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When tensions become conflicts: wind turbine policy implementation and development in the Netherlands

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Governments all over the world experience institutional conflicts in transforming their fossil-based energy system into a more renewable one. Between national, regional, and local tiers of government tensions rise on meeting renewable energy objectives. Under the institutional arrangement of subsidiarity, decisions on renewable energy policy objectives are taken on the international level, while the implementation of policy increasingly becomes a local responsibility. In this paper, we use an institutional framework to analyze the tensions in interactions between tiers of governments on four cases of Dutch wind energy policy implementation. The analysis offers insights into how tensions emerge in top-down wind energy policy implementation in the Netherlands. Within the four cases, tensions between government tiers are found, serving to constrain local tiers of government to implement local policy and object to top-down development. The results indicate that local issues aren't sufficiently addressed in higher-tier government policies.

Keywords: subsidiarity; institutionalism; tiers of government; wind turbine development; tensions

1. Introduction

The transition from a fossil-fuelled energy system toward a more renewable energy-fuelled energy system challenges government policymaking and implementation. At the core of this challenge, tensions exist between the transition toward a more decentralized energy system and a still prevalent central energy policy approach:

- The production of energy is to become increasingly decentral and organized more at the local level: energy transition entails a change from a centralized energy system with a few large energy plants in specialized locations (such as close to large amounts of cooling water etc.) into a more decentral and interconnected local energy system, where energy production and consumption are not necessarily spatially separated (Batel and Devine-Wright 2015). Simultaneously, local governments gain more responsibilities in the implementation of energy policy.

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- Energy policymaking is mainly centrally organized: National governments take part in international negotiations on climate change action, of which renewable energy is a major part. The objectives set on this level are imposed through the principle of subsidiarity on lower tiers (e.g. within the Netherlands and Germany) meaning more responsibility for the local tier in meeting (inter)-national renewable energy objectives (Monstadt 2007; Cherp *et al.* 2018, 176)

The tensions between a decentralized and local organization of energy production and a centrally developed energy policy are visible in organizing a more decentral energy system. Lower tier governments cope with the increasing amount of land needed to produce the same amount of fossil-fuelled energy with renewable energy sources. The main reason for this higher demand for land is the lower energy density of these renewable sources, which is the amount of energy produced on a single square meter (Smil 2010). For example, a modern gas or coal plant can generate between 400 and 700 MW a year, while a modern windfarm of seven wind turbines on land generates around 3.5 MW a year. Both a modern gas or coal plant and seven modern wind turbines need the same size of land to generate this amount of MW. Thus, local organization of renewable energy production does require an increasing amount of land.

Acquiring this extra land for renewable energy production and accompanying infrastructure is a complicated issue due to the impact renewable energy sources have on existing land uses. Andrews *et al.* (2011) discusses the general impact of renewable energy sources and their land use, which comprehends siting issues of renewable energy sources near to residential areas. Ek (2005), Musall and Kuik (2011) Zoellner, Schweizer-Ries, and Wemheuer (2008), all found that land use issues associated with renewable energy development such as noise and sighting issues have a major influence on whether a project will be successful or not. Although the general public supports renewable energy, a variety of examples in different countries show that local tiers have, and are still experiencing, resistance on the scale of individual landowners and communities (Zoellner, Schweizer-Ries, and Wemheuer 2008; Loorbach 2010; Evans, Parks, and Theobald 2011; Larsson and Emmelin 2016) and other stakeholders such as (governmental) agencies (Wolsink 2007). Therefore, local tier governments become more dependent on market or high tier government-led development (Breukers 2010). Additionally, there are cases studied where local communities have welcomed renewable energy sources, but regional tier governments restricted these developments through their (inter)national objectives and their renewable energy policies (Reiche and Bechberger 2004; Michalena and Hills 2012).

In this paper, we analyze the complicated interactions between tiers of governments coping with the contradiction of centralized policymaking and local implementation of such policy on wind turbine development in the Netherlands. We focus on which tensions emerge within the institutional arrangement of subsidiarity, where decision-making and policy implementation for wind turbine development takes place on the lowest level possible (Bednar 2014). Even though the subsidiarity principle is widespread (within Europe and the Netherlands), we question that this does not clearly define what particular commitment can or should be carried out by which tier of government. The question ‘who has which agency?’ seems to be an issue for addressing land-use conflicts and other tensions when implementing national energy policy on the local and regional level (Goldthau 2014). The energy transition takes place on and

between multiple tiers (international, national, regional, and local). This multilevel character creates both a theoretical and a practical problem of who is responsible and at the same time who is capable of solving these conflicts. Therefore, the central question of this paper states: which tensions emerge between tiers of governments when local tiers of government implement top-down renewable energy policy?

To answer this question, we situate our research within the debate of the socio-technical dimension of energy transitions. This dimension focuses on better understanding and explaining the role of institutionalism in energy system changes (Goldthau 2014). We make use of an analytical framework that is derived from previous work on analyzing institutionalism in energy transitions (Goldthau 2014; Jehling, Hitzeroth, and Brueckner 2019). It is not our intention to develop a new methodology, but rather to contribute and build forth on a systematic analysis for institutional arrangements. Institutionalism seems promising to identify and compare government interaction within changes in energy systems (Becker, Beveridge, and Röhring 2016; Andrews-Speed 2016; Kuzemko *et al.* 2016; Lockwood *et al.* 2017). For example, as Jehling, Hitzeroth, and Brueckner (2019) highlights, institutionalist frameworks are both used to identify effective energy transition policies (Kuzemko *et al.* 2016, 98) and to discuss the “effects of variations between national political systems on pathways of energy transition” (Kuzemko *et al.* 2016; Lockwood *et al.* 2017). Both Coenen, Benneworth, and Truffer (2012) and Bridge *et al.* (2013, 338) argue for the inclusion of spatial context and its relationship with institutional arrangements. The principle of subsidiarity on the implementation of renewable energy policy together with the local development of renewable energy introduces the subject of scale and space in the analysis of this paper. Hence, within this context, we question how tiers of government interact on subjects such as policy making and local policy implementation and development of wind turbines in the Netherlands. To better understand the interaction between tiers of government on wind energy policy and its implementation, the policy analysis method of Prittwitz (1994) is used on four different cases of wind policy implementation on the local and regional tier in the Netherlands. This form is widely used for analyzing the interplay between tiers of government on policy development and implementation (Voß and Bornemann 2011).

