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Carbon Markets in Japan

An Advanced Political Economy Analysis of their
Feasibility and the Consequences of the
Fukushima Nuclear Disaster

Sven Rudolph and Friedrich Schneider

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Jana Gattermann
Robin Kirakosian

Email: CliMA@uni-kassel.de
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Carbon Markets in Japan:

An Advanced Political Economy Analysis of their Feasibility and the Consequences of the Fukushima Nuclear Disaster¹

Sven Rudolph² and Friedrich Schneider³

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Abstract

The Great Tōhoku-Earthquake and the following nuclear meltdown in Fukushima called the world's attention to Japan's energy and climate policy. Japan is one of the biggest emitters of greenhouse gases in the world and is still facing problems of reaching its Kyoto target by domestic reductions. Emissions trading has been used in Japanese climate policy since 2005. However, major emission reductions have not been achieved and a function-

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² Dr. Sven Rudolph, Assistant Professor, Department of Economics, Kassel University, Nora-Platiel-Str. 4, D-34109 Kassel, Germany, s.rudolph@wirtschaft.uni-kassel.de.

³ O. Univ.-Prof. Dr. Friedrich Schneider, Department of Economics, Johannes Kepler University Linz, Altenbergerstr. 69, A-4040 Linz, Austria, friedrich.schneider@jku.at.

ing market does not exist. Hence, by using an advanced Public Choice approach, we ask for the political reasons for the failure of ambitious carbon markets in Japan and how the earthquake has influenced the political chances of emissions trading. Also, we evaluate Public Choice's arguments and environmental policy making. We show that in Japan, even after some positive promising developments, chances for an ambitious carbon market are still very low and that. We also show, that a Public Choice that takes exogenous conditions into account delivers important insights into climate policy decision making

Keywords: Japan, climate policy, emissions trading, Public Choice

JEL-code: D62, D72, D73, Q48, Q54, Q58

1. Introduction

In 1989 Hahn (1989) posed the question „How the Patient Followed the Doctor's Orders” referring to early experiences with emissions trading in the USA. He concluded that “virtually none of the systems ... exhibits the purity of the instruments which are the subject of theoretical inquiry”, “all ... systems ... place great importance on the status quo”, and “distributional concerns play an important role in the acceptability” (Hahn 1989: 97, 109). The same insights can be obtained looking at carbon markets in Japan.

After successful efforts to increase energy efficiency in the aftermath of the oil price shocks of the 1970s, Japan's specific national climate policy started in 1990 and is today based on the Kyoto Protocol Target Achievement Plan of 2008 (GoJ 2008).⁴ At the Kyoto Conference in 1997, Japan committed to emission reductions of 6% by 2008/2012 based on 1990 levels. In addition, at the climate summit in Copenhagen, Japan committed to a 25% reduction by 2020 and a 60-80% reduction by 2050 with 1990 as base year (GoJ 2010: 38). Altogether, in 2007 Japan was about 15% short of its commitment (MoE 2009a). On the policy instrument level, Japan's Kyoto Protocol Target Achievement Plan focuses on industry's Voluntary Action Plan (Wakabayashi/Sugiyama 2007), which was rather unsuccessful in limiting industries' absolute emissions. Market-based instruments, on the other hand, are only mentioned in the Kyoto Protocol Target Achievement Plan sporadically.

⁴ See also Schröder (2003), Watanabe (2011).

Emission markets for environmental protection have been spreading globally, especially since the new millennium (OECD 2004). While environmental economists had been emphasizing the merits of emissions trading since its invention by Dales (1968),⁵ it took until the 1990s to implement national emission markets in the USA (Ellerman et al. 2000).⁶ In climate politics, emissions trading had not been used before the Kyoto Protocol allowed the Flexible Kyoto Mechanisms. Since then, emissions trading schemes have been evolving rapidly across the globe including supranational system in the EU, national approaches in New Zealand, and even regional and local systems in the northeastern and western USA and the city of Tokyo. In addition, many more countries are seriously considering the use of carbon markets. Experiences are mixed so far, the EU Emissions Trading Scheme being the most vivid example (Ellerman et al. 2010).⁷ Still, carbon markets appear to become the most important policy instrument in global climate policy, capable of being both economically efficient and environmentally effective.

Carbon markets in Japan – a leader in environmental policy and technology development in the 1970s and 1980s (Weidner 1992) – have been used since 2005 but only produced modest outcomes: Emission reductions have been negligible, and the creation of an efficient carbon market has failed. Thus, in this paper we try to answer the following questions:

What are the major design flaws of the Japanese carbon markets?

What are the political reasons behind the failure of Japanese carbon markets?

How has the political situation changed after the Great Tōhoku-Earthquake?

While political science literature has analyzed environmental policy making in Japan,⁸ there is a gap of knowledge on policy instrument choice in Japanese climate policy with respect to market-based instruments. This is true not only for the literature in western languages, but also for Japanese sources, due to a lack in policy feasibility and implementation research in

⁵ See e.g. Tietenberg (2006).

⁶ Early experiences with flexible command-and-control policies had been gathered in the USA already since the 1970s (Hahn/Hester 1989).

⁷ Most of these deficiencies can be explained by using the Public Choice approach (Rudolph 2009)

⁸ See for general studies on Japanese environmental politics Schreurs (2002), Imura/Schreurs (2005), Broadbent (1999); and for climate policy studies Schröder (2003), Watanabe (2011).

Japan. To date, an individualistic actor-based approach has not been applied to climate policy in Japan. Thus, in order to answer the questions of this paper, we apply environmental economics as well as Public Choice within a case study design.⁹ Besides using existing literature, an extensive qualitative interview study containing more than 50 individual interviews with Japanese climate policy experts and stakeholders was conducted between 2009 and 2011 for data collection.

In chapter 2 we analyze Japan's carbon markets based on environmental economics' criteria. In chapter 3 we use Public Choice arguments to explain the political failure of carbon markets and confront Public Choice predictions with the behavior of climate policy actors in Japan. Chapter 4 sums up and derives recommendations for improving the chances of ambitious carbon markets in Japan.

2. Design and Effects of Japanese Greenhouse Gas Emission Trading Schemes

In 2005, Japan's environmental ministry started the experimental Japan Voluntary Emission Trading Scheme (JVETS)¹⁰. Participation, however, is voluntary, but until 2009 subsidies were used to create incentives to participate. JVETS covers CO₂ emissions from fossil fuel burning. Targets are fixed bottom-up by companies in absolute volume terms, but they have to be one percentage point tighter than past status quo emissions every year. Allowances are handed out free-of-charge according to individual company's targets. Also, Flexible Kyoto Mechanism credits can be used for compliance. Borrowing of allowances from future reductions is not permitted, while banking early reductions is unlimited. Trading is carried out via the Trade Matching System, which is supposed to lower transaction costs. Monitoring follows Kyoto Protocol guidelines.

Experiences with JVETS are ambivalent. Companies' individual targets were all reached in every compliance period between 2006 and 2008. Total reductions of participants accounted for 29% below base-year levels, thus even exceeding commitments. Nevertheless, total reductions of JVETS par-

⁹ See for general environmental economics arguments e.g. Endres (2010), for Public Choice Mueller (2003), for case studies Yin (2009) and Nutzinger/Rudolph (2011).

¹⁰ See for the JVETS design and experiences MoE (2008).

ticipants summed up to only 0.03% of total Japanese greenhouse gas emissions in 1990. The maximum participation was 86 companies, and total transactions accounted for a maximum of 51 transactions and a maximum trading volume of 82,624 allowances per year. The share of allowances traded has even decreased from 8 to 2% since the start of the program. The average price for allowances was 1,200 Yen. As the initial allocation was free-of-charge, only abatement costs were born by emitters, but not total emission costs. While supposedly administrative costs were high due to the sophisticated initial allocation, transactions costs on the secondary market were low due to a working market infrastructure. Incentives to innovate were ineffective, due to voluntary participation and low prices.

Supplemental to JVETS, in 2008, the Japanese Cabinet established the Integrated Domestic Market of Emissions Trading (IDMET).¹¹ Coverage follows JVETS; however, besides individual companies, entire industry sectors can participate as single units. While subsidies are not available, different options for bottom-up target setting including intensity targets are provided for companies to choose from. Nevertheless, participants' targets must at least be as stringent as their Voluntary Action Plan goal, or, if lower, their actual emissions. Allowances can be obtained ex ante or ex post depending on the targets, but only ex post surplus credits or 10% of ex ante allocations can be traded. In contrast to JVETS, in addition to banking borrowing is unlimited. Again, project-based Kyoto mechanisms can be used without limits.

