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Organization of Value Creation and Work in the Japanese Wind Power Industry: Studying Organizational Diversity in Face of Institutional Change

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INCAS

Understanding institutional change in Asia: a comparative perspective with Europe

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ABOUT THE INCAS PROJECT

INCAS is a Marie Skłodowska-Curie Actions R.I.S.E funded project under the European Commission's H2020 Programme.

The project INCAS aims at creating a top-level research and advanced training network on institutional change in Asia, in comparative perspective with Europe.

The coordinator, Ecole des Hautes Etudes en Sciences Sociales (France), promotes this network together with Oxford University (UK), Freie Universität Berlin (Germany), and in collaboration with Waseda University (Japan). The aim of the proposed mobility scheme is to give birth to a European consortium and network of faculties and advanced graduate students specialized in the comparative analysis of institutional change in Asia and Europe. The partners have chosen Japan as a reference point because of its comparability with Europe as shown by previous studies, its historical influence on development and further institutional changes in Asia, and the expertise accumulated within our research team.

Analyzing current economic dynamics in Japan and later expanding this analysis to other Asian countries promises to generate insights that might be help to better understand challenges for Europe and to prepare relevant policy proposals. Our purpose is to compare the results obtained in the case of Japan and few other Asian countries (South Korea, Taiwan, China, and possibly Thailand, after having checked the data availability), not only to previous results on Europe but also to original results we will get on European countries (primarily France – which will be our reference country in Europe – and then the UK, Germany, and Italy) in mobilizing new historical data and applying our theoretical framework.

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Abstract

The Fukushima disaster of 2011 has changed the perspective on renewable energies, not least in Japan. Although the production of renewable energies has since then continuously increased in that country, too, Fukushima seems to have had a greater impact on other countries such as Germany, for example. Given the insight that emerging fields often form and change around particular events that create opportunities, we see institutional change in the field of Japanese energy production taking place. In particular, we are interested to learn about the scope, pace and trajectory of this change, how it is brought about, and whether this will result in more organizational diversity. Preliminary results show that there has been a rather endogenous change within the field of the Japanese energy sector, which was first and foremost initiated and managed by the incumbents of the field, thereby trying to preserve their position. This, however, might explain that change within the Japanese energy sector is most likely to remain incremental rather than transformative, also with regard to the organization of value creation and work.

Keywords: *field, incumbent, institution, Japan, persistence, renewable energy, wind power.*

1. Introduction

The Fukushima disaster of 2011 has changed the perspective on renewable energies, in Japan as well. The Japanese government, especially under former Prime Minister Kan, suddenly considered a “green future” and has since started to support research on wind energy and its development (particularly offshore) and is aiming to quadruple the installed capacity by 2030. However, despite the Fukushima catastrophe being a potential triggering event opening up opportunity structures, the actual diffusion of renewables is still rather limited. Although the capacity has continuously increased over the years, Fukushima seems to have had a greater impact in other countries, such as Germany.

Given that emerging fields often form and change around particular events, thus creating opportunities (Zietsma et al., 2017), we see an institutional change in the field of Japanese energy production taking place. But since certain settings, characterized, for example, by the number, status and origin of the involved actors, influence the scope, pace and trajectory of change (Pacheco et al., 2014; Zietsma et al., 2017: 419), it is an open question as to what this means for energy transition and practices within the field of the Japanese renewable energy sector. To examine the organization of value creation and work under these circumstances we aim to focus on the (emerging) field of renewable energy, with a particular eye on the wind power industry as an example.

