

## Incumbent-challenger dynamics in energy transitions: Governmental challenges and policy needs in Germany, Great Britain and Nordic countries

“Incumbents are those established actors that dominate our understanding of issues. The incumbents’ interests and practices are shaping and creating path dependencies. Challengers are challenging these positions.” With these introductory words, Miranda Schreurs opened the Norwegian-German workshop on challenger-incumbent dynamics in energy transitions. Different to other actor-centered approaches, the incumbent-challenger dynamic especially allows understanding the link between innovation and governance, as Catherine Mitchell pointed out. Thereby, it may help to solve the general puzzle in the field of energy policymaking: incumbent players that have a strong interest in maintaining the existing rules and infrastructures shape countries’ energy policies. At the same time, states face several challenges – securing energy supply, combating climate change – that require a permanent stream of innovation potentially questioning the existing rules and infrastructures. Thus, any energy transition process bears a high potential for conflict.

Working on policy recommendations for how to govern transition processes and to learn from various approaches in Europe, the workshop posed questions such as:

- How are incumbent actors and challengers influenced by governmental policies for energy transitions?
- What factors support the persistence of incumbent pattern and lock-ins in the field of energy policy-making?
- What drives actors to change their position, e.g. from incumbent to challenger?
- What are the strategies of governments to overcome the incumbent paradigms – or, are they part of the incumbent regime?

### Who are challengers? Who are incumbents?

The workshop illustrated that it is not always possible to clearly delineate an actor as challenger or incumbent. Rather, the way we frame our research question will have an implication on the answers we will find, as Claudia Strambo and Aaron Atteridge as well as Philipp Späth pointed out.

While the fossil fuel branches, in particular the coal industry, are widely understood as incumbent actors (as e.g. shown by Gregor Kungl and Benedicte Solaas), Sandra Wassermann’s analysis not focussing on single groups of actors but on the whole policy field painted a more differentiated picture.

Sandra Wassermann framed the electricity sector as a strategic action field with the energy transition representing a field crisis. She interpreted the German Renewable Energy Law (EEG) as an instrument for strategic niche management. It allowed renewables to grow out of the niche. With a raising share of renewables in the electricity mix the fundamental question was raised, whether renewables should be integrated into the existing market structures, or, rather a new market should be built around the logic of renewable electricity production. Actors needed to newly position themselves in this challenged field. It turned out that municipal utilities have been/ are still both: challenger and incumbents. As established actors with experience in trading electricity, they can be viewed as part of the incumbent regime. However, when making use of this knowledge in newly emerging business opportunities such as direct marketing of renewable electricity, they turned out to be more innovative and adaptive than the major four incumbent utilities and thus challenging their business model. This example also shows that it is a challenge to maintain the innovative capacity of existing actors and to ensure that institutional lock-ins will not prevent actors from learning.

The workshop showed that “theories of fields” contextualize actors’ behaviours. Thereby, they help to overcome a simple dichotomy of incumbent-challenger dynamics. Not only Sandra Wassermann but also Elin Lerum Boasson made use of a “field approach”. She pointed to the prevalence of the feed-in-tariffs for renewable electricity at the European level and asked why Norway chose a different way than most of the European countries. She analysed three explanatory field dynamics to possibly explain the Norwegian choice: the organizational field, the political field, and the European influence.

She found out that the field logics shaped the lines of conflicts in the Norwegian case. With regard to the organizational field, Elin Lerum Boasson identified a turf battle where market logics, the idea of economic efficiency and technological development clashed. In contrast, the debate she observed in Germany was rather shaped by engineers (instead of economists). In the political field, the parliament had not a big say about renewable energy development in Norway. From 2000 to 2005, ministerial governing shaped RES-E policy-making. Elin Lerum Boasson characterized this decision-making process as a “garbage can model” as it led to rather random policy results. The second phase of RES-E policymaking (2005-2010) was more shaped by political competition and an increased politicisation of renewable energies in Norway. The conflict lines have been shaped by the field dynamics leading to particular alliances. Elin Lerum Boasson highlighted that the environmental movements in Norway build alliances with business actors and supported a market based support scheme.

Stephanie Ropenus drew attention to incumbent-challenger dynamics within companies and branches. She observed that the emergence of project developers and direct marketers as well as changing tasks of transmission as well as distribution system operators marks a change of actors within branches. To her, it would be interesting to know more about the shift in the actor-dynamics in correspondence with different project phases (i.e. planning, implementation, etc.). Also Gregor Kungl confirmed in his presentation that there are incumbent-challenger dynamics within the incumbent electricity branches and thus the incumbent regime cannot always be considered as a homogeneous block. This dynamic is partly explaining the incumbent companies’ reactive strategies.

