Forest Policy and Economics 83 (2017) 210–218

Contents lists available at ScienceDirect

Forest Policy and Economics

journal homepage: www.elsevier.com/locate/forpol

Reprint of 'Are forest researchers only scientists? Case studies on the roles of researchers in Japanese and Swedish forest policy processes'☆,☆☆

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ARTICLE INFO

Keywords:
Roles of researcher
Forest policy
RIU model
Scientific knowledge transfer

ABSTRACT

The aim of this study is to clarify the roles of researchers in forest policy development processes. Comparative case studies between Japan and Sweden were conducted. The research–integration–utilisation (RIU) model on scientific knowledge transfer was employed as a framework. Based on the RIU model, 'scientist', 'integrator', and 'policy entrepreneur' were defined as three hypothesised roles of researchers, discussed in conjunction with Pielke's 'honest broker' model. It was found that researchers played important roles, both as scientists and integrators in Japan. In Sweden, researchers played only the role of scientist. However, no researchers working as policy entrepreneurs were found in either country. These results indicate that the RIU model could work as a basis for the comparison between countries and the clarification of the roles of researchers in forest policy processes. The case study analysis also specified three additional topics for further discussion: (1) different types of science-based policy advice; (2) the relationship between power allies and consensus building; and (3) the reason why the roles of researchers differ between Japan and Sweden.

1. Introduction

Forest policy design cannot be accomplished without science, because forest management in general faces complex and uncertain issues, such as rural development, biodiversity conservation, and carbon sinks. In correspondence with the significant importance of science for forest policy development, it should be expected that scientists play an important role. However, scientific input on policy development has often been ignored in previous forest policy processes. Failure in knowledge transfer is often addressed by both scientists as well as politicians (e.g. Böcher, 2009; Pielke, 2007; van Kerkhoff & Lebel, 2006). Thus, this study focuses on the role of scientists in the transfer of scientific knowledge into forest policy.

It is useful to elaborate on the theoretical background when analysing the roles of scientists in the science–policy interface. Different roles are expected, and different transfer types are therefore used to describe them. The study then applies these theoretical transfer types to empirical cases in which forest science is well developed, and we can observe recent, strong initiatives to shape an improved forest policy. Two countries, which befit these criteria, have been selected: Japan and Sweden. Both are highly developed economies, with similar Gross Domestic Products (GDP) per capita, and both have recently developed important silvicultural initiatives (Table 1).

Japanese forestry has experienced challenges since the 1980s, due to increased manual labour costs in rural areas and decreased domestic timber prices (Forestry Agency, 2014a). As a result, the economic output from the Japanese forestry industry has decreased by two-thirds (Forestry Agency, 2014a). Therefore, several forest policy countermeasures have been implemented to recover Japanese forestry. For instance, the 'Outline of Forest Policy Reform (*Rinsei Kaikaku Taikou* in Japanese)' and the 'Forest Policy Reform Program (*Rinsei Kaikaku Puroguramu*)' were launched by the Forestry Agency in 2000. The 'New Marketing and Wood Process System (*Shin Ryutsu Kakoh Shisutemu*)' took force between 2004 and 2007, and subsequently, the 'New Production System (*Shin Seisan Shisutemu*)' was implemented from 2007 to 2010—before the Forest and Forestry Revitalisation Plan (hereafter the Revitalization Plan) was prioritised on the political timetable when the Democratic Party of Japan came to power in 2009 (Endo, 2012).

In Sweden, the establishment of a national forest programme (NFP) became a political issue in the late 2000s. No NFP had been fully

DOI of original article: http://dx.doi.org/10.1016/j.forpol.2016.06.006

☆ A publisher's error resulted in this article appearing in the wrong issue. The article is reprinted here for the reader's convenience and for the continuity of the special issue. For citation purposes, please use; Forest Policy and Economics Volume 70, 2016.

☆☆ This article is part of a special feature entitled: "Trends in European forest policy research - Selection of the 1st International Forest Policy Meeting" published at the journal Forest Policy and Economics 83C, 2017.

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http://dx.doi.org/10.1016/j.forpol.2017.08.003
Received 13 April 2016; Received in revised form 10 June 2016; Accepted 10 June 2016
Available online 23 August 2017

Table 1
Japanese and Swedish GDP per capita and forestry.

	Sweden	Japan	Unit	Year	Source
GDP per capita	28,032	25,884	EUR	2008	1)
Forest area	28,203	24,979	1000 ha	2010	2)
Per capita	3.0	0.2	ha	2010	2)
Forest coverage ratio	69	69	%	2010	2)
Volume of annual final felling	2.4	0.8	m^3/ha	2012	3)

Note:
1) (FAO, 2010), foreign exchange rate from 1 USD to 1 EUR is 0.75842, on December 31st, 2008 (Antweiler, 2016). 2) (FAO, 2010) 3) Case of Sweden (Swedish Forest Agency, 2013b), using net felling volume of 68.9 Mm^3 in 2012. Case of Japan (Forestry Agency, 2014b), using total domestic timber supply of 19.7 Mm^3 excluding timber for mushroom cultivation and firewood in 2012.

implemented in Sweden before then, since the main actors in Swedish forestry recognised that Swedish forest and environmental legislations had already substantially met the required standards of the NFP (Svensson, 2004) designed by the Intergovernmental Panel on Forests (FAO, 2013). The trigger for change was the emergence of huge conflicts in environmental conservation within the Swedish forestry industry (Kakizawa, 2014)—for example, the claim of forest degradation announced by an environmental non-governmental organisation (NGO), which the Forest Stewardship Council (FSC) certified (SSNC, 2013).