Concerning experiences, participation significantly increased to 700 companies in 2009 and even nine power companies and more than 100 energy intensive companies accepted targets, only one transfer of exactly one ton of CO₂ occurred. In addition, important energy intensive industries participated on a sector basis, thus impeding an efficient allocation of abatement within these sectors. Again, the free-of-charge initial allocation scheme prevented heavy burdens on industry, but it only followed the weak Polluter-Pays-Principle. Different initial allocation options must have increased administrative costs, while again transaction costs should be low. While coverage increased to 50% of Japanese CO₂ emissions, only 30 of the 75 participants in 2008 picked absolute volume targets. And even some important emitters with intensity targets such as utilities and the paper industry failed to com-

¹¹ See for IDMET design issues and experiences IDMET-Secretariat (2008).

ply, thus even overcompensating reductions achieved by other participants. As a consequence, in 2008, total emissions exceeded the total target level by more than 83 Million Tons. The intensive use of borrowing and Kyoto credits however protected industries from non-compliance. Also, only 25 participants accepted external verification, so that reports might be unreliable.

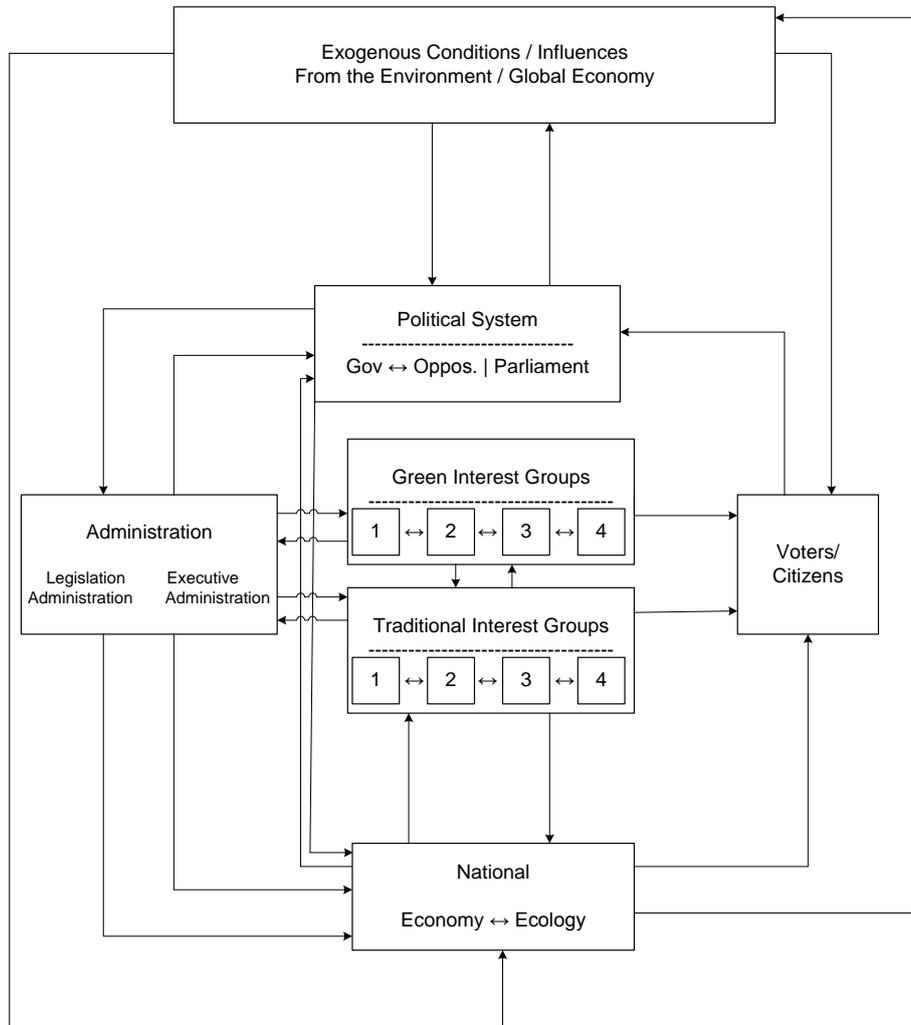
Altogether, both Japanese greenhouse gas emissions trading schemes have not been able to establish an ecologically effective and economically efficient carbon market. While a functioning market infrastructure has been established, coverage is small due to voluntary participation, targets are insufficient due to bottom-up target setting and intensity targets, the initial allocation is free-of-charge, and offsets and borrowing are generously accepted. Also, both systems terminate operation in 2012. The reasons for the rather unsatisfactory design can be found in the political realm.

3. The Political Economy of Emissions Trading: Theory and the Japanese Practice

We now turn to the economic analysis of the most important actors and discuss the motives or interests in environmental policy of voters, politicians, public administrations, producers and other interest groups¹². Figure 3.2 shows the interdependence of all of these actors and that in any policy process the outcome of negotiations is one of all parties' competing interests. In environmental policy, being a policy that ought to preserve the common public good "the environment", these interactions are of great importance, as our analysis will show. The picture also shows that each and every policy making process is heavily influenced by exogenous conditions such as the global economic situation – e.g. the world financial crisis after 2008 – or natural circumstances – e.g. the Tōhoku-Earthquake –, which may significantly alter policy outputs. Nutzinger/Rudolph (2007) tried to systematically incorporate such conditions into the political economy analysis of environmental policy making and differentiated between systemic, long-term stable conditions and situational, short-term variable conditions.

¹² The theoretical subsections closely follow Kollmann and Schneider (2010) as well as Kollmann et al. (2011)

Figure 2: The interaction of economic agents from a public choice perspective



Source: Kollmann and Schneider (2010)

The main focus of Public Choice is discussing the different incentives of all actors in general and the use of market-based instruments. But not only is the choice of the instrument of great importance for successful environmental policy, also the general positions of the actors matter.

In relation to climate change mitigation, Llewellyn (2010) discusses seven different intellectual positions of opponents of a stronger environmental policy: Firstly, he argues, that there is a group of people who generally sees no need for any emission reduction policy and, secondly, some believe that any action comes to late anyway. Both arguments can – in his opinion - be overcome by establishing the credibility of the science. Thirdly, there is

concern, that emission reductions and economic growth are incompatible. The next two positions (four and five) he describes, are the targets of the costs of emission reductions: on the one hand, some argue that emission reductions are too costly and on the other hand they have to be borne „up-front’. Furthermore (position six), emission reduction targets are considered unrealistic and cannot be achieved due to a lack of political will. Lastly (position seven), there is no first mover advantage involved with imposing environmental policy. With these fundamental arguments in mind, we will now turn to analyzing the individual position of the actors involved.

In order to apply Public Choice’s analysis and get a clear impression of Japanese climate politics in practice, we immediately confront Public Choice arguments with the behavior of political actors in Japan’s decision making process on greenhouse gas emission trading schemes (GHG ETS).¹³ In accordance with the above given figure 3.1, the main actors in Japanese climate politics and the debate on GHG ETS are the general public or the voters, interest groups such as environmental and industry organizations, the ministries of the environment and economic affairs, and politicians of differing parties.

3.1 Voters

Citizens’/voters’ sensitivity towards environmental issues has continuously increased throughout recent decades. One indicator for this is that voters attach more and more importance to the use of renewable energy sources. Wüstenhagen and Bilharz (2006) show that in Germany within the period 1984 to 2003 the public attitude towards energy sources has shifted notably from nuclear power to renewable energy sources (wind, solar). While in 1984 only 17% of respondents expected wind energy to significantly contribute to Germany’s energy supply, in the following three decades the figure increased, to 42% in 2003. Public opinion analysis, undertaken by the EU Commission, shows that 50% of European Citizens consider climate change a serious problem. In yet another survey for the European Commis-

¹³ Due to the lack of sources in western languages, we chose a multiple-source approach following Yin (2009), extracting data not only from literature and primary written sources such as legal texts, policy documents, and speech manuscripts but also from more than 30 elite interviews following Grant (2000) with climate policy experts and stakeholders of all major groups in the Japanese climate policy process.

sion, 97% of respondents considered environmental protection very or fairly important.¹⁴

A lack of information about market-based instruments in environmental policy, especially about energy taxes, is found in several studies.¹⁵ One line of arguments why market-based instruments are not satisfactorily incorporated in environmental policies is, that this lack of information on the voters' side is too costly to be overcome. Understanding the complexity of environmental issues requires higher education, interest and time to learn, therefore acquiring information is subject to high opportunity costs.¹⁶ Klok et al. (2006) report that participants in a Danish focus group argued that "they could not accept something they did not understand".

Another aspect is that voters are more likely to accept a policy they are familiar with, as is the case with regulation or command-and-control measures, in contrast to market-based instruments. Dresner et al. (2006) point out that "familiarity breeds affection: those being controlled regard it as „tolerable' while an alternative approach might not be seen as such". This position is also supported by Brännlund and Persson (2010) who find, that people generally dislike the word "tax" and are more willing to accept a policy that even though actually being a tax is labeled differently. That terminology itself may have a considerable influence on acceptance is also shown in Clinch and Dunne (2006) who propose to relabeling taxes as charges, since „tax' is considered a „bad' word. Kirchgässner and Schneider (2003) argue that selfish voting is a major obstacle to any kind of environmental policy. Empirical evidence for this is, that in the year 2000, the Swiss citizens rejected three proposals for taxes on fossil energy.