In Section 2, the analytical framework employed in this study is laid out, after which we outline our research method for the empirical approach (Section 3). We present the case study analysis and comparison in Section 4 before discussing the results in Section 5. Section 6 elaborates on the main conclusions of this paper.

2. Analytical framework

As described in Section 1, we build our framework on institutionalism for the analysis of tensions between tiers of governments, more specifically, the tensions that arise when local tiers of government implement top-down renewable energy policy. To analyze the interaction between actors, or the “power, inequality and the continuing conflicts between groups and individuals” (Lowndes and Roberts 2013, 11), institutionalism offers a proven approach. New institutionalism is highly applicable for collecting empirical information about actors and institutions and their “dialectic relationships” (Lowndes and Roberts 2013, 10). Institutionalism is used for analyzing socio-technical aspects of the energy transition (Jehling, Hitzeroth, and Brueckner 2019). Policymaking and implementation are both influenced by institutions, which we

conceptualize as “regularized practices” (following Hall and Thelen 2009; Kuzemko *et al.* 2016). These practices are defined by a set of formal and informal rules, decision-making procedures, and narratives that shape and define the way in which actors interact when, for example, implementing top-down renewable energy policy (Young 2002, 4; Hall and Thelen 2009, 9–10). Furthermore, through approaching institutions as regularized practices (Kuzemko *et al.* 2016, 99), institutionalism is applicable for analyzing whether and how institutions affect the behavior of actors (Jehling, Hitzeroth, and Brueckner 2019), over certain periods of time.

The actors of relevance for this paper are the three different tiers of government in the Netherlands.¹ These tiers of government all harbor a different amount of ‘agency’ toward decision-making and implementation of governmental policies. Agency stands for the ability or capacity, or the responsibility, to develop and, or implement policy work, by making use of a certain institutional arrangement (Lowndes and Roberts 2013, 77). An Institutional arrangement does influence the way in which governance takes place; it defines the relationships between all actors, and therewith assigns roles and responsibilities to these actors (Lowndes and Roberts 2013). Since there is no clear definition for institutional arrangements, we consider such an arrangement as a certain structure of, rules, norms, and values that governments use for legislation, planning, and implementation of policies. Institutional arrangements appear in every aspect of policymaking and implementation and can vary widely in their formalization or interaction with other institutions and arrangements (Young 2002, 4).

As an institutional arrangement, subsidiarity inclines to the decentralization of governance. Within this specific arrangement, lower tier governments gain more agency and responsibility to either form their policy or to modify existing higher tier policies to better suit local wishes (Bednar 2014; Goldthau 2014, 138). In this regularized practice, higher tiers are ‘subsidiary’ to lower tiers. The general aim of the principle of subsidiarity is to guarantee a degree of independence for a lower authority to a higher body. Therefore, it involves the changing and sharing of powers between different tiers of government and on “multiple and interconnected regulatory levels” (Goldthau 2014, 138; Rosamond 2003). The national scale is therefore relevant as a decision maker or policymaker because energy transitions can be linked clearly to a country’s economy, regulations, or infrastructure (Cherp *et al.* 2018). As we described in Section 1, the national scale, and to a lesser extent the regional scale, is also the locus where “decisions to steer energy systems” (Cherp *et al.* 2018, 176) and where decisions on objectives are made. The spatial embeddedness regarding the development of renewable energy introduces questions about how (inter)national energy objectives are put into practice at the local scale (Bridge *et al.*, 2013, 338). Subsidiarity predisposes increasing governance efficiency due to the possibility for lower authorities to effectively address local issues instead of following more general higher tier policies (Bednar 2014). Hence, the local tier helps us with a specific point of view on how renewable energy technologies are embedded into local and regional spaces and places (Nadaï and van der Horst 2010). Adding the different tiers into our analysis allows us to better frame spatial institutional contexts of renewable energy policy implementation (Coenen, Bennenworth, and Truffer 2012, 973), and also show the tensions that emerge between these different tiers.

In the light of tensions between tiers of government, we briefly address subsidiarity in European energy policy implementation. The EU puts forward the principle of subsidiarity through National Member States Plans. Under the Treaty on the Functioning

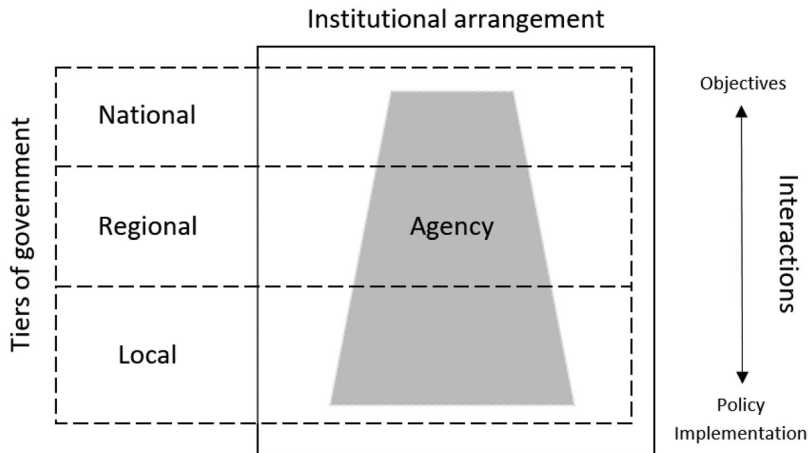


Figure 1. The analytical framework of subsidiarity as an institutional arrangement.