Regarding the Japanese wind power industry, one can observe that important Japanese manufacturers such as Hitachi, Japan Steel Works (JSW), Mitsubishi Heavy Industries (MHI), and Toshiba increasingly engage in wind turbine manufacturing. As incumbents typically have notorious difficulties managing radical or even disruptive transformations (Christensen, 1997), the questions arise as to how these firms nevertheless manage the transformation and what this means for the organization of value creation and work. To address these research questions, we first have to develop a broader understanding of institutional change in Japan as related to the transformation to renewables in general and wind power in particular. In this context, the question arises as to which actors, apart from the incumbents mentioned, are involved in Japan’s energy transition and how, and which structures enable and constrain the development of the field and, in consequence, support or hinder organizational diversity. The question of organizational diversity is an important one within the INCAS research program, because it is considered to be indicative for the adaptive capacity and innovativeness of a society (see <https://incas.hypotheses.org/> and, in particular, Jackson, 2016).

Since such developments appear to be closely related to the institutional configuration within a society, it is obvious that research can benefit from concepts like strategic action fields (Fligstein & McAdam, 2012a, b). The SAF concept integrates insights from organizational, institutional and social movement theories and thereby contributes to a more agentic understanding of field structuration than early neo-institutional theory (cf. DiMaggio & Powell, 1983; Scott, 2013). With its central idea of conceptualizing fields as being contested rather than stable and self-reproducing, it seems possible to grasp the recent dynamics in the field of the Japanese energy industry. For capturing the eventually emerging collective orientation, however, it seems helpful also to refer to new conceptual developments in organizational institutionalism including institutional logics (Thornton & Ocasio, 2008), institutional work (Lawrence & Suddaby, 2006), and institutional fields (Zietsma et al., 2017). Empirically, we aim to answer the questions mentioned by collecting data, in particular with the help of interviews with managers and worker representatives on a firm-level, as well as with representatives of state agencies, non-governmental organizations and associations on a field level. Previous research of our own on wind turbine manufacturing in Germany (HBS Grant 2013-678-2) has made us aware of important aspects of organizational and institutional change in this industry, and will allow us, at a later stage, to work out commonalities and differences between Japan and Germany.

2. Theoretical Background

The “organizational field” (DiMaggio & Powell, 1983) is not only a central level of analysis, but also an important concept for neo-institutional theory (Reay & Hinings, 2005; Wooten & Hoffman, 2008; Zietsma et al., 2017). The organizational – or for some: institutional field – is often defined as a “community of organizations that partakes of a common meaning system and whose participants interact more frequently and fatefully with one another than with actors outside the field” (Scott, 2013: 56). While such fields were usually understood as driven by isomorphic forces (DiMaggio & Powell, 1983), more recent neo-institutional approaches emphasize the importance of strategic agency when they either pick up DiMaggio’s (1988) notion of the institutional entrepreneur (e.g. Garud et al., 2008) or the concept of institutional work (Lawrence & Suddaby, 2006). In face of these developments, neo-institutional theory and the SAF conception have somewhat converged.

Importantly, Zietsma et al. (2017) highlight that a field usually consists of *four central elements*: (1) The basic tenet is the interaction between different organizations, which is structured around common meanings and interests; this means that the organizations form around a certain topic. (2) The interaction takes place within a clearly defined arena, i.e. there are boundaries which are usually established via the intensity of inter-organizational relationships. (3) Through the interaction and the uneven distribution of resources there is a development of status and hierarchies among the organizations, thereby opening up the possibility to exert influence within the field. (4) The interaction in the field, which is not only enabled and constrained by these relationships (Kenis & Knoke, 2002) but in turn produces, reproduces or transforms them (Giddens, 1984), is characterized by a certain degree of rivalry and competition among the organizations.

Beyond these central elements, a further perspective for studying fields is the notion that organizational or institutional fields can be distinguished into two basic types (Zietsma et al., 2017): exchange and issue fields. *Exchange fields* contain a focal population of actors and their interaction with exchange partners, such as industry, social movement or professional communities: *Issue fields*, by contrast, are constituted by a set of actors that interact and take one another into account on particular more or less controversial issues. In this context a central subtype is the *competitive issue field* in which “two or more populations compete for dominance in such fields, often with dense interactions and homogeneous logics and identities within populations, and heterogeneous logics and identities, and conflictual interactions (sometimes through third parties such as the courts, customers, or media) between populations” (Zietsma et al., 2017: 400).

