy detail beliefs based on the new scientific evidence that was contrary to the assumption that all renewable energies contribute to climate mitigation, some of their key actors also reflected on the learning experience, which can be regarded as constructivist learning on the individual level and to a certain extent also on the organizational level within the respective government/European Commission departments:

I mean people have been a bit traumatized with this file [the biofuels aspect of the RED]. . . . Everybody in the DG was telling me, "Oh, it's the worst file I've ever seen." . . . It was extremely difficult and there was a lot of disgrace put on the Commission as well when you have [to] admit that you've made a policy that doesn't make any sense which results go contrary to the objective. It's very difficult. . . . The Commissioner [said during] an official [when he] . . . was talking about . . . another hot topic . . . "Yeah, we need to make sure we take France into account because [we] want to avoid another biofuels disaster." (EC 12)

A representative from the Council concluded on the RED that "we put in place a policy that has massively incentivized the development of an

industry and we didn't take into account the full impact, and this needs to kind of be corrected" (MS 11).

Based on this discussion, it can be concluded that by participants being involved in the policymaking process, there was experiential learning among all policymakers, as well as an increase in knowledge about the specific policy issues during the drafting and negotiation period of the RED and the FQD. However, experiential learning also occurred afterward, as actors reflected on the increasing scientific evidence in favor of the environment-focused coalitions' policy detail beliefs.

This is the most relevant finding on learning: the environment-focused coalition changed their policy detail beliefs, but this resulted in a "fierce fight" (EC 12) with the other coalition, which did not regard the contested scientific evidence as sufficient to adopt a precautionary approach, especially as they were already locked into its policy development path before the scientific evidence emerged. The other hindering factor was the different framing of biofuels, as they were seen not only from an environmental or climate change perspective, but also in terms of their economic benefits.

The key finding in the analysis of learning on the individual level in transport policymaking is that no changes in either deeper, policy design, or policy detail beliefs could be identified and clearly process-traced to the key individuals involved in the economy-focused coalition, although the proposal on ILUC of the European Commission would suggest so at first glance. On the individual level, this was not a result of constructivist learning but of political learning, both in terms of experience and knowledge, among key actors that became locked into a policy pathway due to insufficient information at a crucial time:

We were also at the end of the era where we had huge food surpluses and very low food prices so that wasn't even an issue on people's radar when we first quoted biofuels, and circumstances have changed considerably since then so I guess it's not only the learning that goes on through the analysis which is triggered by the political debate, it's also, as with all social sciences, the circumstances, the environment in which we're working changes and that has a very significant impact on the interrelationships with the policy and what the policy does in the real world. If there's not static as well as our own learning, the whole circumstances of global food production, food demand, have changed significantly. (EC 8)

### **Overall Learning in the Renewable Energy Directive and the Biofuels Controversy**

This chapter examined what aspects of learning occurred, as well as the extent to which learning influenced the policy outcome by applying the

LGF and the methods for data collection and analysis presented in chapter 2. The focus was on an aspect of the RED that resulted in considerable disagreements within and beyond the European Commission. I have provided a detailed analysis of overall learning in the RED elsewhere (see Rietig 2018a). The central findings in Rietig 2018a were that in particular, factual and experiential learning occurred on both the individual and organizational levels due to individuals being involved in a policymaking process and having the opportunity to deepen their knowledge on preexisting areas of expertise. Table 4.1 summarizes those key findings.

The biofuels controversy illustrated that learning is not necessarily always positive, but in particular, experiential learning on how to manipulate the political decision-making process more effectively can have normatively negative, unintended consequences. This can happen when policymakers learn how to use the supposedly right scientific studies to support the desired position, they learn how to push proposals through the European Parliament and Council working groups, and especially when scientific knowledge is contested instead of consensual (Dunlop 2010; Sharman and Holmes 2010). Especially on the organizational level, alternative explanations such as power politics, normal bargaining tactics, and the prevalence of powerful vested interests voiced by lobbyists remained dominant compared to learning.

Even if individuals in the biofuels controversy had learned and as a result of strong personal beliefs, they pushed the issue forward using negotiation tactics, power, and personal relationships to accomplish their objectives. Convincing others of the importance and desirability of their objective would have clashed with their national or political interests. Even if individuals reflected upon other individuals' persuasive proposals and changed their underlying beliefs, they may not have been able to act on it in a coherent manner. This was especially the case for the economy-focused coalition, which was tied to the Council's decision of a mandatory 10 percent target. Table 4.2 summarizes the findings on the biofuels controversy.

