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Translating bioenergy policy in Europe: Mutation, aims and boosterism in EU energy governance

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A B S T R A C T

Supranational policies move from their places of spatial design towards domestic and local materialization, a journey on which policy programs are subject to multiple loops of translation in various spatial contexts. These loops involve shifting rationalities, historically formed path dependencies and distinct constellations of stakeholders, all of which affect the means of their implementation within national and regional socio-spatial environments. This article evaluates the complexity of governance assemblages based on the translation and mutation of European Union bioenergy policies. As part of the transition towards a low carbon economy, EU member states have been given the responsibility to choose their own approaches within the common EU 2020 renewable energy framework. While EU documents highlight energy security, energy union and sustainability, a contested policy translation process reformulates governance means and aims along the way and sometimes causes the generic targets to vanish. Thus, context dependent decision making assemblages are portrayed as shaping the policy process and the advancement of renewable energy in various directions. The article bundles the empirical results of case studies in Finland, Germany, Estonia, France, and Norway, as well as EU institutions in Brussels to conceptualize peculiarities that guide policy design, translation and boosterist processes in transnational governance.

1. Introduction

As a part of the EU transition towards renewable energy systems and a low-carbon economy each member state can choose their own approaches within the common EU 2020 target framework and the 2030 energy strategy. EU 2020 low-carbon policy documents highlight security of supply, sustainability of the energy sector and internal (energy) market development as key targets (RED, 2009; EC, 2010; Scarlat et al., 2015). Additionally, EU environmental policy is one of the main drivers for the development of a common EU renewable energy policy (Solorio, 2011). Nevertheless, when moving from EU nodes of policy design towards materialization policy programs are subject to multiple loops of translation and shifting rationalities concerning the implementation of objectives. Not only are there frequent shifts towards economic aims (Kortelainen and Albrecht, 2014) but the aims, approaches and results of policy also change in various settings (Albrecht, 2015, 2017; Kortelainen and Rytteri, 2017).

Consequently, a wide variety of more or less ambitious national and regional approaches, programs and policies have emerged (Albrecht, 2015, 2017; Sarrica et al., 2016; Lindstad et al., 2015), with some entities actively attempting to “boost” their sustainable credentials (e.g. McCann, 2013) while others merely invest minimal efforts. The result is a heterogeneous and rather unstable space and understanding of EU renewable energy governance, which is too often constituted as normative accounts on best-practices, generalized barriers or scale bound institutional approaches in academic research (e.g. McCormick and Kåberger, 2007; Plieninger et al., 2009; Scarlat et al., 2015). Although these accounts contribute to the understanding of the processes which constitute renewable energy governance or portray the impacts of policy programs (e.g. Lupp et al., 2014; Lindstad et al., 2015), they lack a conceptual generalization of relational governance processes and fail to embed accounts within the shifting properties of spatiotemporal settings between the nodes of policy design and sites of materialization and vice versa.

Our study focuses on the conceptual generalization of governance processes within the EU policy framework and thereby moves beyond a single case, program or fixed level approach. We employ an approach which is framed by social scientific trends on policy transfer, mobility and mutation in political geography (e.g. Dolowitz and Marsh, 2000; Bulmer et al., 2007; Peck, 2011; Peck and Theodore, 2010, 2015; Clarke

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et al., 2015; McCann and Ward, 2012). The socio-spatiality of policy mobility is dealt with by deploying the concept of translation loops, contextual multi-stakeholder interactions which transport and affect policies as they move within governance spaces (Kortelainen and Albrecht, 2014; Albrecht, 2017). Translation loops enable us to simultaneously study the more official interactions between various political entities as well as go beyond the bureaucratic sphere and interpret mobile policies as open and relational processes. It displays the interactions of various actors and their socio-spatial contexts as elemental aspects of policy processes and their mobility.

With an empirical foundation based on a variety of national and regional bioenergy policies and development approaches in five countries: Finland, Germany, Estonia, Norway and France, as well as EU decision making contexts in Brussels, this study not only presents different cases and approaches but also places them in the transnational context of EU renewable energy governance. Thus, with a critical perspective on the rationalities of policy design and materialization, the aims of the paper's conceptualization of governance processes are twofold. First, it discusses policy mobility and mutation processes through a transnational socio-spatial perspective to provide an improved understanding for the theoretical and political implications of EU policy design and materialization. Second, based on expert interviews in the five countries and at the EU level, we evaluate translation processes and display the interactive processes and relations between various loops of policy design and materialization. This provides different examples of the effects of policy implementation for the aims, materialization practices and direction of feedback for EU energy policy.

Additionally, we emphasize the conceptualization of ways that ideas, best practices, economic interests and other aspects affecting policies are actively made mobile by different translation processes. We distinguish several such means, like feedback, contestation and boosterism (Kortelainen and Albrecht, 2014; McCann, 2013), that derive from within the various processes of translation and mutation. These relational aspects play an important role in the processes of uploading, downloading, transferring and mobilizing ideas to adjust policy design (Bulmer et al., 2007) and they improve conceptual understanding of energy governance within the EU and beyond.

2. Methods

We study energy policy from a social-scientific approach rooted in critical geography to shift the balance in predominantly natural science and economy based energy research (see Sovacool, 2014). Therefore, the empirical data of this study is based on multiple qualitative case studies and rounds of interviews conducted from 2011–2015 in Finland, Germany, Estonia, France, Norway and with EU level actors in Brussels (see Fig. 1). This selection is not intended to supply a comprehensive comparison of EU member approaches; rather, it portrays EU bioenergy governance based on examples from geographically, socio-economically and politically diverse cultures to better understand policy translation. Germany is a federation, Finland represents Nordic conditions, Estonia is a post-socialist society, Norway is a non-EU state and Reunion Island (France) provides an example from the EU's extremity. Case selection was also motivated by the authors' expertise on these particular regions.

Together, the empirical data consists of 115 qualitative interviews (Fig.1.) with "interpretively competent voices" (Holstein and Gubrium, 1995, 20), of which 110 are face to face and five phone interviews lasting from 20 min to three hours. Additionally, empirical data derives from participation in 14 bioenergy policy related conferences, seminars and workshops in Finland, France and Brussels. The interviews were conducted with actors from government institutions, NGOs, industry associations, lobby groups, local entrepreneurs, bioenergy development schemes and administrative bodies as well as with officials from different EU institutions. The methods of the individual case studies are described in more detail elsewhere (Albrecht, 2015, 2017; Kortelainen and Rytteri, 2017; Lukkarinen, 2015; Sawatzky and Albrecht, 2017). In combination with secondary sources, such as policy and legal documents, academic literature and other documents from the respective regions, energy sectors and beyond, this data set provides the study with a solid foundation from which to draw conceptual generalizations (Yin, 2006) on EU bioenergy governance.

3. Governance assemblages of policy mutation and socio-spatial translations

EU policies possess power-topologies, which refers to the relations that enable their influence to be felt at a distance. Power-topologies "come into play when the reach of actors enables them to make their presence felt in more or less powerful ways that cut across proximity and distance" (Allen, 2011, 284). Topologically interpreted, power is a relational phenomenon generated through practices and relationships within networks which enable some actors and policies to reach and be present in distant places. Transnational policies and governance exist only if their presence is felt in numerous distant places. Their power-topologies (i.e. their abilities to reach distant destinations) are based on 'far-reaching' relations which require entities that circulate and maintain these relations. This means, firstly, that policy itself has to be transported over long distances and, secondly, that this task is carried out by circulating multiple texts, individuals or other intermediaries carrying the rules, standards and ideas among constituents.