Based on these considerations one basic assumption, concerning the dynamics of institutional fields in general and SAFs in particular, is that the strategic actor constellation, the attitudes and skills of the actors and the practices taken by the actors to deal with certain issues influence the scope, pace and trajectory of change. This also highlights the fact that fields themselves vary in the degree of their institutionalization and the evolutionary stage, and that it would be pertinent for scholars to direct their attention to field conditions and their interaction with agency in order study field emergence and change (Zietsma et al., 2017: 402-409).

It is not least triggering events which provide opportunities for actors to take action, i.e. to react to, interpret and eventually translate these events into issues. Against this background, the use of SAFs is almost self-evident as it allows not only to integrate insights from organizational, institutional as well as social movement theories, but also – like other more recent approaches in the realm of organizational neo-institutionalism – to be serious about the duality of structure and agency (Giddens, 1984). Basically, SAFs are defined as “constructed mesolevel social order in which actors (who can be individual or collective) are attuned to and interact with one another on the basis of shared (which is not to say consensual) understandings about the purposes of the field, relationships to others in the field (including who has power and why), and the rules governing legitimate action in the field” (Fligstein & McAdam, 2012a: 9). The basic idea behind SAF is therefore that fields are contested rather than stable and self-reproducing. In this constellation actors occupy certain roles or positions, which provide them the possibility to influence the institutional field. Influencing is done with the help of strategic actions which are based on organizational capabilities or social skills more broadly. The general aim of the actors is to influence the emergence, stability or transformation of fields by means of their strategic actions.

Structurally, the SAF concept highlights that there are different forms of fields which might be nested, e.g. the field of renewable energy – as an issue field as much as an emerging exchange field – is part of the Japanese energy industry, which in turn is part of the Japanese economy and culture. Although the energy market might be interpreted as a classical exchange field, especially with a view on energy transformation and establishing renewable energy, one has to take into account that these processes are often connected with influence of actors that operate in different spheres and are not classical exchange partners (Pacheco et al. 2014; Sine & Lee 2009).

By looking at the field (trans-)formation in terms of renewable energy in general or the wind industry in particular, the focus is necessarily not restricted to just one industry or field-focused political movement. Rather, there are several types of actors positioned in more than one field that have several relationships spanning different fields. This includes business or market relationships, e.g. between suppliers and producers or energy firms and manufacturers, but also political relationships, e.g. between traditional firms and non-governmental organizations (NGOs) or political parties. In their decisions the actors are therefore not only influenced by their direct exchange partners, but also by a bundle of stakeholders who are interested in the same issue across established exchange fields (Friedman & Miles, 2006). In consequence, emerging issue fields “contain the most diverse set of actors, usually including populations with distinct identities and their own commitments to their own institutional infrastructure that may be located in different exchange fields” (Zietsma et al., 2017: 400).

This constellation highlights the difference between exchange and issue fields, which are often “contested and dynamic in contrast to the settled character commonly ascribed to organizational fields” (O’Sullivan & O’Dwyer, 2015: 36). In a similar way as the chemical industry, which was challenged by environmentalists (Hoffman, 1999), the establishment of renewables can likewise be interpreted as a contested issue field. As the case of German energy transformation shows, the process is not least a societal one, not only resulting from economic exchange or market behavior, but from strategic actions and contestation in different spheres among different actors. Especially in the case of such a field configuration, the approach of SAF is likely to capture the practices which field actors use to express and pursue their interests. This theoretical background thus allows us a suitable perspective on the development of the Japanese wind power industry.

