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Large-scale renewable energy project barriers: Environmental impact assessment streamlining efforts in Japan and the EU

Kim Schumacher*

The University of Tokyo, Graduate School of Arts and Sciences, Department of Multidisciplinary Sciences, Japan

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ABSTRACT

Environmental Impact Assessment (EIA) procedures have been identified as a major barrier to renewable energy (RE) development with regards to large-scale projects (LS-RE). However EIA laws have also been neglected by many decision-makers who have been underestimating its impact on RE development and the stifling potential they possess. As a consequence, apart from acknowledging the shortcomings of the systems currently in place, few governments momentarily have concrete plans to reform their EIA laws. By looking at recent EIA streamlining efforts in two industrialized regions that underwent major transformations in their energy sectors, this paper attempts to assess how such reform efforts can act as a means to support the balancing of environmental protection and climate change mitigation with socio-economic challenges. Thereby this paper fills this intellectual void by identifying the strengths and weaknesses of the Japanese EIA law by contrasting it with the recently revised EIA Directive of the European Union (EU). This enables the identification of the regulatory provisions that impact RE development the most and the determination of how structured EIA law reforms would affect domestic RE project development. The main focus lies on the evaluation of regulatory streamlining efforts in the Japanese and EU contexts through the application of a mixed-methods approach, consisting of in-depth literary and legal reviews, followed by a comparative analysis and a series of semi-structured interviews. Highlighting several legal inconsistencies in combination with the views of EIA professionals, academics and law- and policymakers, allowed for a more comprehensive assessment of what streamlining elements of the reformed EU EIA Directive and the proposed Japanese EIA framework modifications could either promote or stifle further RE deployment.

1. Introduction

The announcement of the restart of the Sendai I nuclear reactor near the city of Kagoshima by the Kyushu Electric Power Company (Kyuden) marks a fundamental reversal in Japan's post-Fukushima energy strategy (Johnston et al., 2015). This represents the first restart since the 2011 Fukushima Daiichi nuclear disaster, which led to the complete shutdown of Japan's entire nuclear reactor park. This also left the country in a situation where they had to rely increasingly on conventional thermal power generation in order to compensate the loss of generation capacities, since almost one third of its domestic electricity demand was supplied by nuclear power just before the Fukushima incident (Johnston et al., 2015).

The current government plans to restart most of the currently offline nuclear power plants and increase the share of nuclear power to 20–22% by 2030 (JFS, Japan for Sustainability, 2016). This evolution stands in stark contrast to the views held by the general population, among which still a large majority opposes nuclear power (Johnston et al., 2015). According to the government, nuclear power, as a domestic, base-load source is indispensable if Japan wants to reduce reliance on energy imports, maintain output and grid stability besides keeping electricity rates low while simultaneously reducing GHG emissions.

Increased reliance on energy imports in a geo-politically fragile world energy market environment as well as volatile commodity prices and rising greenhouse gas (GHG) emissions, in combination with strong adversity towards nuclear power among the general population, made renewable energy (RE) power generation seem like a readily available, socially acceptable domestic solution to the country's energy woes in the immediate aftermath of the 2011 disaster (Haarscher et al., 2014).

In June 2012, with the introduction of a general Feed-in Tariff (FiT) that had some of highest rates for RE producers in the world, the Japanese government wanted to provide the necessary support and financial incentive for RE power generation projects aiming to increase the at that time negligible share of RE in the general energy mix (JFS, 2013).

* Corresponding author at: Graduate School of Arts and Sciences, The University of Tokyo, 3-8-1, Komaba, Meguro-Ku, Tokyo 153-8902, Japan.
E-mail address: kschumacher@opes.c.u-tokyo.ac.jp.

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However, despite significant subsequent growth in RE power generation capacities after the introduction of the general FiT, the overall deployment figures between the various RE sources supported under the FiT scheme diverged largely from one another. The overwhelming majority of eligible investments have been focusing mainly on solar PV, whereas other forms, most notably wind and geothermal, constitute only small fractions of the FiT project approval applications (Kotsubo and Takeuchi, 2013). In stark contrast to the large energy and development potential of wind and geothermal resources in Japan, these forms of RE power generation continue to represent only very small percentages of overall electricity production (Schumacher, 2015).

The Japanese government announced in April 2015 that Japan wants to increase the share of renewables in the total electricity power generation from currently 13% (including large hydroelectricity) to 22–24% in 2030 (Urakami and MOEJ, 2015). Taking into consideration the recent progressive levelized lowering of FiT rates, coupled with the fact that all major large hydroelectricity sites have already been developed, the question arises how Japan will be able to achieve the desired energy mix (METI, 2015). Moreover in June 2015, in anticipation and preparation to the United Nations (UN) COP21 climate change summit held in Paris in December 2015, the Japanese government also approved a plan to reduce GHG emissions by 26% by 2030, with 2013 serving as the baseline year (JFS, 2016).