Considering the values of social discount rates discussed in the literature, it appears that voters care more about the here and now than about the future: In an overview of relevant papers, van der Bergh (2009) reports values of discount rates varying between 3 and 6%, where any social discount rate greater than 0% implies that a higher weight (importance) is given to early generations than to generations in the distant future.¹⁷ Layton and Levine (2003) calculate a public discount rate of nearly 1%. Even though there is an

¹⁴ See EU Commission (2008).

¹⁵ For France see Deroubaix and Leveque (2004), for Ireland see Clinch and Dunne (2006), for Germany see Beuermann and Santarius (2006).

¹⁶ Compare also Anthoff and Hahn (2010).

¹⁷ Compare Howarth (2001) and Ackerman et al. (2009).

ongoing dispute in the literature about the use and size of social discount rates, especially in view of the costs of fighting climate change, there is a widespread tendency to assume that voters at least to some extent, attach more value to the present than to some unknown future. Most interestingly, Halla et al. (2008) find that parents worry significantly more about CO₂ emissions than citizens without children, which is another argument in favor of a non-zero inter-temporal discount rate.

Summing up our theoretical discussion, we find three main issues that can explain why voters do not explicitly vote for the environment: firstly, the provision of the public good „environment’ allows free-rider behavior, secondly, the time delay between costs and benefits of environmental policies (especially CO₂ emission reduction) is difficult to explain and non-zero social discount rates diminish the future’s importance and thirdly, other more urgent issues, like unemployment or income, have a higher priority than less tangible environmental issues.

Using Public Choice considerations on the consequences of the exogenous Fukushima incident, we can expect that such a disaster will change voters’ interests in energy policy. On the one hand, the nuclear meltdowns have clearly shown to voters that atomic energy can be extremely costly and even have irreversible effects on human life. Thus, major parts of the voting public can be expected to be against nuclear energy or even demand its immediate phase-out for the benefit of alternative energy sources like renewable energy. Thus, voters will not support an energy strategy of the government that heavily relies on atomic energy. On the other hand, due to the Fukushima incident, voter’s opinion might even lean more towards opposition against an ambitious carbon market, because an expected energy price increase from the power switch to renewables will be supplemented by a price increase caused by carbon pricing within an emissions trading scheme. Voters are surely not willing to bear this additional cost, at least not in the short or medium run, especially in a situation where energy policy is more important than climate policy. If, as Public Choice argues, politicians follow voters will at least to some degree, even the government will not support an ambitious carbon market, because it will have difficulties in finding a majority in the public on that issue. Also, following these arguments, voters’ political influence will only be increasing in energy policy but not in climate

policy. Hence, in sum, voter's interests will not lead to a better political feasibility of carbon markets after the Fukushima incident.

Just as Public Choice predicts, political priorities of the Japanese public are not centered on environmental issues but rather on topics such as jobs and social security, and recent economic crises have even intensified the emphasis on economic growth; environmental issues are not capable of significantly determining voters' decisions in general elections (Imura 2005: 78ff, Schröder 2003: 85f).¹⁸

Nevertheless, starting with the severe environmental problems of the 1960s and 1970s (e.g. Minamata Disease, Itai Itai), environmental issues have steadily gained importance in the Japanese public (Imura 2005: 78ff). Politicizing the issue is, as emphasized by Public Choice, particularly difficult in industrialized countries, because negative effects mainly burden less developed countries and future generations. In Japan, a public awareness of climate change and the need to counteract has been shown in several surveys (COJ 2005, 2007). The Japanese public overwhelmingly supports climate protection targets and policies. However, there is a fear of financial burdens, and the willingness-to-pay for measures against climate change is low (JfS 2010, JPC 2010).¹⁹ In addition due to rational ignorance (Downs 1957), the state of knowledge on climate change and policy instruments is insufficient (COJ 2005, JPC 2010).

Choosing policy instruments is thought to be a genuine task of the government; particular interests towards policy instruments do not exist, which supports the Public Choice hypothesis. Surveys show that the Japanese public generally considers measures for industry important, while there is no clear preference for particular instruments (JPC 2010, COJ 2005). However, there is a prejudice against the immoral trading of pollution rights and price incentives are deemed dispensable, because moral-based collective action is considered sufficient.

The political influence of the Japanese public is rather low (Schröder 2003: 82).²⁰ As votes in general elections, as Public Choice supposes, are not cast

¹⁸ For confirmation of written sources see for the following paragraphs interview data by Morotomi et al. 2009-2012, Kiko Network et al. 2009-2012.

¹⁹ More than half of the respondents were only willing to pay 1,000 Yen per family per month, while around 25% were even unwilling to pay at all (JPC 2010).

²⁰ For confirmation of written sources see for the following paragraphs interview data by Morotomi et al. 2009-2012, Kiko Network et al. 2009-2012.

based on environmental considerations but rather based on economic and social issues, political pressure to act on global warming does not stem from voters' behavior at the ballot box.²¹ Creating political pressure by political protest, on the other hand, fails, because, as emphasized by Olson (1965), incentives to free-ride apply. Even more important, there is a lack of tradition of political protest in Japan and protest activities are even deemed illegitimate (Schröder 2003: 106, Imura 2005: 50).

Summing up, while there is a general awareness of global warming and the need for action in the Japanese public, selfish voting prevails and instrument choice is considered to be government's task. Still, there is an underlying distrust in tradable emission rights. No political pressure originates from the Japanese public, because citizens do not yield significant power, neither as voters nor as protesters.²² Hence, Public Choice appears to be a valuable first step for analyzing voters' behavior in environmental policy.

However, it also becomes clear that exogenous factors such as the political culture or catastrophes are influential. This has become most obvious when the 2011 melt-downs in the Fukushima nuclear power plants fueled public protests against nuclear energy in Japan and, while the insufficient management of the catastrophe by the Japanese government accelerated the fading of the public's trust in government. Public acceptance of nuclear power dropped dramatically to a mere 20% with 50% favoring an immediate complete phase-out. When the first nuclear power plant was restarted in 2012 after of period of a complete shutdown of nuclear energy use in Japan, 150.000 people protested on the streets of Tokyo and even local blockades were organized (N.N. 2012), a revolution in civil disobedience in Japan and the biggest protest movement since the 1960s. Some observers consider these activities as the start of a major change in the Japanese political culture (Naß 2011). Despite these protests, still, the Japanese government restarted two nuclear power plants in the summer of 2012, which might act as a hint for the still negligible political power of the Japanese public. Climate protection activities of the Japanese public, in addition, were not positively influenced by the anti-nuclear movement, mainly because climate policy is not a directly health-related issue. On the contrary, climate protection as a policy issue was even crowded out by energy policy issues in the public

²¹ In the electoral campaign of 2009 climate policy was only fifth amongst the most important political issues in the manifesto of the Democratic Party (DPJ 2009).

²² See also Kollmann and Schneider (2010) and Kollmann, Reichl and Schneider (2011).

perception. Thus, public pressure to implement an ambitious carbon market has not significantly increased after the earthquake.

3.2 Politicians

Major questions from the Public Choice perspective are whether politicians are intrinsically motivated to engage in environmental policies, and whether they favor market-based means.

According to Mueller (2003) the standard political economy approach assumes a selfish behavior of politicians, where utility is gained by being re-elected and by reaching certain ideological policy goals. If re-election is modeled as a constraint, a politician will promote certain popular policies in order to meet the median voter's preferences.²³ Weck-Hannemann (2008) argues that politicians are intrinsically motivated to implement instruments that are in line with their political ideology and increase their power or their personal income. Whether or not they can follow their own ideological goals or have to comply with the median voter's demands depends on how stringent the re-election constraint is. Then again, List and Sturm (2006) argue that the re-election constraint may be valid only for major political topics like overall government spending or income distribution, it may be less important for secondary issues like environmental policy: a view that is also supported by Franzese (2002).

According to Frey and Schneider (1978) the governing party that aims to stay in power will seek to please the median voter only if their re-election chances are low. If the re-election probability is high, they will undertake policies in line with their ideology. As we stated above, politicians want to be re-elected, in order to stay in power and to receive benefits. What does this mean for a politician's intrinsic motivation to pursue environmental policies? Firstly voters value the environment but do not have complete information about environmental issues, their importance and the toolkit of instruments that can be used. Secondly they also fear being over-burdened financially. And thirdly, following List and Sturm (2006) environmental issues may be of only secondary interest to the median voter, but if secondary issues do not influence the median voter's election decision, there may

²³ See Maux (2009) for a formal discussion of the median-voter model and Böhringer and Vogt (2004) for an empirical discussion of how the national median voter's willingness to pay determined the Kyoto outcome.

be voters who attach extraordinarily high importance to such issues. A politician may therefore be inclined to pursue this secondary policy in order to receive additional votes.