of the European Union (TFEU), Article 194 states that each Member State (MS) maintains its right to “determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply” (Article 194(2)). The transfer of agency to the lower tier of governments does implicate that responsibility for meeting (inter)national renewable energy objectives also transfers to these lower tiers. Following the principle of subsidiarity, national governments should be able to address local issues by giving agency for policy implementation to lower-tier governments (Bednar 2014). Nevertheless, local issues tend to be absent in national renewable energy policies (Michalena and Hills 2016). This is probably because the EU assumes that MSs implement renewable energy policy through subsidiarity and therefore address local issues in their approach. However, the opposite emerges because the EU policy on renewable energy focuses on targets and not on the implementation process (Michalena and Hills 2012, 211). Eventually, when the deadline is due, national governments are held responsible for meeting RE objectives and not so much how these are met. As a result, rather than support local governments by addressing local issues at EU or MS level policies and approaches, national governments choose to put control mechanisms into place to monitor the performance of lower tiers in developing renewable energy plans contributing to the national renewable energy objectives (Michalena and Hills 2012). For example, in the Netherlands, such control mechanisms are translated into both top-down renewable energy objectives per region and national renewable energy development plans (RVO 2016). While differences among local tier governments and land use issues between local tier governments and landowners are complex matters for local tiers to manage when implementing renewable energy policy, the EU policy and MS policies provide minimal support for such localism (Chmutina and Goodier 2014). These examples implicate that tensions emerge between higher and lower tiers of government when local tiers of government implement top-down renewable energy policy.

Following this implication, how do we analyze what tensions emerge between tiers of governments when local tiers of government implement top-down renewable energy policy? Our analytical framework structures institutional arrangements on policy implementation through subsidiarity, across different tiers of government (Figure 1). In applying the framework, we compare local and regional renewable energy projects,

where the agency is a dependent variable, while the institutional settings and changes within are considered explanatory variables (Jehling, Hitzeroth, and Brueckner 2019). This approach allows us to show how subsidiarity empowers or restrains actors through the context-specific configuration of interrelated institutions. It also enables us to delineate how institutional relationships create unclear roles and instability and possibilities for development (Lowndes and Roberts 2013, 69). In what follows, we conduct a context-sensitive comparison of renewable energy policy implementation and renewable energy development, while considering a specific national socio-technical development path for the Netherlands. The analysis of four wind turbine development projects in [Section 4.2](#) will reveal the relevance of local, regional, and national tiers and the respective impact of actor agency on them and the realization of renewable energy projects. First, we provide detail on the methods employed in this paper.

3. Methodology

To identify tensions within different institutional arrangements in our four cases we used an instrumental case design. The instrumental case design is used when the cases themselves are not of importance but rather identify ‘a particular phenomenon’ across the cases (Stake 1995). The case selection seeks to contribute to finding the tensions in four cases with rather similar institutional arrangements. The first case covers the intended development of wind turbines in Amsterdam. Local and regional development of wind turbines in the province of Friesland is the subject of the second and third cases. The fourth case is about the development of wind turbines in the province of Flevoland. In all four cases, renewable energy projects are similar in size and involve regional and local tiers of government, and do not vary, in terms of the respective policy settings. Data acquisition and analysis focus on wind power projects between the years of 2015 and 2018, which to date have either been developed successfully or remain (un)developed. A more thorough description of the cases will follow in [Section 4](#).

Through examining secondary data such as policy documents, we gained insight into what differences in policy exist and how it is implemented. This information helped us to approach relevant government officials who participated in drafting and implementing renewable energy policies. The Dutch government officials interviewed for this research contribute to understanding the reasons behind policies and how they are implemented. The cases analyzed in this paper are derived from these interviews and are therefore an example of the existing tensions between tiers of government and their policies and the policy implementation on the development of renewable energy sources in the Netherlands.

We employed semi-structured interviews to gain in-depth knowledge of subsidiarity issues of governmental wind energy policy. Between 2016 and 2018 we surveyed multiple government officials from all 12 provinces and 4 municipalities in the Netherlands about their experiences with wind policy development and implementation. We surveyed them about their roles, the difficulties, and the success they have encountered during the process from policymaking to actual development of wind turbines. The outcome of these answers on questions such as “What are the governmental objectives on different tiers?”, “Why and how do these tiers choose and implement the policy they do?” and “What difficulties between the tiers are already recorded?” were, interestingly, not that different among the interviewees. For all of the interviews, legal

and policy documents were analyzed thematically (Fereday and Muir-Cochrane 2006). Interview data provided insights into renewable energy actors' interests, actions, and perceived institutional impacts, while the document analysis shed light on the renewable energy policy.

To better understand the relationships between tiers of government on wind energy policy and its implementation, the policy analysis method of Prittwitz (1994) is used. This form is widely used for analyzing the interaction between tiers of government on policy development and implementation. Prittwitz (1994) suggests a five-step procedure to understand both how policy objectives are realized and restricted, to ultimately give policy recommendations (Prittwitz 1994). These five steps are:

1. describing the policy objectives;
2. outlining the policy options (instruments);
3. assessing the implementation of the objectives (effectiveness);
4. exploring the restrictions for implementation;
5. recommendations for overcoming the restrictions.

In what follows, we apply a context-sensitive comparison of similarities and differences of all four cases on these five steps of policy implementation, while we consider subsidiarity as the national institutional arrangement. In light of the descriptive research, we decided to mainly focus on what tensions arise rather than to find solutions to cope with these tensions. Therefore, in Section 5 (discussion) of this paper, the recommendations for overcoming restrictions will be briefly discussed based on the results of the case studies in Section 4. The analysis of the selected renewable energy projects in the Netherlands presented below will reveal the relevance of local, regional, and national scales and their respective impact on actor agency and the (non-)realization of renewable energy projects.

4. Case studies

In the Netherlands, all tiers of government can develop plans for renewable energy. The 'Rijksoverheid'² takes a supervisory role and claims to leave the responsibility to regional and local tiers as long as these lower tiers meet national objectives. This approach is similar to the European Union subsidiarity principle approach; however, the Rijksoverheid can limit responsibilities or impose an objective for the lower tiers to meet. On top of that, the Rijksoverheid has no constitutional obligation for using the subsidiarity principle, because subsidiarity is not included in the Dutch constitution. In the case of renewable energy objectives, lower-tier governments in the Netherlands are well aware that if they do not meet (inter)national objectives, the Rijksoverheid, or even the Ministers, may step in to help or seize the authority to meet the objectives. The interactions between the three tiers of government are briefly illustrated before we share the results of the cases.