To possess such power of reach EU renewable energy policy has to be mobile to deliver certain generic ideas to variegated socio-spatial realms, but it also has to simultaneously enable the translation of policies as they move from policy design to materialization and vice versa (McCann and Ward, 2012; Peck, 2011; Kortelainen and Albrecht, 2014). Political documents acquire problems and representations, as well as claims made for and about them by different actors. Contextual stakeholders recast these claims as questions and positions, interpreting and converting them to decisions, programs and instruments (Freeman, 2009). Mukhtarov (2014, 76) defines policy translation as, "the process of modification of policy ideas and creation of new meanings and designs in the process of the cross-jurisdictional travel of policy ideas." In other words, it refers to the mutation of traveling policy when common definitions of the policy instruments, as well as the roles and identities of actors, are negotiated and settled in different contexts (e.g. Clarke et al., 2015). This includes the setting of objectives and calculations which are carried out in order to reproduce the original policy ideas while meshing with the requirements and problematizations of each context. Policy makers and advocates aim to make sense of policy and seek to make it meaningful and workable. Moreover, policy has to be socially embedded in the target audience by connecting it to particular problems or opportunities within each locality, region or nation (Jones et al., 2014; Armstrong and Bulkeley, 2014; Albrecht, 2017).

Both political science researchers and geographers have studied ways how policy moves and transforms in space. Having its roots in policy diffusion and lesson learning studies, policy transfer research in political science since the 1990s has focused on how policy-related ideas, systems and institutions developed in one political jurisdiction are transported to another and how they transform along the way (e.g. Dolowitz and Marsh, 1996; Benson and Jordan, 2012). More recently, political geographers have criticized conventional transfer studies for neglecting the social context of policy making and developed a relational notion of political mobility and mutation which is a social-constructivist concept and highly sensitive to the constitutive roles of spatiotemporal contexts (e.g. Peck, 2011; Cochrane and Ward, 2012; Peck and Theodore, 2015). Although the two traditions have a conflicting relationship, both policy transfer and policy mobility refer to processes in which the ideas, institutions and programs developed in one political system and spatial context are fed into and translated by another system and political landscape (Dolowitz and Marsh, 1996;

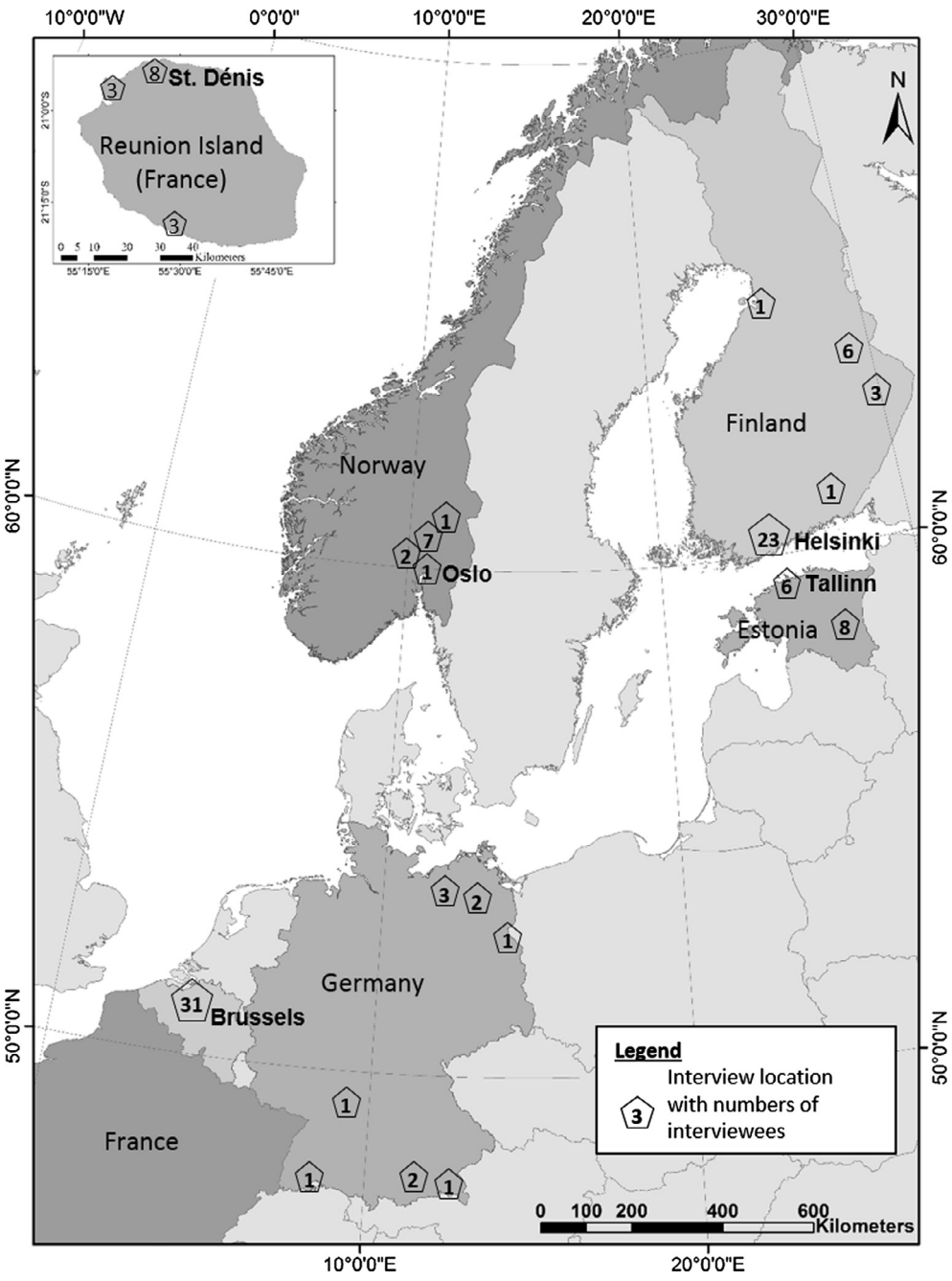

Fig. 1. Location of case studies with numbers of interviewees (background map data: ESRI).

Peck, 2011). Our approach stems from the relational concept of policy mobility and mutation but we see an exclusive confrontation as unfruitful and find that several concepts developed in the policy transfer studies are helpful for our research.

This study also overlaps with another broad field of EU policy and governance studies in political science. There is an abundance of literature on Europeanisation concerned with the incorporation of the EU's political discourses, regulations, support schemes and institutions in domestic policy processes (Moumoutzis, 2011). Various studies suggest convergence instead of divergence in the national implementation of EU renewable energy policies, which seems to be at odds with our basic assumptions (e.g. Kitzing et al., 2012). For instance, Fitch-Roy (2016) shows that there is a policy convergence process going on in offshore wind governance where member states have adopted similar governance arrangements. Bioenergy policies also exhibit a convergent tendency as similar feed-in tariffs, investment grants and tax incentives are deployed in different member states. However, upon relational scrutiny the picture looks quite different if we consider how policies interact in spatiotemporal contexts with variegated histories, institutions, actors and power relations. In this article, policies are approached as contextually embedded relational practices which create distinct policies favoring and promoting different kinds of programs in terms of technologies, energy sources, scale and mix of stakeholders.