Dörte Ohlhorst looked at actors at the subnational level and underpinned that they can be regarded as challengers (laboratories for experimentation or acceleration) with many pioneering municipalities aiming at a high share of renewable energy and some Länder introducing their own climate laws. Susanne Strauch presented her small municipal utility – the Ahrtal-Werke - as a challenger actor. Her talk illustrated the former incumbent position of “Stadtwerke” who, for a long time owned the grid infrastructure. With the trend of re-municipalisation and energy transition, the role of these municipal utilities changed into a challenging position – as it has been also analysed by Wassermann and her colleagues.

Philipp Späth used the example of Freiburg to show how challengers of the national or global energy regime can at the same time be incumbents on a local scale. He confirmed that it very much depends on the criteria, scale and the definition of cleavages if an actor is regarded as challenger or incumbent. Freiburg had very early developed a CHP strategy which led to a share of 50% electricity production by CHP plants in order to turn energy provision more efficient locally and reduce the reliance on fossil fuels and nuclear electricity. At the same time, and for similar reasons, passive houses have been built in the city. Over time the goal conflicts became visible: how many passive houses are compatible with the existing district heating structure? Second, the obligation to connect passive houses to the network came about with high fixed costs since the consumption rate was so small. In the end of the political process, the building of passive houses was subordinate to the CHP-expansion strategy. The example shows that a co-existence of both “transformative” technologies is incompatible. Philipp Späth even said that the CHP-strategy developed a path dependency and has been made immune to challenging actors and technologies. This raises the question if the creation of particular new (socio-)technical paths is good or bad.

He concluded by stating that (local) governments usually are part of energy regimes (“co-evolution”). Generally, the discussants rather confirmed this view and understood governments as part of incumbent regimes.

To sum up, the presentations and discussions showed an important advantage of sorting incumbents from challengers: the categorization of actors reveals existing conflict lines and potential trade-offs between co-existing and sometimes incoherent objectives. It therefore can be a valuable exercise for researchers and decision-makers in order to find entry points for governmental choices.

### Strategies of challenger and incumbents

In a situation where many progressive energy transition policies have been rolled-back by a new government in Great Britain, Catherine Mitchell asked for explanatory factors within the British governance system. She distinguished formal and informal rules that are both influencing the outcome of governmental decision-making.

In essence, it is not merely about existing actors with strong interests but about their access to decision-making. The strategies of incumbent actors are manifold in this regard. The business lobby, which is much stronger than sustainable energy lobby, made use of an important information deficit: decision-makers have only limited access to knowledge on technical issues, which are dominating energy politics. As a result, the stronger lobby was better able to influence decision-making. By giving technical advice to decision-makers they strengthened their position and consolidated existing paths. Another example Catherine Mitchell provided was the negotiation of the governmental position on demand-side response in Brussels. The British government send off a representative of a large company to fulfil that task, a person that had an own interest-based agenda on that issue.

Gregor Kungl stressed the initial strategy of the big four electricity utilities in Germany to not invest early on in renewable electricity projects. This was because the return rates of investments in renewables were comparably low, renewables did conflict the cultural understanding of electricity production in large centralized structures and because the companies didn’t want to “cannibalize” their own conventional power plants. Only slowly, the companies adapted to new circumstances. Besides this incremental adaptation, Philipp Späth observed engagement in niches as an incumbent strategy which was also confirmed by Sandra Wassermann who identified the engaging in sub-fields and the attempt to shape emerging sub-fields as an important strategy of incumbents. Susanne Strauch illustrated how incumbent strategies acted as hurdles to her rather small municipal utility in the process of transformation: Due to the fact that the surrounding grid is owned by RWE, the latter can make use of the institutional and legal framework to delay processes in order to hold the operating role. To her, public ownership is to some extent a problem since transparency and public control prohibit keeping business secrets. She also perceives the influence of governmental policies as a hurdle and emphasized that governments and public administrations are part of the incumbent regime.

Sascha Müller-Kraenner emphasized the role of citizens and local stakeholders in transition processes. He raised the question of how citizens and local stakeholders can shape their own future. Any governmental action that does not take into account interests of regional actors will not succeed. This is especially true in the case of coal mining since it is much more diversified and anchored in the economy than nuclear energy ever has. To him, coal mining is a cultural practice with a strong industrial backing represented by trade unions (especially chemical industry). The ownership structure of RWE as one important coal mining company shows that municipalities strongly depend on the dividend of the company (25% membership of municipalities). Thus, one strategy of the incumbent coal company is to finance a lot of infrastructure in the coal mining regions. As an example, the Vattenfall foundation runs many kindergartens in Brandenburg.