4.1. Introduction of the case studies: wind turbine development in The Netherlands

The Rijksoverheid approaches the energy transition as a major spatial issue, with a focus on increasing the 'quality of life within living areas' with the help of 'energy-inclusive spatial planning' (Ministry of Economic Affairs 2016). As such, the Dutch

national governmental tier approaches the energy transition as a facet policy, which is a policy issue that is part of other policy sectors, or covers these sectors too, such as spatial planning and economic development. The main renewable energy objectives have been translated into a policy document called the 'Energieakkoord'. In this policy document, the Dutch National Government has committed itself to generate and use 14% (8,400 MW) of renewable energy by the end of 2020. The main energy source that contributes to this total is energy generated with wind turbines, which should be 10% (60,000 MW) of the total 14% objective.

The Dutch national government has a strong focus on a more regional approach to develop renewable energy sources. Together with the 12 provinces of the Netherlands³ de Rijksoverheid divided a 6,000 MW target among the provinces, based on a mutual agreement on the possible amount of wind development and land available. As stated in the yearly issued 'Wind on Land' monitor by the Netherlands Enterprise Agency, in 2019 it became clear that the objective of 14% will not be met by the end of 2020 (RVO 2020). In comparison to earlier years, 2019 did not see any progress on wind turbine development projects. With 3,534 MW completed at the end of 2019, only 59% of the main objective has been met. As such, none of the 12 provinces will meet their 2020 objectives of which 3 of the 12 provinces are more than 50% removed from meeting their objective and 4 other provinces are estimated to not meet 75% of their 2020 objective (RVO 2020). The main factors for not meeting the objectives are local issues (such as land-use conflicts), lead times for legal proceedings, and issues with (administrative) local and regional acceptance.

In an approach to meet these objectives, the national government used different options. From the spatial planning policy field, a national embedding plan can overrule land use plans of lower government tiers by assigning certain areas suitable as development sites. This is the major planning instrument the national tier can use. From the energy policy field, the national government has different subsidies⁴ available to stimulate the development of renewable energy sources. Another approach would be to allocate land owned by the national tier for renewable energy development. In 2020, a National Spatial Vision (NOVI) will be completed by the Dutch national government tier. With this vision, the national government can strategically plan the energy transition by acknowledging spatial opportunities and establish conditions for meeting energy transition objectives. All of the twelve provinces in the Netherlands have agreed upon the development objective of 6,000 wind-generated MW before the end of 2020. The 6,000 MW, which stands equal to at least 3,000 wind turbines of 2 MW (current average is even less than 2 MW per wind turbine) is divided among the provinces in mutual agreement, taking into account the availability of land for such development. We examine three of the twelve provinces which are also the subject of the case study.

The province of Noord-Holland has been given a minimum quota of 685.5 MW as part of the National target of 6,000 MW. To meet this objective, the province has created its policy on wind turbine development, called Wind op Land (Province of Noord Holland 2015). The provincial policy is focused on how wind turbines should be allocated to certain areas within the province. As of now, predictions estimate that 89.5% of the 685.5 MW will be completed before 2020. The province will almost certainly not meet its 2020 objective, thus not meeting the semi-long-term objective. Regardless of the knowledge about issues on meeting regional wind turbine development objectives, the regional tier's policy is restricting further local development of wind turbines, contradicting the long-term national objective of 2050 to become 100% fossil fuel free (case 1).

The province of Friesland has to generate 530.5 MW of wind energy. The policy document 'Fryslân geeft Energie' includes the analysis of different wind farms to be built, the different stakeholders in these projects, and the integral approach on how to develop these wind farms with help or input from the stakeholders (Province of Friesland 2016). This approach is aimed at participation and top-down regional spatial embedding plans. At the end of 2019, within the province around 200 MW of wind-powered energy was developed. Estimates assume that only 37.7% of the 2020 objective will be developed (RVO 2020). The issue at hand within the province of Friesland is the provincial policy that restricts the replacement of single older wind turbines for single newer (larger) ones, due to rather unclear reasons, probably for preventing land-use conflicts. If the older ones become out of use before 2020, the amount of wind-powered energy automatically reduces the amount of MW already developed. In case 2 this issue will be further examined. While the province of Friesland has a strong focus on centralized large-scale wind turbine projects, the province experienced a lot of local resistance toward such large-scale developments on land. This resistance led toward recalculation and reevaluation of the initial development plans, which is further elaborated in case 3.

The strategy to meet the objective to produce 1,390.5 MW of wind energy within the Province of Flevoland, is described in the Provincial Regional Plan 'Windenergie' (Province of Flevoland 2016). This plan hosts a vision map, project areas, and specific building plots, the development approach, and the process after development. Within the province, Flevoland has already developed around 1,147 MW as of the end of 2019. At first, it seems like there is no issue at hand; however, as the elaboration in case 4 will show, the initial development plans had to be reevaluated due to land-use conflicts and the total process time until the development took more than 10 years.

The lowest governmental tier constitutes the municipalities, of which there are 355 (as of March 2019) situated within the Netherlands. Municipalities have the opportunity to develop their energy policies with conditions for wind energy by creating land-use plans. However, not all local governments are in favor of wind turbine development within their municipality area due to reasons of resistance or conflicts with other land uses. Their agency over land use covers a small area within the provinces and is mainly governed by their local land use plans. Municipalities can object to provincial development plans but are obliged to cooperate whenever provinces apply a regional embedding plan. In such a case the province will become the leading authority.

4.2. Results

In this section, four cases of renewable energy sources development in the Netherlands are examined. These cases help to analyze the implementation of different energy policies and how they relate to the land-use conflicts over renewable energy developments. Within these cases, we seek to identify what tensions arise between the different tiers of government when implementing renewable energy policy on wind turbine development. These four cases are an example of the interactions between different tiers of government on wind turbine development within the institutional arrangement of subsidiarity in the Netherlands. See [Table 1](#) for summary of case 1.