3. Research Setting and Methodology

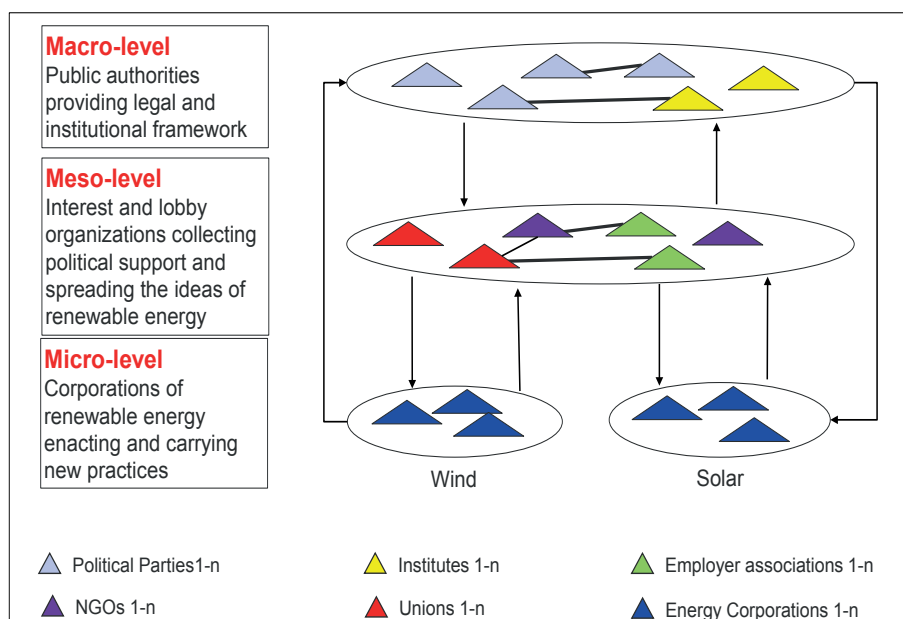
The Fukushima Daiichi nuclear disaster was initiated by an earthquake along the Japanese coast which triggered off a tsunami, leading to a nuclear meltdown in the atomic power station. Since then, the field of renewable energy in Japan has become an interesting setting in which to explore dynamics within an institutional or organizational field. *Renewables*, representing 14.5 per cent of energy production and consumption in Japan in 2015, an almost 50 per cent increase from a 10 per cent share two decades prior to the Fukushima accident, include energy produced with the help of biomass, geothermal and hydropower, photovoltaics, and last but not least wind power. The share of *wind power* in Japan, 0.5 per cent in 2015, was negligible at the time, but following recent regulatory changes (incl. the introduction of a Feed-in Tariff which, however, currently mainly boosts photovoltaics), it has increased considerably (ISEP, 2016).¹ This makes this type of renewable energy particularly interesting because field changes are more likely to take effect at the beginning of a development and can, which is even more relevant, be observed in real time. In particular since the field is not yet settled and discussions are rather controversial,² one can observe how the opponents and proponents interact and how the actors within the field pursue their interests.

Given this transformational potential of energy generation in Japan, it is decisive to be aware of which actors are involved in Japan’s energy transition. In the process of establishing this, it is important to examine which structures – on which level of analysis – enable and constrain the development of the field. Focusing the strategic actions within a particular institutional field or SAF, the perspective on the drivers of the formation of the renewable energy industry in general and wind power in particular is obvious. The question involved is whether the traditional Japanese organization of value creation and work is adapted, or whether new actors trigger a fundamental change in already existing patterns. Thus, the question is not only how institutional change gives rise to new forms of organization but how, in this context, organizational diversity contributes to institutional change.

1. A roadmap published recently by the Japan Wind Power Association envisages a share of 20 per cent or more by 2050: onshore 26.6 GW and offshore 9.6 GW.