Weck-Hannemann (2008) also points out that politicians are not completely tied to the median voter's demands, because rational voters acquire political information only up to the point where the marginal cost of acquiring additional information equals the marginal benefits. As the single voter's influence on an election outcome is marginal, this benefit from acquiring information is marginal, too. In consequence, with uninformed voters, politicians can pursue their own goals. This lack of information on the voters' side offers leeway for interest groups to influence politicians according to their own motives.

After arguing that a selfish politician may not be intrinsically motivated to promote ecological policies using market-based instruments, but reacts in line with the other actors' interests, the question arises whether such a policy will be carried out efficiently. From our discussion so far, it follows that the design of a specific policy is strongly influenced by interest groups whose interests we will discuss in the following.

Using Public Choice arguments on the consequences of the Fukushima disaster, politicians will even be more opposed to carbon markets. This is, because if they intend to install an ambitious carbon market, they might lose a great part of voters' support. As argued above, under the given exogenous conditions, voters can be expected to mainly demand a phase-out of nuclear energy and the use of alternative safe and reliable energy sources, even on a moderate growth path. But also, voters fear increasing energy costs, which might already arise from the energy supply switch. An additional carbon market might additionally increase costs and force consumers to reduce energy consumption, either by more efficient use or by even limiting energy consumption especially from fossil fuel. This would have immediate severe consequences on voters' lifestyle such as heating/cooling, lighting, individual transport etc. In the European context voters did not like that at all. Hence, a government that wants to stay in office and even wants to be re-elected will do very little to install an ambitious carbon market under the particular exogenous energy policy circumstances given in the Japanese case, because this might lead to the loss of the majority in the parliament.

Hence, in sum, politicians will not be more inclined to implement a carbon market after the Fukushima disaster.

As Public Choice predicts, climate policy is not a major political issue or even a goal in party programs, because climate policy does not represent a decisive voting issue for Japanese citizens and thus does not help selfish politicians to be re-elected (Schröder 2003: 77ff, Imura 2005: 53ff).²⁴

Still, the now ruling, moderate left-wing Democratic Party of Japan (DPJ), as Public Choice suggests, leans more to environmental topics than its major competitor, the Liberal-Democratic Party (LDP).²⁵ However, even in the DPJ only a small number of party members are in favor of environmental positions, while the majority cares more about economic growth and jobs. Nevertheless, the DPJ, trying to please the at least somewhat ecologically-minded Japanese median voter in the pre-election period of 2008 and 2009, favored ambitious climate targets.²⁶ A binding greenhouse gas emissions trading scheme (GHG ETS) is basically considered an important instrument for the industrial sector, but was still dropped from DPJ's political agenda in late 2010 in favor of a low-rat carbon tax and the implementation of a Feed-In Tariff for the promotion of renewable energies. The long-time ruling LDP leans to a more conservative and industry-friendly ideology. Hence, in line with Public Choice predictions, the Kyoto Protocol, although officially accepted, is considered unfair, due to the fear of competitive disadvantages. The LDP supports only less stringent targets²⁷ and considers a domestic GHG ETS dispensable.

In terms of political power, parliamentarians are of minor importance, because the traditional way of policy making in Japan favors the bureaucracy. In addition, Parliamentarians suffer from information asymmetries and a lack of staff resources. In addition, environmentally active parliamentarians are few in numbers in all parties and even the inter-party environmental working group of the Parliament, the *kankyō zoku*, is one of the smallest.

On the individual party level, DPJ's power was limited due to the dominance of the LDP since World War II. Only DPJ's landslide electoral victo-

²⁴ For confirmation of written sources see for the following paragraphs interview data by Kiko Network et al. 2009-2012; Morotomi et al. 2009-2012.

²⁵ For a comparison of party manifestos see WWF Japan 2010.

²⁶ Concrete demands were -6% by 2008-2012, -25% by 2020, -80% by 2050 based on 1990 levels.

²⁷ Such as 15% by 2020 and 80% by 2050 with a 2005 base year.

ry of August 2009, earned significant influence to the DPJ. However, DPJ's political margin was soon reduced, when it lost seats and the absolute majority in the Upper House in July 2010. Not commanding over a two third majority in the Lower House, which would allow overruling Upper House decisions, forces the DPJ to form coalitions in order to pass a basic climate law. In addition, the DPJ cannot rely on ecologically-minded networks similar to the "Iron Triangle"²⁸. LDP, on the other hand, has been dominating Japanese politics for decades, uninterruptedly establishing formal and informal networks within the "Iron Triangle". Thus, despite of its opposition position and a minority of seats in both Houses, LDP continues to have a strong position.

Summing up, party positions on climate policy and emissions trading are widely spread, but they seem to depend on party ideologies. The political influence of parliamentarians is rather low, but parties' influence depends on the current majorities and institutional traditions. Prime Ministers have played an important role, often supporting ambitious climate policies. Again, exogenous conditions such as the current majority situation and traditions in policy making are important determinants. Nevertheless, Public Choice gives a good first indication of selfish politicians' preferences and their receptiveness for party ideologies and election cycles.

The consequences of the Great Tōhoku-Earthquake brought only minor changes. While the electorate's unhappiness about the government's engagement in the catastrophe led to the resignation of Prime Minister Kan and the tight network between parties, ministries, and utilities was heavily criticized, the majorities in the two Houses are unchanged, as are the well-established rules of policy making. Nevertheless, especially the close cooperation of politicians with Japan's most important power provider TEPCO has been severely damaged. Climate policy was even crowded out as a policy issue of importance to politicians by questions on Japan's energy future. Thus, the implementation of an ambitious carbon market as rather suffered than gained from the earthquake and its consequences.

²⁸ Since World War II and against the background of Japan's traditional consensus orientation industry, the economics ministry, and the Liberal-Democratic Party have closely cooperated and designed an industrial policy that led to the economic success of the Japan Inc. (Bosse 1997).

3.3 Interest Groups

In modern democracies interest groups play a major role in forming public policy. We argue that traditional interest groups do not prefer ecological policies, but prefer command-and-control measures over market-based instruments in environmental policy. We furthermore argue that green interest groups strongly prefer ecological or environmental policies, but also favor command-and-control measures and have a weaker position in the policy making process. In the following we analyze whether from these propositions, the restricted use of market-based instruments can be explained.

If the lobbyists' information is reliable and is used, then the question arises which attributes of an interest group will make them more successful in pursuing their individual goals. We label four: Firstly, traditional interest group lobbyists will have more financial backing than environmental interest groups. Most interestingly, the so called Green-10, composed of the ten major environmental advocacy groups. The importance of any interest group's budget is shown by Eising (2007). He calculates within a regression model encompassing data from 800 interest groups, that the probability to have weekly contact with the European Commission is 50 % higher if an interest group has a budget of 7.5 million euro compared to an interest group without such a budget. Secondly, with environmental issues, especially pollution control and alternative technologies, there is a strong information asymmetry between producers' lobbyists and environmental lobbyists.

Thirdly, Oates and Portney (2003) mention that environmental interest group's object to market-based instruments in environmental policy on philosophical grounds. In their line of thinking, permits and environmental taxes are interpreted as "rights to pollute" and are therefore immoral. Stavins et al. (1983) add that environmental interest groups furthermore argue that the possible damages from pollution are difficult to quantify and to monetize, which prevents the calculation of an accurate tax rate.

Fourthly, as Becker (1983) famously described in his "Theory of Competition Among Pressure Groups for Political Influence", group size matters: the smaller the group the more effectively it can lobby, which is why business lobbying tends to be more effective than lobbying for consumers.²⁹ Envi-

²⁹ See also Brandt and Svendsen (2002), Markussen et al. (1998), Svendsen (2002).

ronmental groups are relatively weak due to their large group size and their poor financial backing.

We see that lobbyists of industrial and business interest groups are relatively better equipped to influence policy making from an early stage on. The specific information and expertise of lobbyists is a crucial factor in policy-making which strengthens the relationship between administrators and lobbyists. On the other hand environmental lobbyists, suffer from group size and fewer financial resources which in reality can even result in a situation in which the lobbyists are paid by the very organization they lobby.

Applying the Public Choice perspective to the consequences of the Fukushima incident, industries unreliable information policy might weaken their influence in energy policy making, while, on the other hand, environmental organizations might win due to their former criticism of nuclear energy. Also, greater public support for environmental organizations can be expected in energy policy issues, while industry groups will be less trusted. Still, adding costs of a carbon market to costs from a shift in energy supply might lead environmentalists to retreat from strongly pushing for a carbon market. Industry groups can be expected to try to win back society's trust by proposing a reliable and safe energy supply at moderate cost. This of course means that incentives to support a carbon market are even more heavily reduced, because industry groups could be blamed for additional costs. Hence, in sum, interest groups influence will not increase the political chances of having a carbon market after the Fukushima incident.