Case 1: Wind turbines in the Amsterdam harbor

Table 1. A case of wind turbine development in the harbor of Amsterdam.

	Local tier	Regional tier	National tier
Amsterdam Harbor			
Objectives	<p>18 MW generated wind energy by (City Council of Amsterdam 2015). Plans to build 33 wind turbines generating around 100 MW within the Amsterdam harbor area (Municipality of Amsterdam 2012).</p> <p>The local zoning plan allows wind turbines to be built within the area; The policy document 'Windvisie' offers rules for wind turbine development within city limits (Municipality of Amsterdam 2012).</p>	<p>The task from the Rijksoverheid to generate 685.5 MW by the end of 2020. As part of the agreement in the Energieakkoord, it is not clear whether there will be a fine or other 'punishment' when the objective is not met (RVO 2016).</p> <p>Issuing building permit(s); Partnership agreements with public and private parties to develop wind turbines. The regional tier has its energy policy with rules for wind turbine development to promote local initiatives or larger wind farms (Province of Noord-Holland 2015). The province initially thought they would meet their quota of 685.5 MW of wind-powered energy and therefore focused on specific development areas.</p>	<p>The national policy objective of 6,000 MW generated by wind turbines by 2020 as agreed within the 'Energieakkoord'. This amount is divided based on capacity among the 12 provinces of the Netherlands (S.E.R. 2013).</p> <p>National embedding plans to overrule all lower-tier zoning and embedding plans.</p>
Options			
Realization	None of the 23 wind turbines were built.		<p>The development of the local wind turbines contributes to the National total. However, the 'Raad van State' stated that the province of Noord-Holland was fully within its rights to prevent local development of wind turbines.</p>
Restrictions	The regional extra-legal policy hindered the development of the 23 planned wind turbines.	Building permits were only granted for 10 of the 23 wind turbines by the regional tier government because of policy conditions that where exceeded within the development plans.	No national restrictions, the municipal development plan is in agreement with the national conditions.

This case is about the Amsterdam Harbor which is an industrial area in the northern part of Amsterdam. This area is managed by the Harbor Company of Amsterdam, of which the municipality of Amsterdam is the only shareholder. Within this area, work, recreation and living are intertwined.

1.1 Policy objectives

In the Amsterdam 2040 spatial development strategy plan, instructions were given to make a policy document focused on the development of wind turbines within the municipality borders (Municipality of Amsterdam 2012). At the Amsterdam harbor, the municipality of Amsterdam intends to build 33 wind turbines to meet the municipality sustainability plans to achieve 20% more renewable energy production and 20% less energy consumption by 2020 compared to 2013 levels (City Council of Amsterdam 2015). The municipality of Amsterdam permits within the local land-use plan for using the land at the harbor to produce renewable energy with wind turbines. While this development plan complies with the national long-term objective, it contradicts the provincial policy that has a strong focus on clustering wind turbines.

1.2 Policy options and instruments

Provinces can create super-statutory laws and regulations. The province of Noord-Holland has its own policy on wind turbine development (Province of Noord-Holland 2015). For example, while national policy allows wind turbines to be built 400 meters away from residential areas, the provincial policy restricts developments within 600 meters. On top of this increase in distance, the province of Noord-Holland also demands the removal of two old wind turbines before the development of one new turbine is approved. Moreover, wind turbines in Noord-Holland may only be built in straight lines with 6 turbines in a row to prevent scattering within the landscape. These policy rules restrict the possibility for municipal land use plans to develop wind turbines within the harbor area (Parool 2016). The initiators also applied for development subsidies.

1.3 Implementation of the objectives

While within city boundaries, citizens and companies are not always supportive toward the development of renewable energy sources nearby (Wolsink 2007), companies and homeowners in the Amsterdam harbor area are in favor of the development plans. The municipality of Amsterdam introduced an energy policy document 'Windvisie' which assigned certain areas as suited for wind turbine development. The local land-use plans allow the development of wind turbines in these areas.

1.4 Restrictions on implementation

The provincial policy of Noord-Holland overrules the Amsterdam municipal land use plan, showing the competing objectives and approaches. In this case, the municipality of Amsterdam wants to contribute to the national objectives of renewable energy production and the policy of the province of Noord-Holland on clustering renewable energy developments to protect the landscape. The main argument of the province for

this ‘cluster policy’ emerges from fear of societal loss of support for wind turbine development if the landscape is further affected by ‘randomly’ placed turbines.

Case 2: Local development of wind turbines in Friesland

Friesland is one of the northern provinces of the Netherlands, with around 650,000 inhabitants. The land within this region is mostly used for agricultural purposes. Within the province of Friesland, there are strong local communities. Some of those communities have shared their development plans to build wind turbines with their municipalities. Hence, this case is about how the provincial policy of Friesland is restricting the development of these local wind turbine plans. See [Table 2](#) for summary of case 2.

2.1 Policy objectives

Municipalities within the region of Friesland support local initiatives for developing wind turbines mainly for benefits that support other social projects (RVO 2020). Municipalities in Friesland that support bottom-up development of wind turbines do so because of the (financial) local benefits derived from wind turbine development. Local citizen(s) (groups) and companies can participate in the development of local wind turbines and as a result receive a part of the profit (Leeuwarder Courant 2017).

2.2 Policy options and instruments

Municipalities can draw up land-use plans that support the development of wind turbines within their borders. The regional tier issues building permit(s) for wind turbine development and had the authority in this case due to externalizations that are tangible over municipality borders. Specific energy policy on wind turbine development is drawn up by the province of Friesland, providing the opportunity to test the local development plans before issuing building permit(s) (Province of Friesland 2016). The national government has the option to initiate a National embedding plan which overrules all lower-tier land-use and embedding plans.