2. <http://www.wbsj.org/activity/conservation/habitat-conservation/wind-power/>
<http://www.jspb.org/chosa/strike.html>
http://blog.goo.ne.jp/fun_energy/e/92c0c35dd346aecef5c35a61032dd61d
http://greenpost.way-nifty.com/softenergy/2006/01/_yomiuri_onlin_3c35.html

Figure 1: Multi-level structure of the issue field renewable energy



As mentioned above, the empirical field can be seen as an *issue field* in the above mentioned sense and is characterized by diverse actors among multiple spheres and can be structured with different nested subfields (see Figure 1). On a macro level, public authorities are active, providing the institutional and, in particular, legal framework. On a meso level, interest and lobby organizations are prevalent, which bundle political support and want to spread the ideas on renewable energy. And on a micro level, particular corporations of renewable energy enact and carry out new practices. On this level one can distinguish between different corporations that concentrate typically on one type of renewable energy such as solar or wind energy. Given the work we have done in Germany, in our study we want to focus on the example of the Japanese wind power industry, which not only allows us to make real-time observations but also, at a later stage, some important comparisons.

The issue field of renewable energies with its subfield of wind power constitute our case (Yin, 2013). Since little research has been done in the SAF of wind power in Japan, we want to answer our questions with data collected mainly with the help of semi-structured interviews with organizational actors who act upon the structures of this issue field. This means, interviews will be conducted with managers and worker representatives on a firm-level as well as representatives of state agencies, non-governmental organizations and associations on an industry or state level. In addition, we will analyze secondary material that is available in the English language. Since we have already started to analyze such material and conducted first interviews, we are already able to present some preliminary findings.

4. Preliminary Finding Regarding the Field of Wind Power

In the wake of the Fukushima disaster, the relevance of renewable energy has increased significantly in Japan. The importance of this event for Japan is expressed by the following quote: “This disaster will be remembered as a third major turning point in Japanese history after the Meiji Restoration and the end of the Pacific War.”³ Given the general meaning for Japanese society, far beyond energy generation, the Fukushima disaster had repercussions. Abe (2015) for example stated that a “debate over nuclear power has developed on an unprecedented scale in Japan since the meltdown in the Fukushima nuclear reactors” (79). This debate, however, seems to be more than just a debate about nuclear power. While opponents of nuclear energy see the possibility of gaining more democracy, proponents express a certain fear of losing the leading position in technology (Abe 2015).

Having said that, it can be assumed that – although it is quite contested – some form of energy transition was already initiated some years ago in Japan. And the Japanese government now plans to increase the share of renewable energy

3. <http://www.iseip.or.jp/en/about/message>

continuously up to 2030. This is also confirmed by the statement of an NGO: “Already the movement towards green energy has started both amongst citizens and in various regions of Japan.”⁴ The Japanese government declares in this context: “Japan aims to expand the use of a variety of renewable energy sources. Japan will take an approach that optimizes each renewable energy source’s unique characteristics while making efforts to minimize the financial burden on consumers.”⁵ But what is the situation regarding the demand and supplier side in terms of renewable energy?

Demand for Renewable Energy

Today renewable energy reaches a share of almost 15% of Japanese energy generation, and approx. 350,000 people are employed within this field. Although the “sharp change in attitude” regarding green energy was observed after 2011,⁶ as we have already heard, the momentum towards promoting renewable energy has slowed down in the last years. This is surprising, given that renewable energy, according to recent study by Morgan Stanley (2017), has in several countries already become the cheapest form of power generation. For wind power this is particularly the case for countries or regions with favorable wind conditions.

While there was a share of 10.5% in 2011, which increased every year at least 1 percentage point to 14.5% in 2015, from 2015 to 2016 there was only a change of 0.2 percentage points. In accordance with this, it is argued that “Five years after the disaster at the Fukushima Daiichi nuclear plant, the urgency to go green in Japan has faded.”⁷ But also bearing the long-term target of the government in mind, it can be seen that nuclear power will have the same relevance as renewable energy in the magnitude of 20-22%. Moreover, the target for what is called a “green future”⁸ is “quite low compared to the targets of the European countries”. And if we look at the wind energy sector in particular, one can observe of the capacity in the wind energy sector that, although it has continuously increased over the last 15 years, this increase has slowed over the past years, leaving the capacity in wind energy on a very a low level in Japan in international comparison.