Major interest groups in Japan are, as Public Choice supposed, environmental organizations and industry groups. The interests of the major Japanese climate protection organizations are largely homogenous, welcoming ambitious climate policies (Kiko Network 2008).³⁰ In order to advance towards a Low Carbon Society and to contribute to reaching the global 2°C target, they demand ambitious reductions of greenhouse gases, just as Public Choice predicts.³¹

At the instrument level, acting against Public Choice's predictions, Japan's environmental organizations support a domestic greenhouse gas emissions

³⁰ For confirmation of written sources see for the following paragraphs interview data by Kiko Network et al. 2009-2012.

³¹ Concrete reduction demands are 6% by 2008-2012 according to Japan's Kyoto Protocol target, 30% by 2020, and 80% by 2050 with a 1990 base year.

trading system (GHG ETS).³² However, Japanese environmental organizations consider a domestic GHG ETS to be advantageous, first and foremost, because it represents a sorely needed mandatory instrument, which could displace insufficient voluntary approaches. Furthermore, Japanese environmental organizations like absolute emission limits induced by a cap. Also, cost minimization, incentives to innovate, and the introduction of the strong polluter pays principle by allowance auctions are appreciated.

In terms of political power, even though, according to Olson (1965), the homogeneity of interests increases the chances of interests to organize, Japanese environmental organizations' influence is very low (Schröder 2003: 106ff, Imura 2005: 80ff).³³ First, Japanese environmental organizations lack members,³⁴ lowering the capacity to create significant political pressure by utilizing Scale Economies in the Production of Pressure (Endres/Finus 1996: 52f, Becker 1983), or to give ideology orientation to voters (Downs 1957). Low membership numbers can be attributed to incentives to free-ride (Olson 1965) and the lack of political participation culture in Japan. Supporting Public Choices' argument, the budget of Japanese climate protection organizations is small.³⁵ A culture-based low willingness-to-donate and the lack of tax incentives are major reasons. Also, staff numbers of Japanese climate protection organizations are small.³⁶ In addition, the majority of staff members do not have an academic training background, because Japanese environmental organizations cannot afford to pay adequate salaries. As a consequence of the lack of resources, lobbying activities of Japanese environmental organizations as well as participation in governmental hearings and commissions are limited. Japanese environmental organizations also suffer from a lack of access to policy making and policy networks. They, as anti-

³² This result is supported by other studies on the implementation of market-based instruments in Germany and the USA. See Rudolph 2009.

³³ For confirmation of written sources see for the following paragraphs interview data by Kiko Network et al. 2009-2012; Morotomi et al. 2009-2012.

³⁴ In 2009, membership in Japanese climate protection organizations accounted for only 21,000 individual and 450 institutions. In international comparison (Schreurs 2002: 211) environmental organizations in Japan/Germany had the following membership numbers in 2000: Greenpeace 5.000/510.000, FoE 380/340.000.

³⁵ The 2009 budget added up to not more than 10 million Euros. In international comparison the budget of e.g. Greenpeace Japan/Germany in 2000 was 1.5 Million US\$/32 Million US\$ (Schreurs 2002: 213).

³⁶ 70 full-time and 15 part-time employees worked for Japanese environmental organizations in 2009, but only 10 of them are entirely occupied with climate change issues. In international comparison staff numbers of major environmental organizations in Japan/Germany in 2000 were: WWF 30/100, FoE 8/30 (Schreurs 2002: 217).

society protest movements, are not accepted to be on a par with decision makers in the parliament or ministries. Thus, informal meetings as well as invitations to hearings and shingikai – the traditional Japanese advisory commissions, mainly set-up by ministries – are few. Network building with likeminded actors is underdeveloped, due to the general distrust against protest movements in the government and the lack of potential partners such as green research institutes, parliamentarians, or eco-friendly companies.

The political influence of environmental organization's counterparts, the Japanese industry, however, is decisive (Imura 2005: 74ff, Schröder 2003: 100ff).³⁷ Keidanren, the major industry organization, bundles the interests of almost all companies into a homogenous set of positions, overcoming free-rider incentives by strong social ties, loyalty, and the traditional group-orientation (Imura 2005: 50). Also, the major emitters take over major parts of the reductions in exchange for solidarity. Political strength is added by the support of labor unions', which fear job-loss due to stringent climate policies. Access to the decision-making arena and useful networks are granted by the "Iron Triangle" and most shingikai are lined with industry representatives. In exchange, companies offer highly rewarding job opportunities to former public servants, the practice of amakudari. Keidanren's political power is, just as Public Choice predicts, further enhanced by abundant financial and staff resources, which allow for intensive lobbying and costly campaign activities.³⁸ As opposed to environmental organizations, Keidanren also disposes of significant market power, because it can provide decision-makers with exclusive, company-internal information and threaten the government with moving jobs abroad.

Interests of Japanese industries are quite homogenous, which, according to Olson (1965) adds to their influence.³⁹ Ambitious market-based climate pol-

³⁷ For confirmation of written sources see for the following paragraphs interview data by Keidanren et al. 2009-2012, Morotomi et al. 2009-2012.

³⁸ Keidanren encompasses 1,662 company members including market leaders such as Nippon Steel and TEPCO. Keidanren alone employs 20 people in different departments working on climate policy issues.

³⁹ Arguments in favor of ambitious climate policies and GHG ETS are only brought forward by individual company leaders (e.g. Ricoh, Cannon) from Keizai Doyukai, the main representative of corporate leaders, and the financial sector (Morotomi et al. 2009), hoping for competitive advantages and new markets. While the alliance of climate policy opponents in Japanese industry is extremely potent, pro-active forces in the business community only have a faint voice (Kiko Network et al. 2009, Morotomi et al. 2009). Only representatives of less important economic sectors raised their voices. Still, even these proponents would not openly cooperate with environmentalists, because of their

icies are, as expected by Public Choice, seen with utmost skepticism (Imura 2005: 74ff; Schröder 2003: 100ff; TEPCO 2010; Keidanren 2008, 2010).⁴⁰ While basically climate policy is deemed necessary; already the Kyoto target is judged to be unfair, due to Japan's world leadership in energy efficiency. Nevertheless, against the background of the Japanese code of honor (Nitobe/Suchi 1998), industry sticks to its promise given in the Voluntary Action Plan, but expects the government to refrain from additional measures as a return service. Reductions beyond these commitments are declined.

On the policy instrument level, Japanese industry prefers its Voluntary Action Plan. It is considered to be successful, while additional binding instruments are judged dispensable, because industry already considers voluntarily promises to be binding; non-compliance would mean a loss of face. A GHG ETS, on the other hand, is, as Public Choice predicted, strictly opposed. It is argued that GHG ETS would increase production costs, lead to competitive disadvantages and leakage effects. Also, Japanese industry cherishes its positive experiences with „Administrative Guidance“⁴¹ instead of unpredictable price fluctuations and speculation in a GHG ETS. In addition, a cap would implement planned-economy elements and prohibit economic growth. Ultimately, it is claimed that due to government involvement the initial allocation cannot be done fairly.

Summing up, while Japanese environmental organizations support ambitious market-based climate policies, industry is strictly against the application, which was only partially expected by Public Choice. Environmental organizations' political influence is, in line with Public Choice arguments, low, while industry almost exerts veto power.⁴² However, again, exogenous factors such as the political culture and the existence of policy networks such as the “Iron Triangle” are important determinants.

External shocks, such as the Tōhoku-Earthquake and its consequences are capable of, at least for some period of time, altering perceptions and power balances. TEPCO, operator of the Fukushima plants and major political

traditional role as a part of the Japanese business sector and social pressure from other companies including Keidanren.

⁴⁰ For confirmation of written sources see for the following paragraphs interview data by Keidanren et al. 2009-2012, Morotomi et al. 2009-2012.

⁴¹ The Japanese governments specific way of cooperating with and guiding industry, most successful in establishing the Japan Inc.

⁴² Compare again Kollmann and Schneider (2010), and Kirchgässner and Schneider (2003), who reach using the Public Choice analysis the same result.

power, lost almost all of its economic and political power, while utilities reputation in general seriously suffered from the TEPCO's mismanagement and the "Iron Triangle" was severely weakened for the time being (Keuchel 2011). Also, it is expected that the most recently proposed liberalization of the electricity market might further weaken the utilities political influence. On the other hand, anti-nuclear movements gained a lot of public support (Naß 2011). In the case of energy policy, environmental organizations are now even taken more seriously by the government, allowing them easier access to information and policy making itself. However, considering the well-established rules of policy making in Japan, a sustaining effect is unlikely. In climate policy, environmental organizations have not even gained from the anti-nuclear movement in membership, support, or access to policy making, because contrary to climate protection the use of nuclear energy is directly related to human health issues. Sometimes even the argument is made in the public that ambitious climate protection is not possible in the case of a phase-out of nuclear power, so that climate protesters must inherently be pro nuclear. Also, the political influence of Japan's strongest opponents of an ambitious climate policy, the Japanese steel industry, has remained mostly unhurt. Even the liberalization of the electricity market may, as e.g. Germany experienced in the past,⁴³ only have a minor effect on utilities political power, due to well-established networks and the time lag of an effective liberalization. Hence, altogether, while the growing power of the anti-nuclear movement and the diminishing power of TEPCO might influence energy policy decisions, climate policy issues such as the implementation of an ambitious target market might not profit from the earthquake and its consequences.