2.3 Implementation of the objectives

Even though the province of Friesland has granted building permits for several large-scale wind park projects, they are not meeting their objective of wind-generated MW as agreed in the Energieakkoord. Simultaneously, the province has introduced a policy that forbids replacing old wind turbines by new ones that are larger and therefore generate more MW. In contrast, the national government supports both large-scale and local developments such as the local initiatives in the province of Friesland.

2.4 Restrictions for implementation

Local bottom-up initiatives of citizens together with their municipalities and private parties have been denied by the regional government of Friesland to prevent the scattering of wind turbines within the landscape. Such initiatives consist mostly of developing single wind turbines within municipality borders. Regional policy on wind turbine development stresses the local bottom-up development plans in the region of Friesland. The regional government will not give out building permits for wind

Table 2. A case of wind turbine development in Friesland.

Case	Local	Regional	National
Objectives	<p>Municipalities within the region of Friesland support local initiatives for developing wind turbines mainly for benefits that support other social projects (RVO Nederland). Most of these municipalities do not have any direct objectives but support the ‘Energieakkoord’.</p> <p>Draw up Land zoning plans that support the development of wind turbines.</p>	<p>The province of Friesland has to generate a minimum of 530.5 MW of wind-powered energy by 2020 as agreed within the ‘Energieakkoord’ (S.E.R. 2013).</p>	<p>6,000 MW of renewable energy generated by wind turbines by 2020 as agreed within the ‘Energieakkoord’ (S.E.R. 2013).</p>
Options	<p>Municipalities in Friesland that support bottom-up development of wind turbines do so because of the (financial) local benefits derived from wind turbine development. Local citizen(s) (groups) and companies can participate in the development of local wind turbines and so receive a part of the profit.</p>	<p>Through granting building permit(s) the regional tier has the authority, due to externalizations which are tangible over municipality borders; policy on wind turbine development (RVO [Netherlands Enterprise Agency] 2020).</p> <p>Within the province of Friesland several larger wind farms are being built, mainly clustering of wind turbines (Province of Friesland 2016).</p>	<p>The national government has the possibility of initiating a National embedding plan which overrules all lower-tier zoning and embedding plans.</p>
Realization	<p>The province prevents existing older turbines being replaced by new (mainly larger) wind turbines due to reasons of further scattering of wind turbines in the landscape. This restricts the development of local wind turbines by municipalities together with local communities.</p>	<p>The province’s Policy states that existing older turbines may not be replaced by new (mainly larger) wind turbines due to reasons of further scattering within the landscape. The total MW of the province is at risk because of older wind turbines (RVO 2016).</p>	<p>The development of the local wind turbines would contribute to the National total of 6,000 MW. However, the ‘Raad van State’ stated that the province of Friesland is within its rights to prevent local development of wind turbines.</p>
Restrictions			<p>The regional restriction of the province’s energy policy is pressuring the Dutch national objective of 6,000 MW generated by wind turbines (S.E.R. 2013).</p>

turbines larger than 10 meters (Nieuwe Oogst 2017). The reason for this is that the province of Friesland wants to protect the landscape against further scattering of wind turbines in the area of Friesland. While the Provincial policy is focused on “bottom-up local nearby development and for bigger cities more large scale solutions” (Government official of Friesland, 2018), there are still many restrictions on local development. For example, to replace a wind turbine, the new wind turbine cannot be larger than the old one. The challenge for local development of wind turbines within the province of Friesland is to find suitable areas for new developments that are coherent with provincial policy. See Table 3 for summary of case 3.

Case 3: Wind turbines in water in Friesland

The Dutch Minister of Economic Affairs, Henk Kamp, had plans to build more than 100 wind turbines across the Afsluitdijk, the project is called Wind Park Fryslân. The Afsluitdijk is a dike that spans 32 kilometers between the province of North-Holland and Friesland, which protects the Dutch inland from the higher water levels of the North Sea.

3.1 Policy objectives

The objective of the national government source on wind-generated energy amounts to 60,000 MW. The province of Friesland has to generate a minimum of 530.5 MW wind-powered by 2020 as agreed within the ‘Energieakkoord’ (S.E.R. 2013). Therefore, this development plan of more than 100 wind turbines of at least 3.5 MW is a major contribution to the minimum quote of 530.5 MW.

3.2 Policy options and instruments

The province of Friesland claimed that the initial development plan cannot be produced with only wind turbines on land and therefore options on water have been examined for feasibility. The Gedeputeerde Staten of Friesland, which is the executive committee of the Province of Friesland, used its authority to commission the Minister, Henk Kamp, to research the feasibility of the 100 turbines along the Afsluitdijk. The Gedeputeerde Staten is the day-to-day management of the regional government and has the authority over several policy sectors within the regional tier and area.

3.3 Implementation of the objectives

As such, after completion of this research, in 2013, the Province of Friesland did not agree with the development of wind turbines across the Afsluitdijk, because these wind turbines would interfere with other land uses such as nature reserves, recreation, and local fisheries (Gemeente SWF 2014). However, only four years later and with the same objections, the same province has invested 127 million euros in Wind park Fryslân, near the village called Makkum, which despite local concerns, will be built in the water a few miles out of the shore. Hence, the province uses its regional embedding plan to enable land use for renewable energy development.

3.4 Restrictions on implementation

In this case, the Dutch national government top-down assigns a certain area for renewable energy development through a ‘Rijkscoördinatierегeling’. However, the

Table 3. A case of wind turbine development on water in Friesland.