Supply of Renewable Energy

Problems in the establishment of the wind energy sector are connected to different aspects on the supply side. The first aspect is the embeddedness in the technical and political infrastructure. For example, there is a regional mismatch of wind resources and electricity demand: Most of the resources can be found in the north of the country, whereas the demand is much greater in the metropolitan area of Tokyo and the south. This is first and foremost a problem since the grid infrastructure is very complex and fragmented in Japan. Usually owned by traditional firms, grid access for wind power is restricted. Wind associations correspondingly complain that the grid line capacity is reserved for a new large coal-fired fossil and nuclear power plant.

Obviously, these aspects of infrastructure have to be explored in greater detail. But there are further aspects responsible for the quite low level of wind power among the Japanese energy generation. Even if actors are in favor of renewable energy, there is a focus on photovoltaics rather than on wind power. According to an NGO, this is because wind and other types of renewable energy “require more time to prepare a business and there’s more risk” involved.⁹ These aspects – which seem superficially to be technical questions – are strongly connected with the field conditions, namely the actor constellation such as ownership details and the relationships of the actors to one another. Having said that, an NGO sees major political and institutional problems which are closely associated with a particular actor constellation: “the ongoing environmental assessments, land-use zoning, obtaining social agreement and preparing connections to the electrical system”.¹⁰

Mapping the SAF

After a first look at the demand and supply side of renewable energies, we want to map the issue field of renewable energies in general and the sub-field of wind power in more detail with its actor constellations, diverse interests, and interorganizational relationships. With an SAF lens on this constellation, the situation can be depicted as follows: Renewable energy can be seen as a contested issue field, in which a diversity of organizational actors has to express and pursue their interests in terms of establishing or transforming an existing exchange field. If we see nuclear energy

4. <http://www.isep.or.jp/en/about/message>

5. http://www.enecho.meti.go.jp/en/category/brochures/pdf/energy_plan_2015.pdf

6. <https://www.ft.com/content/e4657f3e-8a3e-11e2-bf79-00144feabdc0>

7. <https://www.wsj.com/articles/japans-shift-to-renewable-energy-loses-power-1473818581>

8. <http://edition.cnn.com/2017/06/13/tech/renewable-energy-japan/index.html>

9. <http://www.isep.or.jp/en/wp/wp-content/uploads/2016/10/JSR2016Summary-EN.pdf>

10. <http://www.isep.or.jp/en/wp/wp-content/uploads/2016/10/JSR2016Summary-EN.pdf>

as a traditional and established form of power generation and we look at the established actors (or to speak in terms of the SAF concept: incumbents) in Japanese energy generation, we find well-known Japanese firms such as MHI, Toshiba and Hitachi that deliver technology or operate power plants.

If we look at the actors in the emerging field of renewables or the challengers of the traditional configuration, we find that almost exactly the same actors are delivering or developing technology for the emerging field of renewable energy, especially wind power. Again, not only the contradictory role of these firms needs to be further explored, but the field also needs to be screened in greater detail regarding the possible role of new entrants from other countries and, in particular, start-ups.

As it would presently seem, the lobby organizations responsible for spreading the idea of renewable energy are also governed by representatives of the incumbents of the field, as a review of the membership of the Japanese wind power association reveals. The role of new entrants in these kinds of “meta-organizations” (Ahrne & Brunsson, 2008), should there be any, has also to be explored.