3.4 Bureaucracy

Bureaucracies necessarily play an important role in environmental policy making in modern societies that are characterized by a sophisticated division of labor. According to Niskanen's famous model of bureaucracy (Niskanen 1971), the head of any public administration unit seeks to maximize his unit's budget, increase the number of his employees, and hence increase his power and importance.⁴⁴ In contrast to politicians bureaucrats

⁴³ See for the EU ETS case e.g. Markussen and Svendsen 2005.

⁴⁴ See Chang and Turnbull (2002), who provide empirical support for this notion.

are not bound by re-election constraints. This holds for any administration authority whether or not it is engaged in environmental policy, the result of budget-maximizing behavior is that environmental administrations are highly motivated to implement environmental policy measures which require the most administrative controls as well as exhibiting the high costs. We assume that most members of ‚green‘ public authorities identify themselves with the goals of their authority and are highly motivated. But being motivated need not necessarily lead to favoring cost-efficient policy making. Especially with environmental policy that is largely tied to incentives that need to be given to the regulated party, the inefficiency aspect of command-and-control mechanisms also comes from the simple fact that administrators are not there to formulate or provide incentives or to encourage and reward the regulated ones, not to speak of any innovation beyond compliance with given requirements, as Rondinelli and Berry (2000) point out.

When it comes to the question whether public administrations are in favor of market-based instruments using incentive orientated policy instruments and assuming budget-maximizing behavior, several factors need to be considered in order to explain why they favor command and control measures: firstly, command-and-control mechanisms exhibit high costs, since monitoring them is labor-intensive; secondly, with command-and-control mechanisms the administration has an information advantage that mainly derives from expert knowledge within the authority compared to the government; thirdly, the administration simply knows what to do, which may not be the case with a new instrument; and fourthly, the public administration is needed for command-and-control mechanisms, but may be superfluous if, say, a command-and-control mechanism it is replaced by an environmental tax⁴⁵

Using Public Choice arguments on the consequences of the Fukushima incident, a similar line of arguments as for interest groups apply. While ministries that supported nuclear energy might suffer in influence, opposing ministries might win, because information of the latter appears more reliable. Concerning interests, the exogenous shock will significantly shift ministries‘ priorities to energy policies, because budgets will be more readily available in this field than in climate policy. Hence, in sum, the political conditions for a carbon market will not be improved by bureaucracies‘ reaction to the Fukushima incident.

⁴⁵ See Schneider and Volkert (1999) and Stavins (2003) for a discussion.

Adding to Public Choices arguments, the public administration in Japan plays an even more important role than in other countries, due to the traditional way of policy making (Schröder 2003: Ch. 3.1.3).⁴⁶ To a large extent it is responsible not only for implementing but also for preparing and drafting laws, which are then only officially legitimized by the Japanese Diet. Japan's public administration is supplied with significant financial and personnel resources, making them "Japan's original think tanks".

Ministry officials' interests are strongly influenced by their academic training and the specific institutions they work for. Japanese civil servants are exclusively trained for working in a ministry, 90% of them at the Tokyo University, allowing their preferences to be immediately determined by their administration-oriented education. Due to the traditional Japanese group-orientation, officials show utmost loyalty their respective ministries' goals. The strict separation of ministries in the Japanese political system then leads to egoisms and competition between ministries, in climate policy e.g. between the Ministry of the Environment (MoE) and the Ministry of Economy, Trade, and Industry (METI).

Already at the Kyoto negotiations but also in the recent debates, the MoE favored ambitious reduction targets (MoE 2009d).⁴⁷ By being pro-active, the ministry intends to establish itself as the main authority in climate policy and replace the METI, thus increasing its power and budget. This budget orientation closely follows Public Choice arguments.

The MoE has recently been enabled to appreciate the advantages of emissions trading because of an influx of economic knowledge and learning effects similar to environmentalists.⁴⁸ Ministry staff has acquired specific skills in handling GHG ETS, which could be utilized for an ambitious domestic system. Thus, Public Choice's argument of bureaucrats preferring

⁴⁶ For confirmation of written sources see for the following paragraphs interview data by Morotomi et al. 2009-2012.

⁴⁷ Preferred targets were -10% in the Kyoto period, -15% by 2020, and -80% by 2050 (base 1990). For confirmation of written sources see for the following paragraphs MoE 2009-2012.

⁴⁸ Civil servants in Japan are selected based on ministry-specific quotas (MoE 2009c). In the MoE 15 to 20 new employees are hired each year on the basis of a quota for lawyers, economists, engineers, and natural scientists. While in the past 3 to 4 positions were given to lawyers and economists, now 6 to 9 are newly employed, whereas economists are preferred, thus steadily increasing the share of economists in the ministry.

well-known and well-established instruments, which prevent their experience from becoming dispensable, still holds.

Despite the general importance of the public administration in Japan, the political power of the MoE is small compared to METI's influence, (Imura 2005: 56ff, Schröder 2003: 88). The reasons for MoE's political weakness are the following: First, MoE's responsibilities do not cover energy policy, which still resides with the METI. Second, financial and personnel resources are comparatively small.⁴⁹ Third, the MoE does not offer exclusive information such as technology potentials or company cost offered by the METI. Fourth, the MoE moved from agency to ministry status only in 2001, making it one of the youngest ministries in Japan. As a consequence, the MoE lacks valuable networks comparable to the "Iron Triangle".

MoE's counterpart, the METI, disposes of huge political power.⁵⁰ First and foremost, the METI is responsible for energy policy. Second, the METI is an integral part of the "Iron Triangle", supplying it with valuable networks and exclusive, industry-internal information. Third, the METI is by far the biggest ministry in Japan, commanding over huge financial and staff resources.⁵¹

In terms of interests, the METI supports climate policies in the cases of win-win- or no-regret-solutions for industry.⁵² But while the Kyoto-target is officially tolerated, officials still consider the target to be unfair. Only modest mid- and long-term targets are thought to be acceptable.⁵³ Internally, the

⁴⁹ In 2005 the MoE only commanded over 9% of the budget for implementing the Outline for Promotion to Prevent Global Warming, thus having the smallest budget amongst the main ministries dealing with climate change (GoJ 2006: 37). In addition, budget cuts (-32% against 2004) were the biggest amongst all ministries. In terms of staff numbers, the MoE personnel doubled when moving from agency to ministry status 2001, but still, in 2006 the MoE only had 1,185 employees (including local branches), thus being one of the smallest ministries in Japan (Ikkatai 2009). The Office of Market Mechanisms employed 11 people working on ETS-related issues in 2009 (MoE 2009c).

⁵⁰ For confirmation of written sources see for the following paragraphs interview data by METI 2009-2012; Morotomi et al. 2009-2012, Keidanren et al. 2009-2012.

⁵¹ The METI's budget in the Outline for Promotion to Prevent Global Warming was a third of the total budget and three times the size of the MoE's resources; also, there were no budget cuts for the METI (GoJ 2006: 37). METI employed 8,528 officials in 2006 (including all local branches), eight times as many as the MoE (Ikkatai 2009). 30 people alone are dealing with market-based climate policy issues in 2009 (METI 2009).

⁵² For confirmation of written sources see for the following paragraphs interview data by METI 2009-2012, Morotomi et al. 2009-2012.

⁵³ Such as a stabilization of emissions on the 1990 level by 2020 appears feasible to the METI staff.

METI fears the shift of responsibilities to the MoE in case of ambitious climate policies.

On the policy instrument level, a domestic GHG ETS is opposed by the METI mainly due to its potential to increase production costs. Also, absolute volume caps are feared as being a limit to growth. The Voluntary Action Plan, on the other hand, is considered to be successful, so that additional measures are dispensable.

Summing up, the METI is highly skeptical about ambitious, cost-inducing market-based climate policies, whereas the MoE supports such approaches, a result only partly predicted by Public Choice. However, the MoE lacks political power, of which the METI disposes of in abundance.⁵⁴ Public Choice has so far not taken into account the behavior of economics ministries, but budget orientation seems to play an important role for any kind of ministry. Also, again, exogenous conditions such as staff members' ministry affiliation and regulatory responsibilities play a decisive role.

The exogenous shock of the Great Tōhoku-Earthquake first and foremost limited ministries' capacities to act on climate change, because most of the resources have since been focused on disaster recovery. Climate policy has become a minor issue even in MoE, while METI is entirely focused on energy policy now. As even MoE is not anti-nuclear, it may not gain in power and reputation from the growing anti-nuclear movement in Japan. However, in comparison to METI, which closely cooperated with TEPCO, MoE's loss in reputation might not be as severe as METI's. In addition, with the decline of TEPCO, METI has lost one of its major allies against an ambitious carbon market; however, surely, others will step up to fill that gap soon. Hence, altogether, even in the bureaucracy no major changes towards an ambitious carbon market are to be expected.