Case: Wind Park Fryslân	Local	Regional	National
Objectives	<p>Municipalities within the region of Friesland support local initiatives for developing wind turbines mainly for benefits that support other social projects (RVO 2016). Most of these municipalities do not have any direct objectives but support the objectives as agreed in the ‘Energieakkoord’.</p> <p>Municipalities can object and do so against the National government tier land use plans by filing objections following options within the normal planning procedure.</p>	<p>Wind Park Fryslân contributes almost 60% of wind-powered energy to the total regional objective of 530.5 MW.</p>	<p>6,000 MW of renewable energy generated by wind turbines by 2020 as agreed within the ‘Energieakkoord’ (S.E.R. 2013).</p>
Options	<p>Municipalities can object and do so against the National government tier land use plans by filing objections following options within the normal planning procedure.</p>	<p>Gedeputeerde Staten has the authority to question National plans; Gedeputeerde Staten and the region itself can object to state development plans through objection within the normal planning procedure; Partnership agreement with private parties to support development plans.</p>	<p>‘National Embedding Plan’; ‘Crisis en herstelwet’; ‘Rijkscoördinatiering’.</p>
Realization	<p>Wind Park Fryslân is reaching the phase of receiving a definitive building permit.</p>	<p>Wind Park Fryslân is reaching the phase of receiving a definitive building permit.</p>	<p>Wind Park Fryslân is reaching the phase of receiving a definitive building permit.</p>
Restrictions	<p>Regional questions based on local concerns from several municipalities have changed the initial land use development plans of the National government tier.</p>	<p>Regional questions based on local concerns from several municipalities have changed the initial land use development plans of the National government tier. In the end, the development will still take place, but on water.</p>	<p>Regional authority has influenced the initial development plans; however, ultimately the Wind Park Fryslân will be built in water.</p>

Province of Friesland questions this development and uses the jurisdiction of the Gedeputeerde Staten of Friesland to challenge the development plans of the Dutch National government. The intervention eventually restricted the development of 100 wind turbines on land. Ultimately, 89 wind turbines will be built on land by the end of 2021. This suggests that the higher tier governments, in this example the Province of Friesland, address local concerns.

Case 4: Wind turbine development in Flevoland

In 2003, the ‘Koepel Windenergie Noordoostpolder’ took the initiative to build a wind turbine park in the Noordoostpolder (Rijksoverheid 2016). The Noordoostpolder is in the northern part of the province of Flevoland, has two municipalities (Urk and Noordoostpolder), and consists mainly of agricultural land use. See Table 4 for summary of case 4.

4.1 Policy objectives

As agreed in the Energieakkoord, within the province of Flevoland 1,390.5 MW needs to be generated annually with the help of wind turbines by the end of 2020 (Province of Flevoland 2016). The latest statistics show that the province of Flevoland will meet this objective.

4.2 Policy options and instruments

The initial development plan is a so-called ‘Rijksinpassingsplan’ based on the ‘Crisis- en herstelwet’. Both the ‘Rijksinpassingsplan’ and the ‘Crisis- en herstelwet’ are top-down National Governmental initiatives to claim land, in this case, for renewable energy development.

4.3 Implementation of the objectives

Together with the municipalities of Urk and Noordoostpolder, the provinces of Friesland and Flevoland and Waterboard Zuiderzeeland and several private stakeholders the ‘Koepel Windenergie Noordoostpolder’ have developed and started to build 86 wind turbines mainly across the borders of the municipality Noordoostpolder. The main challenge of the developers was to find a way to cope with the land-use conflicts created by drop shadow and noise affecting nearby villages.

4.4 Restrictions for implementation

The largest local opposition group to this development, the so-called ‘Urk Briest’, wished to have more say on the number of wind turbines and the distances from the village Urk (Rijksoverheid 2016). However, this kind of participation was refused; instead a small form of allowance was made to participate in how the development would be employed. The main arguments of this opposition group are derived from the fact that the historical local village of Urk would be surrounded by these wind turbines, pressuring local living quality. The chairman of the ‘Urk Briest’ claimed to have stopped the plans if possible, but also wanted to make the best of it (Rijksoverheid 2016). Just before the development started some wind turbines were eventually removed from the development plan, due to interference from the regional

Table 4. A case of wind turbine development in Flevoland.

	Local	Regional	National
Case: Noordoost-polder			
Objectives	The municipality objects to wind turbines within their municipality borders.	1,390.5 MW has to be generated yearly by wind turbines within the region of Flevoland in the year 2020 (Province of Flevoland 2016).	6,000 MW of renewable energy generated by wind turbines by 2020 as agreed within the 'Energieakkoord' (S.E.R. 2013); Windpark Noordoostpolder will generate around 414 MW.
Options	The municipality of Urk did object to the national tier's development plan by filing objections following the normal planning procedure (Rijksoverheid 2016). Eventually, Urk and Noordoostpolder supported the development plan.	Partnership agreement with other tiers and private parties to support development plans. The Province of Friesland and Flevoland both agreed to the development plan.	'National Embedding Plan'; 'Crisis-en herstelwet'; 'Coördinatie-regeling'.
Realization	The whole plan of 86 wind turbines has been developed, despite local concerns for development on water.	The whole plan of 86 wind turbines has been developed, despite local concerns for development on water. This plan contributes to the total development quota of 1,390.5 MW. The province of Flevoland was in favor of this development; therefore there were no restrictions from this tier of government.	The whole plan for 86 wind turbines has been developed, despite local concerns for development on water, contributing to the total of 6,000 MW.
Restrictions	Appeals have been claimed unfounded by the 'Raad van State'. This means that there were no development restrictions whatsoever (Rijksoverheid 2016).		Appeals have been claimed unfounded by the 'Raad van State'. This means that there were no development restrictions whatsoever (Rijksoverheid 2016).

tier, to meet with local concerns. Without the interference of the National governmental level, this project would probably never have been built due to the land-use conflicts concerned with the development of such a project.

5. Discussion

The results of the case studies show signs of tensions between different tiers of government implementing renewable energy policy on wind turbines in the Netherlands. Under the principle of subsidiarity, lower-tier governments are to be guaranteed a certain level of agency to implement or address local issues in (national) policies at the local level. The municipalities in all four cases analyzed find themselves responsible for active involvement in the development of wind turbines within their jurisdiction. Nevertheless, in three of the four cases studied in this paper, the municipalities find their agency confined by higher-tier governments. The (inter)national objectives are clear, but subsidiarity does not facilitate lower tiers in how to meet these objectives or how to cope with local issues in the implementation of renewable energy policies. These are issues we found in our analysis of the four cases.