Table 1: Structure of the SFA in Japanese Energy Transition

	Actors	Quote
Incumbents	Dominant: Hitachi Mitsubishi Toshiba Weak: Unions	<i>“The people are still rather skeptical because energy becomes dependent on natural resources (...). So they want to keep the nuclear industry. And their first arguments are always economy and employment” (EA1_Jp)</i>
Challengers	Dominant: Hitachi Mitsubishi Toshiba Weak: Formation of ‘green party’ (founded in 2012), some NGOs	<i>“Actually it is first and foremost the traditional enterprises that are active in this market. (...) In the EA there are some newcomers but the traditional enterprises exert a significant influence on the association’s politics” (EA1_Jp)</i>
Governance unit	e.g. Sasakawa Peace Foundation (SPF)	<i>“Expanding renewables is important, but it needs to be twinned with a nuclear-power solution that is acceptable to the public” (Nubuo Tanaka, WSJ 2016)</i>

To map this constellation with the help of the SAF concept in a first step, it becomes evident that the dominant organizational actors within the field assume the roles of incumbents and challengers simultaneously. This is also confirmed by these exemplary quotes: “The people are still rather skeptical because ... they want to keep the nuclear industry. And their first arguments are always economy and employment” (EA1_Jp). So incumbents want to defend their strongholds with arguments about securing economic growth and stable employment. The dominance of the traditional enterprises is emphasized further by the following quote: “Actually it is first and foremost the traditional enterprises that are active in this market. (...) In the EA there are some newcomers, but the traditional enterprises exert a significant influence on the association’s politics” (EA1_Jp).

And also governance units seem to prefer a slow change in line with arguments of public acceptance. “Expanding renewables is important, but it needs to be twinned with a nuclear-power solution that is acceptable to the public”¹¹. Like the activities of industry associations, the role of governance also needs to be scrutinized more closely.

5. Discussion and Outlook

Based on the preliminary empirical insights we have gathered to date, our conclusion is as follows: Despite the Fukushima disaster being a potentially triggering event providing opportunities for strategic agency and institutional change in the field of energy generation, the diffusion of renewables in Japan is limited. This is particularly true of wind power. In contrast to countries like Germany (Bruns & Ohlhorst 2011) and the United States (Pacheco et al. 2014; Sine & Lee,

11. <https://www.wsj.com/articles/japans-shift-to-renewable-energy-loses-power-1473818581>

2009), Japan may not (yet) have the strong and well-organized social movement that pushed renewable energy forward in those countries and could trigger entrepreneurial activities and the development of new forms of organization as documented in these studies.

Perhaps more importantly, the incumbents are also the challengers, playing out the tensions and contradictions between being engaged in both traditional as well as renewable energies within their organizations, rather than in the organizational field of issue or exchange. This dual role of organizational actors as incumbents and challengers, as they try to change the field but under their conditions, is theoretically an interesting phenomenon since the concept of SAF does not address this issue. Usually the concept presupposes the existence of group of organizations trying to preserve the field, while another group of organizations try to challenge established organizational actors, practices and structures within the field. In the case of Japanese wind energy sector the constellation can be depicted quite differently. Ecologically oriented entrepreneurial firms – such as „Enviro-Capitalists“ (Anderson & Leal, 1997) – seem to be missing. In consequence, there seems to be a high level of organizational homogeneity rather than diversity involved in the Japanese energy transition, at least at first sight.

Given these issues, it may well be the case that the present lack of organizational diversity contributes to these – for the most part – incremental institutional dynamics of energy transition in Japan. Currently, our observation is that a rather endogenous change is being initiated and managed by the incumbents there. More radical or transformational change would not only require much greater political pressure, not least by environmentalists and their NGOs but, in a corporatist society like Japan (Aoki 2000; Sako, 2007; Lechevalier 2014), ideological and financial support by the government in addition.

Before organizational and institutional change can develop into a positive, virtuous cycle (Masuch, 1985) the additional question arises, not only as to how such a cycle could be triggered but also as to how it could be sustained, possibly even in way that is fed by the positive feedback of self-reinforcement (Sydow & Schreyögg, 2013). For currently, energy transition in Japan and elsewhere seems to be confronted with institutional persistence, not least fed by initial conditions, imprinting effects and even technological and organizational path dependencies (cf. Simmie, 2012; Simmie et al., 2014) making the creation of a new path as reflected in renewables in general and wind power in particular extremely difficult. But these conjectures also need to be validated and specified in further empirical research.

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