Political science scholars have also developed the concept of multi-level governance to better understand the spatial complexity of EU policy making (see Faludi, 2012; Stephenson, 2013). However, echoing its critics (e.g. Faludi, 2012), we believe that deploying a multi-level governance concept brings with it the danger of falling into a territorial trap, a way of conceptualizing societies predominantly through territoriality and seeing territories as containers of societies and power. By referring to policy mobility and mutation literature, and deploying the concepts of assemblage and power topologies, we aim to portray a

relational picture of EU policy and emphasize a more complex and open spatiality of policy making and political power in which nested territoriality is a very important aspect (e.g. Peck, 2011; McCann and Ward, 2012; Peck and Theodore, 2010, 2015; Clarke et al., 2015).

Policy mobility and mutation processes are conceptualized here as a hybrid assemblage consisting of a variety of translation loops, successive rounds of multi-stakeholder interaction which design, adjust, materialize and contest policies (Kortelainen and Albrecht, 2014). Loops contain shifting governmental and stakeholder rationalities as well as unequal power relations which play a key role in how the EU bioenergy policy mutates and is felt in each geographical context. An assemblage is a hybrid gathering of actors and things creating a more or less coherent system of an evolving and fragile collective with no clear center or boundaries and whose power and agency are distributed among its constituents in a heterogeneous manner (Anderson and McFarlane, 2011; McCann and Ward, 2012). EU policy undergoes a process of reinterpretation and transformation on its transboundary and cross-scalar journey. In addition to the translation of policy objectives, it also includes feedback, contestation and continuous processes that feed-in partially competing governmental and other rationalities into the different stages of policy design, adjustment and materialization (see Fig. 2).

Although the regulatory properties of EU policy design result foremost in a cyclic policy mutation/translation process (Kortelainen and Albrecht, 2014), it is a relational governance process wherein policy mutation is driven by the different translation loops that (re-)produce a hybrid EU bioenergy policy assemblage. This changes our understanding of the governance process from one which moves through a multi-level/scalar process of fixed or territorialized properties to a heterogeneous and shifting field of play. Echoing Allen and Cochrane's (2007) concept of regional relational assemblages, we argue that translation loops of EU bioenergy policy are (re-)produced by political and social processes that stretch beyond their territoriality or theoretical institutional reach (see also McFarlane, 2009). Furthermore, they include non-governmental actors who are active generators of policies and whose interests stem from practices and spaces related to the policy in question.

To understand governance and its mutation processes the role of translation loops in policy design, as in Brussels, national policy making, regional planning and policy materialization practices (e.g. energy-production plants or farms) must be conceived of from a hybrid perspective. Evaluation of translation loops facilitates access to a thorough understanding of varying importance and interpretations of sustainability in different approaches and consequently enables inferences on the sustainability of EU energy policy itself. While Solorio (2011) sets "Green Europeanisation" among the core aspects of EU energy policy development, his study of its legal design is locked within the formal processes of EU level legislation and fails to follow policy through to implementation (McCann and Ward, 2012). It consequently falls short in addressing the sustainable aspects that derive throughout the translation, mutation and materialization processes of EU energy policy. It also fails to determine the relative importance of the trinity of EU energy policy (security of supply, internal energy market, sustainable energy) as the policy is translated within the EU's hybrid energy governance assemblage. Examining multiple translation processes provides additional insights into the competitive feed-in of governmental rationalities in loops of policy design and translation. It therefore provides another important aspect that (re-)produces EU energy governance as a relational assemblage which must be accounted for in policy mobility processes.

Regarding the various pathways chosen by member states, regional and local entities, we find the concept of environmental policy boosterism as employed by McCann (2013) to be helpful in evaluating aspects of policy mobility related to feedback, contestation and the uploading of ideas (Bulmer et al., 2007) with their ability to alter policy design. Policy boosterism differs from the related notion of political entrepreneurship in political science literature (Mintrom and Norman, 2009). Both concepts emphasize active dissemination of policy ideas,

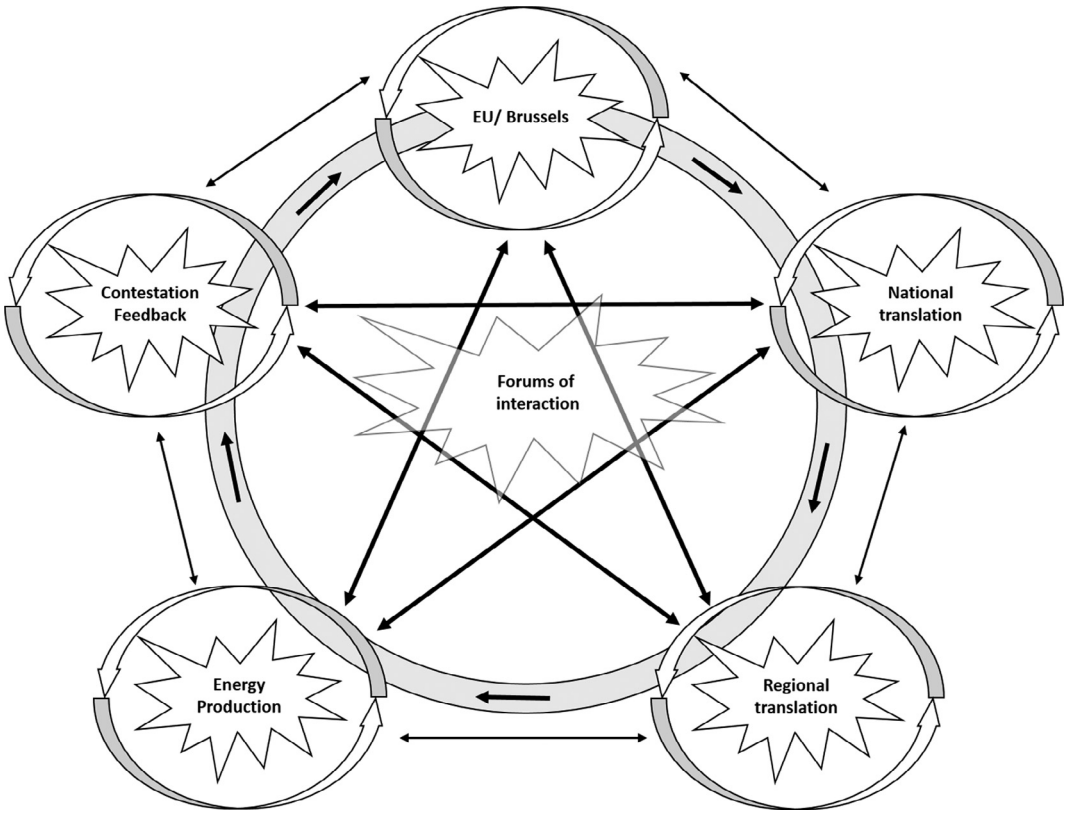

Fig. 2. EU bioenergy governance assemblage (based on Kortelainen and Albrecht, 2014).

on the one hand, and aspirations of political actors to improve their status, on the other. However, as a geographical concept, policy boosterism focuses on policy mobilization as an attempt to also burnish the image of the place where policy was developed. McCann (2013) derives this concept from David Harvey's studies on new boosterism (1989) and employs it within the context of urban sustainability and its role in policy mobility. Simply put, environmental policy boosterism is an action that aims to facilitate the mobility of an entity's own approach to other places. Thus, it not only includes branding the place of origin as an environmental best-practice but also aims to establish its actors as experts in the field in question (McCann, 2013). This plays a role in facilitating policy mobility and is an important aspect of policy mutation in relation to geographically differentiated translation processes (Kortelainen and Albrecht, 2014), particularly feedback, transfer and uploading. For this purpose the concept needs refinement to be applicable beyond urban environments (e.g. McCann, 2013; Peck and Tickell, 2002; Temenos and McCann, 2012) to policy relevant settings and their approaches in general, such as bioenergy regions or national policy translation loops.