⁵⁴ This result is also supported by other studies on the political implementation of market-based instruments in other countries. See for Germany and the USA e.g. Rudolph 2009.

4. Summary and Conclusions

Although Japan is amongst the most energy efficient countries in the world, it is also one of the biggest emitters of total greenhouse gases and still far away from complying with its Kyoto target domestically. Carbon markets have been used in Japan policy since 2005, but the experiences have been disappointing both economically and ecologically. Major design flaws are the compulsory participation, bottom-up intensity target setting, a free initial allocation, and the generous acceptance of offsets and borrowing. In order to explain these deficiencies we applied actor-based Public Choice theory.

In the Public Choice analysis of voters there are three main issues that can explain why voters do not explicitly vote for the environment: firstly, the provision of the public good „environment’ allows free-rider behavior, secondly, the time delay between costs and benefits of environmental policies (especially CO₂ emission reduction) is difficult to explain and non-zero social discount rates diminish the future’s importance and thirdly, other more urgent issues, like unemployment or income growth, have a higher priority than less tangible environmental issues. For the politicians we find that after arguing that a selfish politician may not be intrinsically motivated to promote ecological policies using market-based instruments, but reacts in line with the other actors’ interests, the question arises whether such a policy will be carried out efficiently. From our discussion so far, it follows that the design of a specific policy is strongly influenced by interest groups. Turning to the interest groups we realize, that lobbyists of industrial and business interest groups are relatively better equipped to influence policy making from an early stage on. The specific information and expertise of lobbyists is a crucial factor in policy-making which strengthens the relationship between administrators and lobbyists. On the other hand environmental lobbyists, suffer from group size and fewer financial resources which in reality can even result in a situation in which the lobbyists are paid by the very organization they lobby. The public administration is not in favor of an effective environmental policy using incentive orientated instruments due to the following three reasons: firstly, command-and-control mechanisms exhibit high costs, since monitoring them is labor-intensive; secondly, with command-and-control mechanisms the administration has an information advantage that mainly derives from expert knowledge within the authority compared to the government; thirdly, the administration simply knows what

to do, which may not be the case with a new instrument; and fourthly, the public administration is needed for command-and-control mechanisms, but may be superfluous if, say, a command-and-control mechanism is replaced by an environmental tax, or this may at least require a great degree of flexibility within the authority. The exogenous shock of the Fukushima incident, from the Public Choice perspective, cannot be expected to strongly influence the political feasibility of a carbon market, while it will certainly influence decision making on energy policy and improve the chances for renewable energies.

If we confront these theoretical insights with the Japanese situation we conclude as follows:

(1) While there is a general interest in the Japanese society for environmental issues and climate change, this does not result in environmentally oriented voting behavior or even activities in protest movements.

(2) Climate policy interests of Japanese politicians strongly depend on party affiliation. The now-ruling left-wing party favors ambitious climate policies, while the conservative party is more skeptical. Parliamentarians' power, however, is small in general, and even the now ruling left-wing party slowly loses its margin over the conservatives, making it hard to establish a political consensus on ambitious carbon markets.

(3) Regarding interest groups, environmental organizations strongly favor an ambitious market-based climate policy, while industry is strongly opposed to it. While environmental organizations are rather powerless, industry groups almost exert veto power in climate politics. Within the most powerful public administration, the economics ministry, being rather skeptical towards carbon markets, clearly dominates the pro-active environmental ministry in power.

(4) A further conclusion is that Public Choice appears to provide a valuable first approximation to the explanation and prediction of environmental policy making outcomes, but case studies and the inclusion of exogenous conditions improve Public Choice argumentations.⁵⁵

The disastrous Tōhoku-Earthquake and the following multiple meltdown of Fukushima nuclear power reactors fueled a new and for the Japanese case

⁵⁵ Compare Schneider and Volkert (1998), Nutzinger and Rudolph (2007).

revolutionary public movement. The increasing public pressure might influence Japan's decisions on the future energy mix. However, policy making on carbon markets is only slightly touched by this change, because of two reasons

(1) Energy policy and climate policy are, although tightly interdependent in terms of effects, merely competitors in the perception of the public but also political decision makers.

(2) The tradition of policy making in Japan, a systemic condition in our model, its institutions and processes, appear to be sufficiently solid to even withstand such situational shocks as the Tōhoku-Earthquake and its consequences.

As for policy recommendations we conclude that for the Japanese case, the prospects of having an ambitious domestic carbon market in place in the near future are rather bad. The well-established power balance appears to be hard to overcome. However, the 2012 decisions on energy policy and, even more, the discussion on climate targets beyond the Kyoto Protocol commitment period might trigger a new discussion on an ambitious climate policy including a carbon market. And, although by now not interrelated, the anti-nuclear movement might also fuel the general willingness of the Japanese public to engage in environmental policy affairs and thus strengthen civil society's influence in Japanese climate policy.

5. Literature

Anthoff, D., Hahn, R.. 2010. Government failure and market failure: on the inefficiency of environmental and energy policy. *Oxf Rev Econ Policy* 26, 197-224.

Becker, G. S., 1983. A Theory of Competition among Pressure Groups for Political Influence. *Quarterly Journal of Economics*, 98(3), 371-400.

Beuermann, C., Santarius, T., 2006. Ecological tax reform in Germany: handling two hot potatoes at the same time. *Energy Policy* 24, 917-929.

Blume, G., 2010. JAPAN – Japans Joschka. <http://www.zeit.de/2010/24/Japan-Premier> (10/6/10).

- Boehringer, C., Vogt, C., 2004. The dismantling of a breakthrough: the Kyoto Protocol as symbolic policy. *Eur J Polit Econ* 20(3), 597-617.
- Bornstein, N., Lanz, B., 2008. Voting on the environment: Price or ideology? Evidence from Swiss referendums. *Ecol Econ* 67, 430–440.
- Bosse, F., 1997. Wirtschaftliche Strukturen, in: Bundeszentrale für politische Bildung (Ed): Japan, pp. 32-40.
- Brandt, U.S., Svendsen, G.T., 2002. Rent-seeking and grandfathering: The case of GHG trade in the EU. Working paper 35/02, Department of Environmental and Business Economics.
- Brännlund, R., Persson, L., 2010. Tax or no tax? Preferences for climate policy attributes. Working paper, Centre for Environmental and Resource Economics.
- Broadbent, J., 1999. *Environmental Politics in Japan*. Cambridge University Press, Cambridge.
- Chang, C., Trunbull, G.K., 2002. Bureaucratic behavior in the local public sector: A revealed preference approach. *Public Choice* 113.
- Clinch, J., Dunne, L., 2006. Environmental tax reform: an assessment of social responses in Ireland. *Energy Policy* 34, 950–959.
- COJ, 2005. *chikyu ondanka taisaku ni kansuru yoron chosa*. Tokyo.
- COJ, 2007. *chikyu ondanka taisaku ni kansuru yoron chosa*. Tokyo.
- Dales, J. H., 1968. Land, Water, and Ownership. *Canadian Journal of Economics*, 1(4), 791-804.
- Downs, A., 1957. *An Economic Theory of Democracy*. Harper & Row, New York.
- DPJ, 2009. *Manifesto*. Tokyo.
- Dresner, S. et al., 2006. Social and political responses to ecological tax reform in Europe: An introduction to the special issue. *Energ. Policy* 34, 895–904.
- Eisling, R., 2007. Institutional Context. Organizational Resources and Strategic Choices. *European Union Politics* 8, 329-362.
- Ellerman, A. D. et al., 2000. *Markets for Clean Air*: Cambridge University Press, Cambridge.

- Ellerman, A. D. et al., 2010. Pricing Carbon. Cambridge University Press, Cambridge.
- Endres, A., 2010. Environmental Economics Cambridge University Press, Cambridge.
- EU Commission, 2008. Attitudes of European Citizens towards the Environment. Report Special Eurobarometer 247. European Commission, Brussels.
- Franzese, R.J., 2002. Lectoral and Partisan Cycles in Economic Policies and Outcomes. *Annu Rev Polit Scie* 5(1), 369.
- Frey, B.S., Schneider, F., 1978. A Politico-Economic Model of the United Kingdom. *Econ J* 88(350), 243-253.
- GoJ, 2006. Japan's Fourth National Communication under the UNFCCC. Tokyo.
- GoJ, 2008. Kyoto Protocol Target Achievement Plan (totally revised). Tokyo.
- GoJ, 2010. Japan's Fifth National Communication under the UNFCCC. Tokyo.
- Grant, W., 2000. Elite Interviewing. Birmingham: University of Birmingham (IGS Discussion Papers).
- Hahn, R.W., /Hester, G.L., 1989. Where Did All the Markets Go? An Analysis of EPA's Emissions Trading Program. *Yale Journal on Regulation* 6(1) 109-153.
- Hahn, R.W., 1989. Economic Prescriptions for Environmental Problems: How the Patient Followed the Doctor's Orders. *Journal of Economic Perspectives* 3(2), 95-114.
- Halla, M. et al., 2008. Satisfaction with Democracy and Collective Action Problems: The Case of the Environment. Working Paper No. 0808, Department of Economics at the Johannes Kepler University: Linz, Austria.
- IDMET-Secretariat, 2008. Experimental Emissions Trading Scheme. Tokyo.