The Swedish government officially mandated the Swedish Forest Agency to conduct a feasibility study regarding the establishment of a NFP in Sweden (Swedish Forest Agency, 2013a) after receiving an interim report from the All Party Committee on Environmental Objectives in June of 2013 (All Party Committee on Environmental Objectives, 2013). This Committee was established with the aim of advising the government on strategies, policy instruments, and measures to achieve the sixteen environmental quality objectives before 2020 (Swedish Environmental Protection Agency, 2012).

The Swedish Forest Agency submitted the first pre-study on the NFP to the Ministry of Rural Affairs in October 2013, and the first official meeting, the Program Council (*Programråd* in Swedish), was held in June 2014, attended by twenty member organisations (Government Offices of Sweden, 2014). The organisational framework and timetable for this dialogue on the NFP were discussed (Government Offices of Sweden, 2014). Additionally, the Swedish University of Agricultural Sciences (*Sveriges lantbruksuniversitet* in Swedish: SLU) was assigned the task of conducting further pre-studies on the NFP with support from a research programme 'Future Forests' (SLU, 2014). SLU submitted this research to the government in October 2014 (SLU, 2014).

The Future Forests research programme was first established in 2009, with the second phase running from 2013 until 2016 (Future Forests, 2012). Around forty forest-related researchers have been involved in the programme, mainly from the SLU, Umeå University, and the Forestry Research Institute of Sweden (*Skogforsk* in Swedish) (Future Forests, 2013). Future Forests aims at providing scientifically robust knowledge to enable greater and sustainable provision of ecosystem services from forests, which face climate change, energy transition, and altered markets for forest goods and services (Future Forests, 2013, 2012).

2. Analytical framework and hypothesis

In his until now very frequently cited book, 'The Honest Broker: Making Sense of Science in Policy and Politics', Pielke (2007) describes the different challenges within the science–policy interface. He addresses four idealised roles of researchers in policy and politics, namely, 'pure scientist', 'science arbiter', 'issue advocate', and 'honest broker of policy alternatives' (Pielke, 2007). The pure scientist focuses on research activities only, has no considerations about its utilisation, and thus, no direct connection with decision-makers (Pielke, 2007: 15). The science arbiter focuses on positive scientific questions posed by decision-makers (Pielke, 2007: 17). The issue advocate focuses on the implications of research for a particular political agenda, and reduces the scope of choice for decision-makers (Pielke, 2007: 18). Finally, the honest broker plays the role of expanding policy alternatives for decision-makers (Pielke, 2007: 17).

We take Pielke's honest broker model as the starting point of our analysis and compare the ideal multiple roles that he describes for researchers with the ones that the RIU model of scientific knowledge transfer (Böcher & Krott, 2016) depicts. We have chosen both approaches in their pure form in order to highlight the most important advantages of the honest broker and the RIU model. Pielke's model is very useful in that it delineates some important central aspects regarding the possible roles of researchers within policy processes. One of the main advantages of Pielke's model is that the science–policy interface is based on different form of interaction between science and politics. In many cases, these interactions proceed far beyond the traditional understanding of a linear transfer from science to politics in which scientific expertise can be directly applied by political actors (Beck, 2011; Pregernig & Böcher, 2012; Durant, 2015). Pielke deals with existing scientific uncertainties that challenge linear models of the scientific knowledge transfer in which one precondition for a political problem is that there is one uncontested scientific solution available. In this regard, Pielke's model is a very important improvement in the extensive literature on science–policy interactions.

Nevertheless, some aspects remain unclear despite the advantages of Pielke's model. Therefore, we take Pielke's model as a starting point and use our own research–integration–utilisation (RIU) model for the transfer of scientific knowledge (Böcher & Krott, 2016) (Table 2) to address those aspects. Those aspects are: (1) Pielke distinguishes different roles for scientists in scientific knowledge transfer but is not clear enough to apply empirical analysis to their main preconditions as scientists and their activities; and (2) Pielke's model does not reflect enough findings from political science. In his view, the 'honest broker' can have direct influence on political actors and political decisions by brokering policy alternatives and providing existing or new policy options. Here, Pielke's model lacks a more elaborated political science perspective. However, the political science perspective is a main aspect of RIU: this model assumes multiple roles for scientists in scientific knowledge transfer, highlights the important role of integrators (whether scientists or not), and analyses the necessity of having powerful political actors as allies who are crucial for the realisation of science-based policy advice. Since politics is not just the application of science, but the result of power struggles, this important perspective goes beyond Pielke's model and justifies our comparison between the honest broker model and the RIU model.

The RIU model, based on political science, assumes that it is not possible to have direct influence: scientists can play the role of 'integrator', but the integrator does not have direct influence. The integrator has to select scientific knowledge in regard to specific political actors and considers that these political actors are powerful enough to enforce the science-based knowledge against weaker actors. We use the RIU model, which was developed to broaden Pielke's important findings. We believe that this model can be helpful to shed light on the 'blind spots' of the 'honest broker' model.

Furthermore, Pielke defines science simply as the 'systematic pursuit of knowledge (Pielke, 2007: 31). In the RIU model, an important consideration is whether policy advice is based on high-quality, independent scientific achievements, or not. Without strong scientific basis, scientists cannot formulate independent science-based advice. For this reason, the RIU model defines four concrete preconditions to clarify whether a certain activity conducted by researchers would be classified as scientific, or not (Böcher & Krott, 2016). These four activities are: (i) assessing current scientific information; (ii) compliance to