Many locally embedded bioenergy projects are aimed at and affect rural environments, which are key players in the EU bioenergy governance assemblage as the foci of policies, resource areas and examples of best-practices. They also function as spaces of knowledge production and learning for actors in policy design, as well as actors facing the challenges of implementing and translating policies and programs (Armstrong and Bulkeley, 2014). The challenge of a sustainable and low-carbon future is frequently promoted as a global one (RED, 2009; EC, 2011; UNFCCC, 2015), but compared to McCann's (2013) urban global boosterist approach our perspective requires more attention to multiplicity and the local socio-spatial relations that are entwined in these governance processes. Aside from the properties attributed by McCann (2013), to be successful boosterist parties must cater to the shifting capabilities of their targets of policy design deriving from the internal heterogeneity of different translation loops (Albrecht, 2017). Concerning sustainability, an important part of evaluating the EU energy governance assemblage is understanding the governmental rationalities underlying the boosting party's aims as well as the accepted evaluation criteria of feed-in best practices aimed at altering policy design.

The following section will provide some examples of translation processes that constitute important parts of the EU bioenergy governance assemblage and thereby provide a framework to conceptualize EU bioenergy governance processes. This is not intended as an exhaustive portrayal of EU bioenergy governance, an aim not feasible from a relational perspective (e.g. Massey, 2005), but it does provide empirical data to display an overall picture of translation processes and how they shape EU bioenergy governance and policy.

4. Variegated policy approaches

This section presents different policy translation loops, mutation processes and attempts at bioenergy policy boosterism in five European countries that are bound to the RED policy framework. It is important to note that despite the possibility of achieving the emission reduction targets or renewable energy targets through cooperation mechanisms (RED, 2009), most EU countries and all of the cases presented here chose to achieve their objectives using independent approaches. While this shows the importance of domestic loops in translating EU policy based on their own rationalities and trajectories, it also highlights the competitive setting to portray one's approach as successful and worth promoting in consecutive rounds of policy alteration at the EU level for the 2030 strategy or other related legislative instruments. Thus, the aim is to impel the initial EU framework towards the translating entity's objectives and rationalities.

It must also be noted that power is not equally distributed among actors involved in policy development in Brussels. For example, Saurugger (2008, 1283) states that the lack of regulations concerning access to the European Commission, "seems to reinforce a situation in which groups possessing financial and social resources are privileged whereas the voices of small interest groups, be they general interest or small business groups, are not heard quite as loudly in the consultation process," which leads to a, "somewhat skewed 'organised civil society' involvement in the policy-making process." Our case studies indicate that a similar situation occurs during national and regional policy translation where large corporate actors appear to wield more power in influencing materialization.

4.1. Spatial design of RED

EU bioenergy policy consists of a complex constellation of actors, support mechanisms, regulation and contextual elements (for an overview see Scarlat et al. 2015). In the policy's core there are variegated supportive instruments, including investment grants, tax exemptions and feed in tariffs, which are promoted to member states in order to enhance bioenergy projects. Additionally, the policy includes more restrictive regulatory aspects, such as sustainability criteria, which aim to set certain limitations and preconditions for the utilization of energy resources. These policies are recorded in various policy documents of which RED, the main focus of this research, is the central and guiding pillar.

Supranational policy instruments, like EU directives, are not designed for a distinct jurisdiction or locality but are made to be implementable in all member states and vastly different spatial contexts. From this perspective the EU can be seen as a huge policy mobilizer which absorbs experiences, experiments and interests from all over Europe, designs mobile policies within its institutions and transports them through its system of political logistics to all parts of the union. It takes great efforts for EU institutions, especially the Commission, to formulate policies which are able to travel to and be implementable in various parts of Europe. These efforts are the spatial design of policy, meaning the ways how different spatial contexts are taken into account in the formulation of supranational policy.

The EU Commission is the node of directive design because its Directorate-Generals (DG) coordinate the process, collect information, consult with stakeholders and formulate texts to produce legislative documents. Bioenergy policy design is led by the DG Energy but the spectrum of actors involved is much larger. This translation loop attracts actors interested in bioenergy governance from all over the EU and beyond. In other words, the pan-European bioenergy governance assemblage is represented in Brussels because physical presence is the most efficient way to affect the EU's policy design processes (see Kuus, 2011). In addition to Commission officials, important actors of the assemblage include, for instance, (bio)energy producer associations (e.g. AEBIOM), pulp and paper producers and their associations, forest owner associations, ENGOs as well as national and regional governments from countries where bioenergy is an important issue. While the assemblage is based on common interest in bioenergy, it does not have a common goal because actors often have conflicting aspirations (Rytteri and Kortelainen, 2015). All these actors contribute to policy design through governmental negotiations, public hearings, conferences and direct lobbying, bringing information from and linking the process to actors and places all over the EU. The efforts of various stakeholders and their contributions are vital to spatial design. As an official at the DG Energy explained:

We go to conferences, people come also to us to have information, chat, like what we are doing now. It's a daily process I would say. Be in contact with stakeholders to really understand the concerns, the technical issues, the political issues and it's not only the private sector, also the public sector.

Furthermore, spatial design is conditioned by various EU treaties (Treaty of Lisbon, 2007; OJ C 326, 2012) which guarantee member states shared powers and certain national competences in EU policies.

Within this frame, a directive is designed to be an open instrument (Bulmer et al., 2007), leaving member states the power to select particular pathways towards each policy target. If we take the example of RED, which an official from the DG Climate described as "*our bible*" in bioenergy governance (personal communication, 2014), the mobility and contextual translation of its political ideas are enabled by three built-in properties. First, there are coercive governance elements consistent with rules and regulations, such as the legally binding renewable targets or definitions of renewable energy sources. They are indisputable norms or standards and are meant to carry the key political ideas and targets to all parts of the EU unchanged. Second, there are voluntary governance elements based on soft incentives, like policy suggestions about feed-in tariffs or subsidy schemes. These are more fluid and optional building blocks which can be deployed in domestic implementation of the directive. Third, there are, what we call, the empty governance spaces where policy lacks concrete measures as it converges with member states' competences and can therefore be filled in by national politics (e.g. Bulmer et al., 2007; Kortelainen and Rytteri, 2017). Thus, policy is designed to be mobile due to EU treaty-based competence sharing legislation and subsidiarity (EUR-Lex, 2017) but also to be applicable in a wide variety of social, political and ecological contexts.

The discussion below aims to exemplify how RED has been translated in national bioenergy policies and local practices in various contexts at different spatial scales. The example countries and regions are not presented to provide a comparison between member state approaches but to demonstrate contextual translations of the EU bioenergy governance assemblage.

4.2. Finland: All about wood

The share of RES in Finland is comparably high to most EU member states (Table 1). Lacking the hydropower capacities of its northern neighbors, Finland's renewable energy production has relied heavily on forest-based bioenergy (about 26% of total energy production), especially on energy produced in forest industrial processes and CHP (combined heat and power) plants. In most cases wood is co-fired with fossil fuels, mainly peat, which is a rather abundant and well-distributed but contested natural resource in Finland, or coal. The new national energy and climate strategy (TEM, 2016) formulates the pathway until 2030 and further solidifies the role of peat in energy policy, but it also initiates plans for the phase-out of coal. Furthermore, Finland is currently constructing new nuclear power plants with the aims of lowering electricity prices for industry and improving energy security by reducing dependency on electricity imports, especially from Russia (Kojo and Litmanen, 2009).