- Imura, H., 2005. Japan's Environmental Policy: Institutions and the Interplay of Actors, in: Imura, H./Schreurs, M.A. (Eds): Environmental Policy in Japan. Edward Elgar, Cheltenham, pp. 49-85.
- Imura, H., Schreurs, M.A., 2005. Environmental Policy in Japan. Edward Elgar, Cheltenham.
- JfS, 2010. Public Says Japan Should Move Quickly on Climate Change <http://www.japanfs.org/en/pages/029702.html> (23/2/10).
- JPC, 2010. The Internet Survey on Global Warming. http://www.jpconnect.jp/eng/research/2010_04.html (15/7/10).
- Keidanren et al., 2009-2012, Interviews with representatives from Keidanren, Nippon Steel, and TEPCO, Natsource. Tokyo.
- Keidanren, 2008. Basic Standpoint on Climate Change Negotiations at the G8 Hokkaido Toyako Summit. Tokyo.
- Keidanren, 2010. Achieving a Low Carbon Society of Global Scale. Tokyo.
- Keuchel, J., 2011. Japans Atomlobby – Wenn Aufseher zu Anstiftern werden. <http://www.zeit.de/wirtschaft/2011-08/japan-atomlobby> (2/8/11).
- Kiko Network et al., 2009-2012. Interviews with representatives of Kiko Network, JACSES, WWF Japan, FoE Japan. Tokyo/Kyoto.
- Kiko Network. 2008. The NGO Approach towards a Low Carbon Society. Kyoto.
- Kirchgässner, G., Schneider, F., 2003. On the political economy of environmental policy, *Public Choice* 115/3, 369-396.
- Klok, J. et al., 2006. Ecological Tax Reform in Denmark: history and social acceptability. *Energy Policy* 34, 905–916.
- Kollmann, A., Schneider, F., 2010. Why Does Environmental Policy in Representative Democracies Tend to Be Inadequate? A Preliminary Public Choice Analysis. *Sustainability* 2010, 2(12), 3710-3734.
- Kollmann, et al., 2011. Why is environmental policy in representative democracies inadequate? A preliminary Public Choice analyses, Institut

für Volkswirtschaftslehre, Energieinstitut an der JKU Linz, Diskussionspapier, Linz Juni 2011.

- Layton, D.F., Levine, R., 2003. How Much does the Far Future Matter? A Hierarchical Bayesian Analysis of the Public's Willingness to Mitigate Ecological Impacts of Climate Change. *J. Am. Stat. Assoc.* 98, 533–544.
- List, J.A., Sturm, D.M., 2006. How Elections matter: Theory and Evidence from Environmental Policy. *Q J Econ* 121, 1249-1281.
- Llewellyn, J., 2010. The Political Economy of National Climate Change Mitigation Policies. OECD Working paper ECO/CPE/WP1(2010)18.
- Markussen, P. G. et al., 1998. The political economy of a tradeable GHG permit market in the European Union. Technical report, Aarhus School of Business.
- Markussen, P., Svendsen G.T., 2005. Industry Lobbying and the political economy of GHG trade in the European Union, *Energy Policy* 33, 245-255
- Maux, B.L., 2009. Governmental behavior in representative democracy: a synthesis of the theoretical literature, *Public Choice* 141, 447-465.
- METI, 2009-2012. Interview with METI representatives. Tokyo.
- MoE, 2008. Outline and Results of Japan's Voluntary Emissions Trading Scheme. Tokyo
- MoE, 2009. National Greenhouse Gas Inventory. Tokyo.
- MoE, 2009-2012. Interview with MoE representatives. Tokyo.
- MoE, 2009b. Current Status of the Emissions Trading Scheme in Japan. Tokyo.
- Morotomi, T. et al, 2009-2012. Interviews with climate policy researchers (K. Ueta, H. Niizawa, A. Morishima, H. Imura, T. Morotomi, S. Ikkaitai, S.-J. Park, T. Otsuka etc.). Tokyo/Kyoto/Kobe.
- Mueller, D.C., 2003. *Public Choice III*. Cambridge University Press, Cambridge.

- N.N. (2012): Japan fährt erstmals seit Fukushima Atomreaktor hoch. In: <http://www.zeit.de/wissen/umwelt/2012-07/atomreaktoren-japan> (7/16/12).
- Naß, M., 2011. Japan – Generation 11. März. <http://www.zeit.de/2011/44/Japan-Regierung> (2/11/11).
- Niskanen, W., 1971. Bureaucracy and Representative Government. Aldine-Atherton.
- Nitobe, I., Suchi, T., 198.: Bushido. Kodansha. Tokyo.
- Nutzinger, H.G., Rudolph, S., 2007. Mediating between Political and Economic Science by Societal Order Parameters – The Case of Environmental Policy Instrument Choice, in: Paiva, A. (E.): Sob o Signo de Hórus. Colibri, Lisbon, pp. 171-197.
- Nutzinger, H.G., Rudolph, S., 2011. Zur Relevanz qualitativer Fallstudien in der Neuen Politischen Ökonomie der Umweltpolitik, in: Dreger, C. et al. (Eds): Empirische Regionalforschung heute. Gabler, Wiesbaden. pp. 283-309.
- Oates, W. E., P. R. Portney. 2003. The political economy of environmental policy, in: Mäler, K.G., Vincent, J.R. (Eds), Environmental Degradation and Institutional Responses, Volume 1 of Handb Environ Econ. Elsevier, Amsterdam. pp. 25-354.
- OECD, 2004. Tradeable Permits. Paris.
- Olson, M., 1965. The Logic of Collective Action. Harvard University Press, Cambridge.
- Pohl, M., 2004. Geschichte Japans. Beck, Munich.
- Rondinelli, D.A., M.A. Berry, 2000. Corporate Environmental Management and Public Policy: Bridging the Gap. Am. Behav. Sci. 44,168-187.
- Rudolph, S., 2009. How the German Patient Followed the Doctor's Orders – Political Economy Lessons from Implementing Market-Based Instruments in Germany, in: Lye, L.H. et al. (Eds): Critical Issues in Environmental Taxation Vol. VII. Oxford University Press, Oxford. pp. 587-606.

- Schneider, F., Volkert, J., 1999. No chance for incentive orientated environmental policies in representative democracies, A Public Choice analysis, *Ecological Economics* 31/1, 123-138.
- Schreurs, M.A., 2002. *Environmental Politics in Japan, Germany, and the United States*. Cambridge University Press, Cambridge.
- Schröder, H., 2003. *Climate Change Policy in Japan*. Berlin: Free University of Berlin).
- Stavins, R.N., 2003. Market-based Environmental Policies. What Can We Learn from U.S. Experience (and Related Research)? Resources for the Future, Discussion Paper 03-43.
- Stavins, R.N. et al., 1997. The Positive Political Economy of Instrument Choice in Environmental Policy. Discussion papers 97-25, Resources for the Future: Washington, DC.
- Svendsen, G.T., 2002. Lobbyism and CO₂ trade in the EU. Presented at the 10th Symposium of the Econ-Sohmen-Foundation in Dresden, Working Papers 02-16, University of Aarhus, Aarhus School of Business, Department of Economics.
- TEPCO, 2010. *2020 Vision*. Tokyo.
- Tietenberg, T., 2006. *Emissions Trading*. Resources for the Future, Washington D.C.
- van der Bergh, J.C. (2009). Safe climate policy is affordable – 12 reasons. *Clim. Chang.* DOI 10.1007/s10584-009-9719-7.
- Wakabayashi, M., Sugiyama, T., 2007. Japan's Keidanren Voluntary Action Plan, in: Morgenstern, R. D., Pizer, W. A. (Eds) (2007): *Reality Check*. Resources for the Future, Washington D.C. pp. 43-63.
- Watanabe, R., 2011. *Climate Policy Changes in Germany and Japan*. London: Routledge.
- Weck-Hannemann, H., 2008. Environmental Politics, in: C. K. Rowley, F. Schneider (Ed.), *Readings in Public Choice and Constitutional Political Economy*. Springer, Berlin.
- Weidner, H., 1992: *Basiselemente einer erfolgreichen Umweltpolitik*. Sigma, Berlin.

Wüstenhagen, R., Bilharz, M., 2006. Green energy market development in Germany: effective public policy and emerging customer demand. *Energy Policy* 34, 1681–1696.

WWF Japan, 2010. san,,in-sen 2010: kaku tou no manifesto.

Yin, R.K., 2009. *Case Study Research*. Sage, Los Angeles.

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