Müller-Kraenner therefore concludes that a governmental strategy of confrontation will not work, since this would not only challenge electricity production but also some basic infrastructural services provided by incumbents.

Benedicte Solaas gave an input as a representative of the fossil fuel industry, which is typically framed as incumbent industry. Not focussing so much on the future of coal, she stressed the importance of Gas for energy transitions and stated that the European Emissions Trading would be decisive for the gas share in the electricity mix. In the discussion she also estimated that there are little incentives for the fossil fuel industries to change their business model.

### **Success factors in determining the success of incumbents/ challengers**

The presentations and follow-up discussions throughout the workshop mentioned various explanatory factors and framework conditions that help actors' strategies to succeed.

The British example shows that access to knowledge in combination with economic power of incumbent interests have a strong explanatory power in terms of successful strategies of incumbents. During the discussion, it was highlighted that certainly, also electoral systems determines sudden political shifts towards or against incumbents interests: first-past-the-post systems as in the UK tend to make sudden and more radical changes possible but they also may not result in long-lasting effects making it especially for challenger interests more difficult to coin their own paths in existing systems.

The Norwegian case contrasts the British example. Guri Bang presented attempts by the Norwegian government to leave oil and gas in the ground – despite the countries' long history of oil exploration. In the past, the exploration of oil has been considerably subsidized by the Norwegian state. Guri Bang emphasized that besides falling oil prices revealing the economies' vulnerability, public demand, also expressed by a fast rising Green party, was a strong driver for the abandonment of the Lofoten and Vesterålen project. Public demand also pushed the divestment idea which led to the global cancellation of investments into coal industries by the Governmental Pension Fund Global.

The Norwegian example led to the discussion of the role of finance explaining the ambivalent role of in Norwegian politics of fossil fuels. The Norwegian economy builds on producing and exporting fossil fuel. Divesting became only possible because of Norway's longstanding exports of fossil fuels. At the same time, almost all electricity used in Norway is from hydropower.

The divestment initiatives themselves can provide strong signals to financial actors and thus be a lever for climate protection and leaving fossil fuels in the ground.

To Gregor Kungl, one important factor to explain the shifts in adaptivity of the big four utilities over time are (distributive) conflicts within the companies giving weight to the argument that there is also an incumbent challenger dynamic within companies and branches. In the case of E.ON and EnBW for example the gradual shift towards adaptivity was only possible because renewable entrepreneurs within the companies came into better power positions - formerly these were opposed by the traditional energy economists which led the powerful divisions. In some cases the companies have also been blocked by their shareholders. Thus, for the renewables to grow, the crucial question became, how and why to get them on board?

Not only within industrial branches but also dynamics inside governmental regimes unfold explanatory power: Dörte Ohlhorst concluded that there is a lot of intra-level learning and potential for change. She emphasized that multi-level structures give access points for leadership, learning and diffusion. Thus, multi-level reinforcement is the single most important factor to set in motion innovation processes and help to destabilize the existing regime.

Sascha Müller-Kraenner emphasized that due to local protest initiatives, many incumbent electricity companies were not able to realize their coal fired power projects. At the same time, the strong local cultural embeddedness of coal mining explains the persistence of the incumbent mining industry. He reminded the audience that there is not one form of dialogue but a variety of participatory and dialogue-oriented formats. With those manifold processes also many important actors should be integrated such as local politicians, media, and universities. Asked for good transition practices, Sascha Müller-Kraenner draw attention to structural changes in eastern Germany where, in a process of trial-and-error, regional science hubs emerged in the past two decades. He also pointed to Bavaria which transformed from an agricultural economy into a high-tech biotechnology site – steered by governmental policies.

While in the discussion, the role of international norms was confirmed as an important driver for change, Sascha Müller-Kraenner argued that their effect may be limited in case they produce low acceptable results. Thus, to him, participatory approaches to understand and integrate regional interests and cultures are indispensable – despite the importance of international agreements.

Kerstin Tews gave a short update on the latest fundamental shifts of the Renewable Energy Law in Germany. It gave prove that governmental policies are an important institutional factor shaping opportunities for challengers and incumbents pursuing their strategies. The instrumental shift to an auction scheme will influence the actor-constellation and participation in the renewable electricity market: it will diminish the possibilities for risk reduction for those actors who cannot diversify risks. In this regard, the reform may further lock-in the effects that Sandra Wassermann and her colleagues analysed in the case of direct marketing where some bigger municipal utilities further strengthened their market position and smaller challenger actors run the risk of being crowded out of the market. The recent reform will generate higher transaction costs for investors and may slow down the process of decentralization due to spatial concentration (including the appearance of side effects of hot spots of generation such as lack of acceptance problems, etc.). Kerstin Tews concluded by emphasizing potential trade-offs between different goals of the energy transition (achievement of targets, cost-efficiency, and maintenance of actors' diversity).