The power relations in the Finnish loop of RED translation have historically been characterized by the strong position of industrial forestry. Energy policy decisions to award permits for the construction of new nuclear power plants and expand bioenergy production in the mid to late 2000 s were the result of lobbying efforts (Kortelainen and Rytteri, 2017). Forestry interests have played a dual role in framing national bioenergy governance by blocking policy instruments which would have weakened the competitive position of pulp and paper mills on wood markets in relation to energy production, and simultaneously emphasizing industrial forestry's position in bionergy production through innovation and investment activities in bioliquids and other more novel products. Consequently, centralization of the energy system has been favored over the decentralized options available through bioenergy production and renewables (Kortelainen and Rytteri, 2017; Lindstad et al., 2015).

Specific policy concepts designed to promote the industrial definition of bioenergy to avoid disturbing the existing forest industry have been central in the advancement of forest bioenergy use. The principle of 'reserve biomass' is a tool developed by forestry researchers to represent the maximum amount of wood that can be economically and ecologically sustainably utilized in forests (Åkerman et al., 2010). In natural resource governance the readily available forest resource (mainly consisting of leftover branches and stumps) has been interpreted as an untapped renewable energy potential to be harnessed. The general idea of the established support mechanisms is to frame bioenergy production as a sub-branch of the forest industry, avoid pricing competition and enhance economic framing of sustainable forestry, which has raised criticism from forest-owners and energy entrepreneurs who advocate alternative definitions of bioenergy (Rytteri and Lukkarinen, 2014; Lukkarinen 2015).

Furthermore, the main calculative assumption behind the Finnish bioenergy rationality is its reliance on the definition of bioenergy as a carbon neutral resource, which is a potential source of friction. Since the combustion of biomass and related land-use changes cause direct and indirect carbon emissions, the issue of carbon neutrality has been strongly contested since the establishment of RED. Finnish stakeholders in national delegations and advocacy associations have put great effort into maintaining the status quo, but the EU consensus has recently moved closer to preserving biogenic carbon stocks and monitoring actual carbon fluctuations in the European Commission's "Winter package", which sketches an energy governance framework until 2030 (EC, 2016), and the amendment of LULUCF (land use, land use change and forestry) rules. Overall, the changes in the status and definition of bioenergy on the EU level might undermine Finnish reliance on bioenergy and shift the rationality of national renewable energy policy.

Table 1
RES 2020 targets, RES 2013 share and national energy sector focus of NREAPs (EC, 2017; SSB, 2017).

Country	Estonia	Finland	France	Germany	Norway
2005 RES share	18%	29%	10%	6%	60%
2015 RES share	27.9%	39.5%	14.5%	14.5%	69.4%
NREAP 2020 RES target	25% (863 ktoe)	37% (10700 ktoe)	23% (35711 ktoe)	18% (35492 ktoe)	68% (15501 ktoe)
Bioenergy share: RES sector 2020 targets					
Heating & Cooling	100%	91%	83%	79%	73%
Electricity	18%	39%	11%	23%	0.5%
RES 2020 target sector focus: domestic consumption & (total RES consumption)	H & C: 38% (~70%)	H & C: 47% (~54%)	H & C: 33% (~55%)	E: 39% (~48%)	E: 113% (~85%)

4.3. Germany: Bioenergy transitions "…again a step ahead…"?

Despite the comparably low share of RES in its energy mix (Table 1), German political thought regards itself as a front runner in European RES development. Based on the ambitious *Energiewende* project, initiated by the Green party in the early 1980s and institutionalized in the Red-Green government coalition in 2001 (Mautz et al., 2008), it has strongly influenced EU renewable energy policy design (e.g. RED, 2009) and boosts its credentials in the field of climate-friendly energy. Acceptance as a successful model throughout Europe enables German actors to mobilize some of their policy translations within and beyond EU boundaries. Yet, dents have appeared in the green image and calls for cost reduction of the *Energiewende*[1] highlight the dominance of economic rationalities in the national translation process compared to the initial environmental goals (e.g. Lupp et al., 2014). Adjustment of Germany's energy policy within the RED translation process has contributed much to the impressive growth of renewable energy

[1] Speech by Sigmar Gabriel, 16.04.2014. Alterations in terms of reducing costs for consumers and industry (e.g. Renewable energy tax reduction) and not in terms of stricter environmental or sustainable considerations.

production, 40 GW to 93 GW between 2008 and 2014 (BMWi, 2015). This has created spin-offs whose actors further translate policies, materializing them in a variety of socio-spatially embedded local approaches, such as citizen-heatings, bioenergy villages and regions (e.g. Albrecht, 2017; Jenssen et al., 2014; Wüste and Schmuck, 2012), many of which are promoted as best-practices (e.g. FNR, 2008, 2010; BMELV, 2012).

Based on Germany's institutional constituency, German federal states not only fill in the empty spaces left by EU and national policy but directly upload the trajectories of their own translation processes as a feed-in to EU and German energy policy. Policy mutation thus functions not as a multi-level process from EU to local but in a relational shifting manner between various translation loops. In Germany this hybrid connectivity between translation loops is further displayed through the translating and boosting activities of entities active in materialization. For example, the Bioenergy Region Achental (Albrecht, 2017) is operating under self-proclaimed mottos such as "…again a step ahead" (Achental, 2011). Well connected to political decision making on state (Bavaria) and national levels, it boosts its own translation of the German *Energiewende* and is an internationally renowned best-practice of local, wood based energy transition. Prominent visitors, such as Al Gore and international energy tourist groups, enable the mobility of its approach and establish it as an expert institution to be respected. Simultaneously, the region's approach is employed by Bavarian politics and through its activities in the German government's Bioenergy Region competition as a best-practice for EU energy governance (e.g. BioRegions, 2016). Despite many positive developments in the region, the fact remains that its own energy provider obtains most of its wood from much criticized Bavarian state forests (BR, 2014) and rejections of outside criticism by its officials (e.g. Albrecht, 2017) are lost in translation when the approach is rendered mobile as a best-practice. The rejection of larger wind and energy grid projects, biomass potential criticism and an overall approach focused on local economic development align well with Bavarian political rationalities on energy policy materialization and situate the Bioenergy Region Achental as a best-practice widely employed to upload governmental rationalities into EU, national and regional policy design.

4.4. Estonia: Coping with post-Soviet legacies

Since joining the EU in 2004, Estonia has followed a unique path in European renewable energy policy. In the past 10 years Estonia has almost completely revised its energy legislation and market rules along with rapid construction of electricity network connections with Finland and Sweden (NREAP EST, 2010). Since 2013, the electricity market has been open to competition on the Baltic-Nordic electricity market. Estonia's translation of EU energy policy has focused on the requirements of the European internal energy market rules providing a competitive environment for renewable energy solutions to emerge, which has led to interesting developments.

In international comparisons, Estonia has been successful in meeting its renewable energy obligations (Table 1) and was the first member state to reach its 2020 target for renewable energy in 2014 (EurActiv, 2013; EC, 2015a). Renovations and investments in outdated energy infrastructure have been the key driver behind its success. The construction of modern biomass-based CHP facilities and the gradual expansion of central heating networks by foreign energy companies in the biggest cities, Tallinn, Tartu, Pärnu and Kuressaare, illustrate the pattern. These urban energy strategies also extend beyond the obvious technological shifts. Tallinn and Tartu have joined *The Covenant of Mayors* network, set climate goals for the year 2020 which reach beyond the national climate framework and promote more innovative solutions. Ultimately, the Estonian energy transition has emerged hand in hand with neoliberal infrastructure privatization programs.