Whether in the cases of Amsterdam (case 1) and Friesland (case 2), in which in both cases the province restricts the development plans at the local level, or in the case of not addressing local opposition toward wind turbine development in Flevoland (case 4), local concerns are ‘overruled’ by higher tier governments. In light of previous research by Bednar (2014), the identified restrictions on local agency limit local tiers of government in addressing local issues and concerns, ultimately increasing local opposition and creating tensions between local and regional tiers (case 1 and 2) and between local and national tiers (cases 3 and 4). These results point to the failing agency of governments at the local tier. Hence, there is a tension between tiers of government in how subsidiarity is supposed to transfer agency from higher to lower tiers and how lower tiers are mainly restricted by higher tier policies or development plans negatively affecting wind turbine development. Previous findings on subsidiarity in EU renewable energy policy implementation on the MS level suggest the same issue with applying the principle of subsidiarity (Michalena and Hills 2012).

Conflicting differences between local (liveability), regional (protection of landscape), and national tier interests (renewable energy objectives) are found in both cases 3 and 4. In contrast, the results for case 1 show that the municipality of Amsterdam was in favor and made it possible to develop wind turbines within its city limits. However, in this case, the regional policy of the province of Noord-Holland overrules the Amsterdam governmental land-use plan. The policy of the province of Noord-Holland has a strong focus on clustering renewable energy developments for the preservation of the landscape. Simultaneously, the municipality of Amsterdam wants to meet its objectives for renewable energy production within city limits. Such a mismatch between interests constitutes a tension between top-down policy and local implementation. This tension is also visible in the local development case in Friesland (case 2), in which several municipalities apply a bottom-up approach trying to develop wind turbines with support from their local communities. In this case, the province of Friesland restricts local development through regional policy for the preservation of valuable landscapes, which is an important objective and responsibility of the regional tier. The tensions between the different tiers of government that emerge due to the differences in interests correspond with the importance of linking (inter)national policy

setting and implementation on lower tiers for successful renewable energy promotion and development (Wolsink 2007). Another interesting finding is the rather decisive role of the regional tier in both addressing local concerns toward higher tier governments and neglecting local concerns. In Case 3, the province of Friesland examined and eventually questioned the initial development plans based on local concerns from several municipalities located near the supposed development area. Ultimately, the initial land use development plans of the national government tier changed due to legitimate local concerns carried out by the province. Simultaneously, the results from cases 1 and 4 both indicate that the regional tier also follows its objectives and policies neglecting local opportunities.

The issue of a lack of agency is magnified by the institutional arrangement based on the subsidiarity principle. Due to the local character of the energy transition, it seems logical to put local governments in charge of the implementation of national energy policies, as national policies suggest. However, the case study analysis of this paper points out that the implementation of renewable energy policy is not simply bottom-up or top-down, as the principle of subsidiarity sometimes suggests. Interactions take place between and across multiple tiers of government as Goldthau (2014) describes. In practice, local governments keep struggling with local issues, and higher-level governments are holding tightly to existing approaches (cases 2 and 4). Hence, lower-tier governments are increasingly reliant on developments led by private parties and/or higher tier governments to meet energy policy objectives. These results add to the findings of Breukers (2010) who stated that such reliance has led to conflicts due to not addressing local concerns, which eventually increases local opposition toward renewable energy developments and public policy in general.

The main recommendation of this paper follows the results of our analysis and existing literature (Michalena and Hills 2012), that if national objectives on RE are to be met, (inter)national objectives need to be better aligned with regional and local interests, issues, and concerns. This recommendation should be taken into account when considering new renewable energy policy on wind turbine development.

6. Conclusion

This research aimed to identify what tensions emerge when lower tiers of government implement top-down renewable energy policy. Based on a quantitative and qualitative analysis of top-down implementation policies for wind turbine development in the Netherlands, it can be concluded that different tensions arise between higher and lower tiers of government concerning policy implementation. The results indicate that there is a difference between the formal and informal top-down policy implementation and the interests of tiers of government that both underpin the tensions that emerge.

The tensions implicate that policy implementation on the lower tier is difficult and local tiers' agency in large-scale wind turbine development is limited. The significance of this paper can be found in the empirical findings on how different tiers of government interact on renewable energy policy implementation. It both adds to the existing literature about subsidiarity and renewable energy policy implementation on the local level, which is deemed one of the biggest challenges in the energy transition. The still prevalent top-down approach to these developments results in increasing opposition toward renewable energy developments at the local level. These conflicts undermine the agency of lower-tier governments. Under the principle of subsidiarity, local

governments are to be guaranteed a certain level of agency to implement or influence (national) policies at the local level. However, objections by the local governments rarely lead to a change in the final development. Regional tiers have an important role in policy implementation, meaning that provinces are both able to restrict local development and overrule objections from local governments toward high-tier developments. These examples highlight that responsibilities on renewable energy development between tiers of government are sometimes blurred, that there are several jurisdictions and policy actors active on different tiers and have multiple-tier strategies that influence agency. Thus, throughout the institutional scales the implementation of renewable energy policy and wind power development in the Netherlands is disrupted, negatively affecting the transition toward a more renewable energy-based energy system.

The tensions that emerge from a central policy-making and top-down policy implementation are not sufficiently managed if tiers of government will not align their approaches or clearly define their responsibilities. This implicates that local tiers find it more difficult and complex to contribute to the national objectives, as the case studies suggest. As such, future studies should address cases where top-down policymakers address local issues and concerns and offer means to overcome the tensions discussed in this paper. Further research is needed to determine the effects of addressing local issues and concerns in energy policymaking and implementation. Even though it is somewhat naïve to think that there will be no tensions between the tiers of government, addressing local issues could contribute to meeting renewable energy objectives on the local tier.

Notes

1. The tiers of government in the Netherlands consist of the national government, 12 regional provinces and 355 local municipalities as of 2019.
2. The Dutch National Government.
3. The 12 provinces together combine the regional governmental tier in the Netherlands.
4. These subsidies are available for all kinds of initiators. These initiators have to comply with certain conditions to qualify for the subsidies.

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