The discussion pointed to the importance of finance in terms of realizing low cost options and access to finance. This is especially relevant for renewable electricity challengers who were traditionally rather lacking knowledge in finance issues. Finance skills will be increasingly important with every amendment of the Renewable Energy Law. However, this applies especially to the German case since the potential for new renewable installations in other countries such as Norway is rather limited.

Throughout the workshop, the influence of interests and power versus institutional factors, but also their interplay, was discussed. In addition, the role of ideas was explicated. It was shown that incumbents and challenger use storylines to find and sustain support for their interests. It will, however, require some further investigation to determine in particular cases what factors unfold more explicatory power: is it the strongest storyline rather than institutional factors or actors interests that explain the success of incumbents/ challengers?

### **Breaking-up or building lock-ins?**

The question of whether or not lock-in effects are desirable was raised several times especially in the discussions. On the one hand, lock-ins inhibit the diffusion of innovation and can therefore be understood as a hurdle for transformation processes. On the other hand, in the light of new challenges e.g. climate change, lock-ins may also lead to innovations within the established technological application. CCS would be such an example. Path-dependencies provide also a certain stability which is needed for investments and encourages efficiency gains within a chosen technology path.

It was also pointed out that lock-ins may occur in various forms, e.g. as institutional, technological, or, ideational lock-ins. In this context, it was raised that legal systems can be regarded as inhibitory lock-in for they represent a certain way of thinking and making use of a language that is not easily accessible for non-lawyers. Thus, similarly to the argument that engineers frame problems differently compared to economists, this is also true for lawyers. In incumbent-challenger dynamics, this can become especially meaningful if large incumbent companies with their own legal departments are able to postpone processes and thereby slowing down transformation processes as the example of RWE and the Ahrtal-Werke showed.

### **Conclusions: what can governments do?**

Governments will have to acknowledge trade-offs in energy transition processes. They will have to take informed decisions supporting actors, organizing participation processes and making sure that decision will not lead to unsustainable lock-ins. This is especially taken up by the concept of reflexive governance: governments need to act and react flexibly to societal needs. This does not, however, mean that path dependencies and lock-ins are always unwanted. Instead, they are also offering necessary stable framework conditions for actors (to invest). Since there is a diversity of lock-ins and a changing role of actors being – depending on the context – potentially both, incumbent and challengers, each lock-in effect needs to be addressed individually. Governments need to be aware of the many natures and dimensions of lock-ins, e.g. legal hurdles, technological paths, ideational barriers. They will have to design framework conditions accordingly. It is also important, that public administration and governmental actors take into account cultural factors and design participation processes accordingly. This has become especially obvious in the case of coal-mining in Germany as Sascha Müller-Kraenner pointed out. It can be understood as a cultural practice. Any transition process will have to compensate for the losses that are imposed on whole regions.

### **Outlook: Future research**

The workshop also drew attention to research gaps and requirements for further research on that topic.

Analytical approaches should account for differences between countries as well as for local perspectives. Claudia Strambo and Aaron Atteridge presented an analytical framework that integrated different bodies of literature in order to account for differences across cases, including geopolitics, international political economy, and transition management. Similarly, ideas, institutions and interests enfold explanatory power and will have to be set in the context of multi-level governance, structure-agency interplay, as well as historical developments and path dependencies. In addition, they observed that fossil fuel production is rarely put in the centre of research activity.

In order to better understand conflict lines and the context factors influencing incumbent-challenger dynamics, theories of fields turned out to be useful and could be further explored.

The examples discussed at the workshop showed that a variety of factors – political institutions including the legal framework and access to decision-making, storylines and ideas as well interests and resource distribution unfold explanatory power. However, the role and weighing of each factor, e.g. the role of public demand and local protests on the direction of energy transitions, still needs to be further investigated. Similarly, the interplay of these factors and the potential for and conditions of learning are to be understood more thoroughly, e.g. to what extent do the models from somewhere else still have a chance to be brought in from the bottom-up?

In a concluding remark, Miranda Schreurs reminded the workshop participants that energy transitions happen in a global system. Sometimes, systems that were good in innovation have later stopped being innovative. Sometimes, incumbents were slow to see things, and then they learned to get better. And sometimes, incumbents in other countries learned from incumbents in Germany. This is especially relevant in a world of transnational companies.