However, there is a darker side to Estonia's energy system since its electricity demand has been materially met with a rare fossil fix. In 2015, 75% of Estonian energy production consisted of oil-shale (Statistics Estonia, 2017). As a result of its unique history, including a brief period of independence in the 1920s and 1930s and its role in the Soviet Union until the early 1990s, Estonian energy production consisted almost entirely of the oil-shale resources mined and processed around the city of Narva in the easternmost part of the country (Holmberg, 2008). The abundant electricity production from oil-shale guaranteed the nation's industrialization and energy independence, but has recently become an elephant in the climate change room due to CO_2 emissions comparable to brown coal. Consequently, the design of renewable energy policies takes place in relation to oil-shale's dominance in electricity production. From 2009–2012 subsidized wood was co-fired with oil-shale in electricity production to reach national RES targets, but this particular policy approach was incongruous with EU renewable energy sustainability objectives resulting in the introduction of stricter efficiency criteria in the Estonian RE subsidy system.

4.5. Norway: Bioenergy in the hydroelectric shadow

Not an EU member, Norway is nonetheless integrated in the EU's RED framework due to its EFTA membership and follows ambitious goals in its national energy strategy (Table 1; NREAP NO, 2012). Bioenergy development in Norway is confronted with a luxury problem in relation to low-carbon energy solutions since 96% of its electricity is produced by hydro-power stations, a more or less undisputed clean energy source. On the other hand, Norwegian hydro-carbon resources and the derived prosperity, even in rural areas, challenges the development of renewable energy for the sake of rural development and security of supply (Albrecht, 2015). For bioenergy development in Norway the question arises on how to fill in a governance space occupied by national energy policy translation loops largely in favor of electric solutions despite high bioenergy potential.

Heating solutions, the primary area in local bioenergy development, are confronted with a socio-economic environment that supports electric solutions based on a sector that is historically framed by an alliance between state owned hydro-power production and a mature electric appliance sector that further boosts its rationalities to national level policy makers (Albrecht, 2015). While niches and possibilities appear for bioheat, one initial translation to fill in transnational governance spaces in Norway was to create a locally sourced and produced transport fuel sector. The materialization of this translation process, a 45 million euro investment in the form of a new biodiesel plant near Oslo, was stopped dead in its tracks by new legislation taxing biofuels at the same rate as fossil fuels. The conflictual potential of this particular translation with pro-electricity national government rationalities (Albrecht, 2015) and the state's translation of supranational energy policy is seen by the actors involved as the source for this unexpected decision to counter unwanted policy mutation processes.

Norwegian translations of RED, with their focus on hydro-electric power generation, leave little space for ambitious bioenergy development, aside from the relatively small niche market of heat production. Thus, household consumption of bioenergy declined more than electricity use in the last years despite a share of 80% electric heating in households[2] (SSB, 2017). Aside from single household usage, district heat production, with a comparably minor share of approximately 20% bioenergy sources (Aanensen and Fedoryshyn, 2014), constitutes the main opportunity for bioenergy development. Yet, despite investment schemes for district heating facilities, infrastructure and resource exploitation by the state agencies ENOVA and Innovasjon Norge (see Albrecht, 2015), the lack of promotion for CHP development through national policy support hinders bioenergy from entering the electricity

[2] While 2014 was a particularly warm year, the decline of wood use in heating is not merely due to low temperatures but due to the low costs of electricity and the rise in installed heat pumps in Norwegian households (SSB, 2017).

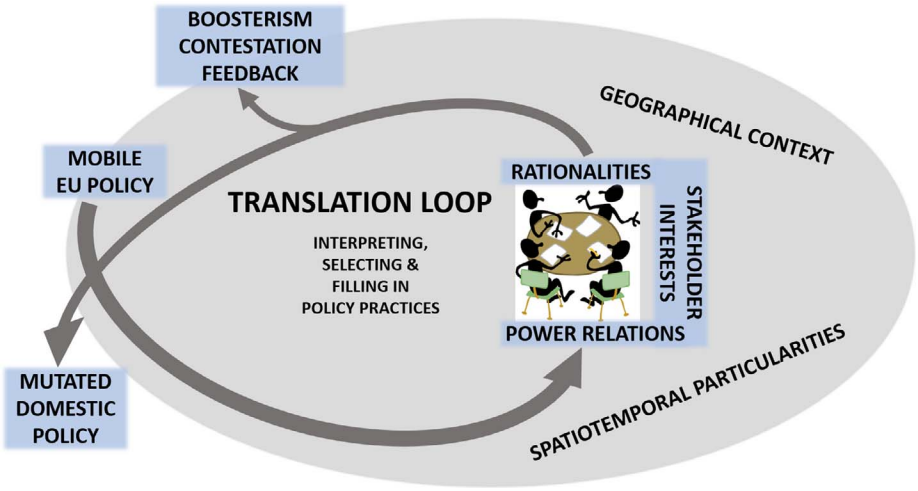

Fig. 3. National translation loop.

market and receiving support through green certificates. Consequently, bio-based CHP development is almost non-existent. This results in decreased efficiency of bioenergy production and affects the possibilities of actors who actively translate these policies into materialization practices to follow non-optimum development paths. Thus, while hydropower is a highly demanded export commodity and source of revenue for Norway, bioenergy is more a necessary addition under RED in national policy translation.

4.6. *La Réunion, France: building some savoir faire*

France has been considered a poor student when it comes to RES in the EU (EC, 2015a) and its electricity market is dominated by nuclear energy. The large investments required to operate a nuclear energy network combined with a centralized governance style have made it challenging for other energy sources to develop. However, France's NREAP (2009) mentions an array of renewable energy sources, and identifies biomass as the primary source for achieving national objectives. To reach its goals France has begun decentralizing some aspects of its energy policy and regional governments are now responsible for devising development plans to fill in empty governance spaces.

Other aspects affecting regional translations of bioenergy policy are national social justice and economic mechanisms. For reasons of equality, electricity prices are set nationally in France irrespective of varying production costs. The effects on regional translation processes from this national policy framework and its socio-spatial conditions is particularly noticeable in French Overseas Departments and Regions (DROM), which are subject to national and EU renewable energy policies. While consumers there pay the same energy prices as on the mainland, where nuclear energy and international grid connections result in cheaper production costs, local bioenergy producers have difficulties competing with the fossil fuels used on DROMs. Criticized by regional actors for some time, the French government is now reacting through the Energy Transition Act to further decentralization and bioenergy development.

Reunion Island (RUN) is a DROM in the Indian Ocean. In accordance with national obligations, it has developed a regional environmental plan which includes an energy governance committee (SRCAE, 2013). Being subject to policies designed to be mobile foremost for mainland EU territories, RUN's remote geographic location, climatic specificities, lack of nuclear energy and energy grid connections greatly affect its energy policy translations. For example, while France's national renewable energy objectives are modest in the EU context (Table 1), national law requires that renewable energy make up 50% of final energy consumption by 2020 on DROMs and RUN is attempting to become energy autonomous by 2030 (SRCAE, 2013, 6). This objective, which originated in the regional political sphere (Sawatzky and Albrecht, 2017), appears to be beyond reach as approximately half of RUN's energy is linked to transportation, a domain which the SRCAE calls for only minimal efforts.