Actors engaged in behavior that could be termed as strategically dealing with input to avoid deeper reflection. Instead, they engaged in experience-based learning how to better protect deeper and policy design beliefs to avoid adjusting these beliefs to the new input—in short, they preferred defensive avoidance due to organizational or political hindering factors such as policy lock-in and path dependence.

Previous contributions examining the emergence of the biofuels aspect of the RED restricted their analysis to a normative environmental perspective, examining the biofuels controversy from the point of view of the

**Table 4.1**

Overview of findings on learning in the RED

	Factual Learning (gaining knowledge)	Experiential Learning (gaining additional experience)	Constructivist Learning (change in underlying beliefs)
Individual level	Senior-level actors gained expertise on renewable energy	Members of European Parliament as well as actors at the Commission and in the Council gained experience by working on the RED, but overall limited, as few key actors were deeply involved (several of whom were already experts)	Deeper beliefs  Policy design beliefs Policy detail beliefs
Organizational level	Actors reflected on information about available policy instruments and other actors' positions	Reflection on several stages of renewable energy development (2001, 2003, 2007–2008) and national renewable energy policies (e.g., UK, Germany); additional experience with renewable energy policies	Deeper beliefs  Policy design beliefs  Policy detail beliefs

Limited change: UK head of state formed deeper beliefs on importance to act on climate change

No change

No change: Defensive avoidance among economic-focused coalition against acknowledging scientific evidence contrary to policy detail beliefs

No change in European Commission's deeper beliefs on European integration and harmonization

No change on policy design belief triangle of improving economic competitiveness, climate change, and energy security

Strategic change: European Commission adjusted some policy instrument choices to protect its policy design beliefs

**Table 4.2**

Overview of key findings on learning in the biofuels controversy

	Factual Learning (gain in knowledge)	Experiential Learning (gain in experience)	Constructivist Learning (change in underlying beliefs and perspective)
Individual level	Increase in knowledge among experts and higher-level decision-makers by being involved in the process and having to engage with details in order to defend their position in negotiations	Learning by doing, learning to play negotiation tactics better and to agree to opposing coalitions demands on minor issues to hold their position on more important issues closer to policy detail, policy design, and deeper beliefs	Deeper beliefs  No change: Remained stable on understanding that climate change exists and needs to be addressed; priority of economy-focused coalition remained with energy security/nonclimate benefits of biofuels
			Policy design beliefs  Yes: Change in short term among individuals in environment-focused coalition by correcting their beliefs about the appropriateness of using biofuels to address climate change  Yes: Among environment-focused coalition to align with policy design beliefs (removal of biofuels target) No change: Defensive avoidance among economy-focused coalition to acknowledge scientific evidence contrary to policy detail beliefs, medium-term minor policy detail belief adjustments on ILUC and need to limit first-generation biofuels

*(continued)*



**Table 4.2 (continued)**

Overview of key findings on learning in the biofuels controversy

	Factual Learning (gaining knowledge)	Experiential Learning (gaining additional experience)	Constructivist Learning (change in underlying beliefs)
Organizational level	Yes: Increase in knowledge due to emerging scientific evidence on the negative environmental impacts of biofuels	Yes: By being involved in the process, improved experiential learning as more decision-makers were involved in the discussion as usual because the disagreements between the coalitions required intensive debate; also more people involved as biofuels policy was split across several directorates with different directorate generals in the lead, resulting in new/changed positions of organizations (European Commission, NGOs)	Deeper beliefs Policy design beliefs  No change in either coalition Yes: Change in long term for both coalitions via formulating beliefs that climate change exists and that policy must react with legislation Change in short term among environment-focused coalition by correcting their beliefs about the appropriateness of using biofuels to address climate change  Yes: Environmentalists reflected on evidence and changed their beliefs; No: Defensive avoidance among economy-focused coalition as 10 percent target had been set politically by Council

environmentalist coalition (Palmer 2015; Sharman and Holmes 2010), or to an application of Sabatier's Advocacy Coalition Framework (ACF) and shifts between subsystems (Rietig 2018b). With this analysis, I widened the scope for understanding the link between learning and policy failure from a perspective of contested beliefs, which result in different interpretations of scientific evidence. The moderate outcomes of the 2010s reforms with regard to ILUC and trying to limit how first-generation biofuels can be counted into renewable energy targets in transport also highlight the difficulties of escaping policy lock-ins and path dependencies that were created during periods of scientific uncertainty in the late 2000s. It highlights why such subsequent reforms are limited to incremental changes that try to revert unintended consequences of initial policy failures gradually over decades.