Given the fact that its national GHG emissions saw a steep increase after the Fukushima disaster, as a result of Japan expanding its thermal power capacities in order to offset the complete shutdown of all its nuclear power facilities, this emission reduction target appears difficult to attain, even with the less ambitious 2013 baseline year and the assumption of nuclear power approaching pre-Fukushima levels (JT, 2015). In light of the aforementioned goals of a 22–24% renewables share of TPES and a 26% GHG emissions cut by 2030, large-scale wind power and geothermal power developments could contribute significant shares to Japan's energy mix, but due to several administrative barriers emanating from the country's environmental laws that appear to partially neutralize the benefits of the FiT, investments and project development have been stagnating in comparison to solar PV, which is largely exempt from these environmental assessment regulations (Azechi et al., 2012; Shibata et al., 2015; Watanabe et al., 2016).

Being aware of some of the administrative constraints that have been adversely affecting the environmental approval and permitting stages, the Japanese government has been attempting to deregulate and streamline the stringent national environmental laws, most notably the environmental impact assessment (EIA) law, by modifying and adapting some of the most prohibitive provisions within the various legal frameworks (MOEJ, 2012b; MOEJ, 2013). The majority of these measures proved to be of mostly palliative nature, as their impact has remained relatively limited, and growth rates for wind power and geothermal have been continuing to be comparatively low or at times even decreasing (Azechi et al., 2012; Nishikizawa et al., 2013; Shibata et al., 2015).

In absence of comprehensive, integrated environmental law reform efforts and looking at a OECD member region with similar economic weight and structured RE issues for entire territory, this paper aims at comparing the Japanese measures in juxtaposition to the EIA legal framework of the European Union (EU), which has recently been reformed as well, in order to determine what elements of the EU EIA law could be implemented into the Japanese EIA law in order to strengthen and streamline the environmental approval process as well as reduce the administrative barriers to LS-RE development. Examples and cases from different EU member states (Germany, United Kingdom, Ireland, Belgium and Bulgaria) will be used to illustrate some of the strengths and weaknesses of the EIA process in Europe.

This paper focuses for the most part on the administrative barriers for large-scale geothermal power in Japan and large-scale onshore wind power for Japan and the EU, as these represent the RE sources with the most similar energy potential rates and administrative obstacles (IEA, 2015). Finally, applying comparative analysis expands the scope of the discussion in what ways EIA and environmental laws in general can act as barriers to RE development beyond national or transatlantic considerations.

Table 1
Evaluation criteria of the Japanese and EU EIA Frameworks (after Galás et al., 2015).

Issues	Analysis and evaluation	Evaluation criteria
A) In the procedural framework	Legal frameworks and reform proposals	• Number of procedural stages • Number of procedural requirements per stage • Public input possibilities • Administrative facilitation • Overall procedural duration • Overall cost
B) In the practical application	Expert opinions and semi-structured interviews	• Consideration of industry concerns in reform efforts • Public input variations • Political willingness to reform • Perceived strong and weak points

2. Methodology

In order to assess the strengths and weaknesses of each EIA framework, a levelized mixed-methodology approach was applied. The first step consisted of in-depth literary and legal reviews of the current rules in place, followed by the identification of the regulatory elements that acted as development barriers to RE projects. The literary review was concluded by outlining the planned or already enacted reform and streamlining measures in each jurisdiction. The next step consisted of the conception of evaluation criteria presented in Table 1 that allowed for an objective assessment of the fundamental requirements set by EIA procedural steps for developers. These criteria were then integrated into a comparative qualitative data analysis that highlights the likely impact of each procedural component.

The final step consisted of a conceptualized research framework integrating the opinions obtained through semi-structured expert interviews, incorporating established techniques described by Bryman (2008), conducted with individuals both in Japan and the EU between October 2013 and January 2016, and covering various sectors (academia, project development, energy sector, government agency, lawmaker), into the respective conceptualized EIA policy frameworks. The questions addressed issues of EIA framework efficiency, procedural shortcomings and streamlining effort evaluation. The interviewees listed in Table 2 are allocated codes for the Japanese (JP1- JP17) and EU experts (EU1-EU4) to guarantee their anonymity (Bryman, 2008). To offset the small EU sample size, I also cross-checked the EU responses with an official EU questionnaire in which national EIA legislators and administrators were asked to respond to the proposed

Table 2
Semi-structured JP and EU expert interviews.

EIA Experts classified by sector	
Sector	Number of interviewees
Academia	6 (JP1–5, EU1)
Project development	2 (JP6–7)
Energy sector	2 (JP8–9)
Government agency	6 (JP10–14, EU2)
Legislator	2 (EU3–4)
Think tank and consulting	3 (JP15–17)
Total	21