Currently bioenergy on RUN consists primarily of bagasse and approximately 10% of households are supplied with electricity from two cogeneration (coal/bagasse) power plants. Thus, despite attempts to become a renewable energy laboratory (e.g. marine energy), bioenergy policy translation processes have focused on sugar cane based energy. The region's expertise in this particular field is in demand in other sugar cane producing parts of the world, yet domestic bioenergy development is restricted by limited surface area and a large national park (Sawatzky and Albrecht, 2017). More fibrous varieties of sugar cane could enhance local energy production (Sabatier et al., 2015), though the sugar industry contests such translations to fill in the open voids of domestic energy development due to a lower sugar content, which has lead actors to explore the possibility of importing biomass from other countries instead.

5. Discussion and conclusions

The examples above show that while Brussels is the key locus for the spatial design of EU bioenergy policy, the governance processes of EU bioenergy development and conduct are formed through a relational assemblage based on a variegated set of translations, mutations and acts of mobilization. The EU's power of reach is built relationally in each context, and the ways its policy presence and influence are felt is modified by rationalities, power relations and geographical particularities within each contextual translation loop. RED, as any other directive, is designed to be a porous and hollow policy instrument consisting of relatively fixed relations between coercive elements (national targets, definitions of RES, control mechanisms etc.) and relatively fluid relations between soft elements (voluntary guidelines, suggestions, moral anticipations etc.). These elements are accompanied by an extensive empty governance space which member states and other actors are obliged or able to fill in with specific policy measures and practices.

The simplified illustration below (Fig. 3) aims to summarize the process of how a national translation loop works as a part of the larger EU policy assemblage. The mobile EU policy enters and interacts with the national context, and governmental actors play key roles in interpreting its coercive elements, selecting feasible voluntary measures and filling in the empty governance space. However, the political process is much broader and more open because it attracts a wide spectrum of concerned stakeholders with specific rationalities, unequal power relations and often conflicting interests to negotiate, struggle and collaborate around the policy issues at hand. The loop is framed by a unique

geographical context with specific institutionalized and path dependent socio-technical networks, political and economic histories, natural environments and other spatiotemporal particularities which condition and enable the rationalities and political choices. In addition to domestic policies, the loop produces feedback for policy designers, contests the premises and outcomes of policies, and creates boosterist efforts towards policy designers and other regions.

In the remainder of the paper we will discuss the implications of these hybrid processes on EU bioenergy governance deriving from the policy's need to be mobile, the translation of policy aims and the framing of boosterist practices. Employing the concept of translation loops to study EU bioenergy policy and governance allows us to:

1. Identify the rationalities used by actors to fill in policy and create different approaches.
2. Highlights the current focus on economic goals at the expense of environmental objectives.
3. Uncover the trend of introverted perspectives and approaches in translation with the idea of becoming a 'best-practice' to be exported.
4. Study the mobility and direction of uploaded ideas and practices, which can be traced to other levels of government and different locations.

5.1. Translating mobile policy into EU bioenergy governance processes

The creation of mobile policies based on spatially designed instruments in Brussels and followed by variegated translation loops throughout Europe requires an examination of governance processes beyond bureaucratic or legislative settings (e.g. Scarlat et al., 2015; Lindstad et al., 2015). It also enables the distribution of ideas and practices deriving from different translation loops to shake off territorial and institutional constraints in their reach as they are shaped through the socio-spatial characteristics not only at the site in question but in relation to various translation processes of multiple actors (Peck and Theodore, 2015). The cases above provide us with illuminating examples of different socio-spatial conditions from which translations materialize, guided by actors who were the most successful at deploying their power and reach to influence others (Allen, 2011).

In all cases the translation processes are embedded with particular actor rationalities related to the topic of discussion in the translation loops, like pathways of bioenergy development. However, translations derive their justification from how they suit localized socio-spatial contexts. These contexts are influenced by socio-economic attributes and power relations, such as powerful pro-forestry rationalities in Finland and pro-hydroelectricity rationalities in Norway. National particularities are also shaped by historical conditioning, such as the influential green movement of the 80 s in Germany and the Soviet legacy of oil-shale production in Estonia, or particular geographical locations, as on Reunion Island. In most cases a mix of the above is the norm. The importance of these interlinked yet locally embedded socio-spatial priorities for EU bioenergy governance further portrays itself in the lack of translating EU policy jointly. Thus, while the cooperation mechanisms in RED are seen to provide a field of play to commonly translate policy with shared aims and efforts, the mobile design of EU policy, primarily its framework to be filled in, seemingly sabotages this aim by allowing parties to be largely introverted in their approaches. This is particularly the case with bioenergy governance, whose developments are less often tied to transnational grid infrastructures, and has additional consequences on what kind of policy ideas are actively practiced and mobilized by translating actors who are frequently influenced by large corporations.

Mobile EU bioenergy policy thus creates a setting where translation takes place foremost in the shadows of diverse socio-technological and cultural fixes, like hydro, nuclear, oil-shale, forestry etc. (Albrecht, 2015). While these are partially linked to certain sectoral path dependencies, reducing them to path dependent developments fails to grasp the complexity and interrelations of the processes at stake in the hybrid EU bioenergy assemblage and national/regional translation processes. While path-dependencies framed by socio-technological fixes, such as the hydro-, forest-, or sugar content foci presented above, may act as restricting barriers to policy translation, derivative approaches and mutations do create alternative spaces. The regional innovativeness of the Estonian bioenergy sector compared to the national oil-shale legacy or the slow development of a Norwegian district heating sector exemplify this. The creation of such alternative spaces does not necessarily result in improved performance, EU policy compliance or major changes to certain path dependencies. Yet, as exemplified by Finland, a reframing takes place that derives from the translation and its relational processes that enable new voices and (outside) actors to be included, if only at the local scale or in policy readjustment in Brussels.

Institutional policy translation widely takes place as a cyclic process (Kortelainen and Albrecht, 2014). However, when examining aspects of active mobilizations, such as the uploading and boosting of ideas as well as the creation of rationalities that shape translation, a relational perspective is required to understand the governance processes involved. Active mobilizations of policy ideas, such as German federal states' direct uploads to EU policy design loops or regional best-practice boosterism in Achental, which contests many of the rationalities found in the general German RED policy translation (e.g. anti-wind, grid infrastructure), display the heterogeneity of this governance assemblage. The EU's policy framework not only provides empty spaces to be filled in, it also encourages uploading as a democratic process and as a means for self-adjustment. This has additional effects on the spatial reach of policy ideas which have no reason to restrain themselves to their own or even EU territoriality. For example, the socio-spatial particularities of Reunion Island provide EU policy translations and ideas as an export commodity to other sugar producing countries thereby enlarging EU policy beyond its institutional constraints. The focus in boosting ideas through international energy tourist groups in German Bioenergy Regions or elsewhere has similar effects. To the contrary and most visibly, but not exclusively, lobbying efforts in Brussels challenge EU spatial policy design with outside ideas from Canadian or Indonesian policy/industry actors interested in bioenergy/biomass trade, for instance.

EU bioenergy policy, based on its spatially designed framework enabling mobility and fill in through translations, is prone, if not destined, to mutate in the materialization process. However, these attributes of mobility and openness also allow for translations themselves to become mobile beyond the territorial or institutional constraints of the EU and national frameworks, which enforces the spatial powers of reach for EU policy (Allen, 2011). Following this, we must ask how do these different translation processes support the initial aims of EU bioenergy policy? In other words, does the presence of the policy appear as it was intended by policy designers?

The trinity of EU energy policy aims, security of supply, internal (energy) market development, and sustainable energy production and its various sub themes (e.g. RED, 2009; EC, 2010, 2011, 2014), such as the Energy Union (EC, 2015b), are sorted, prioritized and may even vanish within the various translation processes that continuously take place. Concerning efforts to achieve the initial RED targets framed by the NREAPs, only France is considered to be lagging behind in the last EC progress report (2017), while it is thought that Estonia and Germany will surpass their final targets and Finland announced in a recent energy and climate program that it is on track to reach its targets during the current government's tenure until 2019 (TEM, 2016). Despite France being the largest producer of biomass heat in Europe, the sufficiency of its policy instruments is questionable (EC, 2015a). However, the EC assessment is largely oriented towards the raw numbers of reaching NREAP and RED targets and less concerned with how national translations pay tribute to the initial aims of EU policy. Policy translation provides ground for shifting rationalities and aims that, in turn,

may create policy mutation and affect materialization practices. Previously, a common shift towards economic priorities was detected within loops closer to materialization (Kortelainen and Albrecht, 2014; Albrecht, 2015, 2017). Our study supports these findings in several ways but also allows a deeper discussion on the effects of translation processes for EU policy aims and development.

Especially the design of bioenergy support schemes on the national scale is in many cases evidence of a political pragmatism. The material qualities of biomass has made it a more-or-less ready-on-hand resource to be utilized in existing thermal energy plants firing fossil resources, such as coal (France), oil-shale (Estonia) or peat (Finland). In this regard bioenergy has emerged as a low-maintenance solution having far better socio-technological readiness than several competing renewable energy solutions. The Finnish and French cases and, to some degree, the approach of German Bioenergy Regions also highlight the role of biomass as a tradable and tangible resource that produces markets and work-places in different parts of the value-chains. By creating support for bioenergy, the countries or regional actors translate renewable energy targets as economic opportunities, which includes the risk of neglecting aspects of sustainability (e.g. biomass potentials, food vs fuel). In a similar fashion, yet with the opposite result, Norwegian bioenergy development competes with the existing national energy structure and has been pushed to the margins by national policy translation processes.

5.2. Socio-spatial perspectives of policy mobility and mutation

The above-mentioned economic focus, largely in line with EU policy aims of market and/or rural development (e.g. RED, 2009; EC, 2011) and commonly present at the regional and local scales of bioenergy materialization, emerges in a different light depending on the socio-spatial environment that frames translation processes. As displayed by the regional experiences from Germany and Estonia, there appears to be a contrast between the effects of translating rationalities in rural and urban settings. Though the main rationality behind many regional policy translations in both countries as well as in the other case studies have been economic, the focus in the former is towards supporting existing infrastructure and actors, as is also the case of the forestry sector in Finland, while for the latter the restructuring of socio-material systems gains importance. This indicates that the lack of bio-based resources themselves encourages urban translations to be less restricted by rural pragmatism and therefore promote policy aims that contain more profound restructuring and often move beyond RED targets. The example of Reunion Island illustrates very well a translation process that emerged in an urban setting,[3] yet due to the confined character of the island is met with the realities of resource potentials and therefore struggles with materialization (Sawatzky and Albrecht, 2017).

Being supportive of EU policy aims in the realms of economic growth, bioenergy policy translation in all cases nevertheless lacks a strong cohesive component of common bioenergy markets or approaches. National and regional translations, be they urban or rural, tend to be introverted in their own spatial-design and implementation. They are extroverted, however, when promoting their solutions for integration into EU policy processes or horizontal and vertical policy boosterism. Additionally, the seemingly ambitious component of sustainability falls short within most policy translation processes (e.g. Albrecht, 2017). These aspects guide the final question addressed by this paper: what kind of pathways are promoted/uploaded by translation processes that are marked/boosted as best-practices?

The EU bioenergy policy assemblage is characterized by its capacity to transform and absorb feedback from the geographically diverse practices created during the materialization of policy. Thus, the multidirectional disposition of the policy design encourages promotion of region-specific approaches deemed successful in terms of economic, ecological and social performance. Such best-practice examples are employed by many of the studied cases to further boost their approach through direct links to EU institutions as well as by collaboration with actors in different parts of the EU. The German case highlights how the bioenergy regions have been successful in constructing a set of practices that has direct coverage on the European scale and beyond (see also Albrecht, 2017). The regions form a nexus for a specific type of knowledge about energy production, local livelihoods and sustainable environmental management promoted as readily transportable and replicable in the wider policy assemblage. Since the regions or, as exemplified above, the Finnish forestry sector's restructuring have been active in enrolling research and development resources, the boosterist agenda is not confined to bioenergy development but also contributes to the European Knowledge-Based Bioeconomy (EC, 2012). These best-practices are readily uploadable knowledge that is designed to affect the European policy assemblage in a wider sense.

However, the uploading of ideas by boosterism is not merely aimed at policy designing institutions in Brussels. The case of the Tartu Sustainable Energy Action Plan presents a model to unlock semi-large Baltic towns from fossil-energy pathways. An important aspect of regional boosterism is the proactive distancing from national level objectives that have been deemed either lackluster or problematic. Instead of relying on official measures, strong networks of cities and regions – like the *Covenant of Mayors*, of which Tartu became member of in 2014 – are increasingly important. Here, the national aims established on the EU scale are not translated as the final goal but as a point of departure. Similarly, the energy autonomy aims of Reunion Island and the hosting of French regional governments from both DROMs and the mainland to boost its approach of an innovative energy governance committee moves far beyond French NREAP translations, though there have been few repercussions on the EU level. Best-practice uploading or boosterism is a vivid part of bioenergy governance that reproduces policy mutation in the EU bioenergy governance assemblage. Yet, boosting best-practices is a competitive practice to promote, as criticized by Theodore and Peck (2015), "silver-bullets" or "policies that work" but which are primarily based on the rationalities in the translation loops rather than common EU policy aims.

Looking at the lack of collaborative policy measures in EU bioenergy governance and the economic focus of translating actors, the promotion of region or country specific practices carries certain risks for the intended aims of EU policy. These risks derive from the ways to measure the achievement of green growth in terms of CO2 savings, local added value or ambitious strategic plans in combination with weak auditing practices. In terms of environmental impacts, it appears that green boosterism in many ways focuses on green growth boosterism, with growth for national/regional businesses taking priority over more ambitious green solutions. One effect of the focus on economic translations and boosterism is the noticeable change since 2008 in the initial aims of EU policy towards a stronger focus on developing market actors and evolving aims to provide affordable energy to consumers (compare RED, 2009; EC, 2007 vs. EC, 2014, 2015b). Thus, while originating primarily from EU environmental/climate policy (Solorio, 2011), the open character of EU bioenergy policy, which allows actors to fill in the policy and boost their own translations, currently creates a bioenergy governance assemblage that promotes business driven best-practices rather than environmental ones because larger energy corporations and other economic focused stakeholders have been more successful at influencing national and regional translations (e.g. Albrecht, 2017; Kortelainen and Rytteri, 2017). While the numbers (e.g. Fig. 1; EC, 2017) indicate the success of the current approaches to transform the EU energy system, we need to ask ourselves if an approach with rather limited foci on stringent sustainability guidelines and best-practices that focus on growth rather than on the limitation of biomass can successfully create an environmentally sound bioenergy policy framework in the long run?

[3] RUN has a population density of 312 inhabitants/km^2 and is largely considered an urban environment by its inhabitants.

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