

Working Paper

**No.130**

**Public Participation in Market-based Climate Policy:  
A Political Economy Perspective and the Cases of Japan and  
Germany**

*Sven Rudolph*

Associate Professor,

Graduate School of Economics, Kyoto University

*March, 2015*

# **Public Participation in Market-based Climate Policy:**

A Political Economy Perspective and the Cases of Japan and Germany<sup>1</sup>

*Sven Rudolph*<sup>2</sup>

## **Abstract**

Due to the increasing threat of irreversible, dangerous global warming, effective climate policy is one of the most urgent political challenges. And as mitigation costs are going to increase even in the case of cost efficient measures, government action against global warming needs the sovereign's support. So what is the role of public participation in modern market-based climate policy? Public Choice theory has been analyzing respective questions since the 1970s, mainly because economists' recommendations for expanding the use of economic incentives had been ignored in practice. However, recently carbon taxes and cap-and-trade have been spreading, raising questions on the validity of Public Choice arguments anew. Against this background, in this paper I summarize Public Choice's hypotheses on public participation in climate policy instrument choice, survey respective empirical studies, and add new case study data on carbon market decision making in Germany and Japan. I mainly argue, that public opinion will play an increasingly important role in effective and efficient climate policy, that political support by citizens becomes most effective via environmental groups' activities, and that strengthening citizen participation calls for lowering information costs and for supporting the civil society.

JEL classification: D62, D72, D73, Q48, Q54, Q58

Keywords: Public Choice, Public Participation, Climate Policy, Emission Trading

## **1 Introduction**

Global warming is one of the major threats to the global society and emissions trends are not at all promising. The latest report of the Intergovernmental Panel on Climate Change (IPCC) considers anthropogenic climate change "extremely likely" and predicts temperature increases of up to 4.8°C by 2100 (IPCC 2013). As the IPCC also emphasizes, the consequences of continuous global warming will be disastrous and, according to Stern (2007) may cost between 5% and 20% of global Gross Domestic Product (GDP). Postponing action against global warming will only increase damage and policy costs (Kemfert 2005). On the other hand, im-

---

<sup>1</sup> Discussion paper presented at the International Workshop on Environmental Policy-Making Instruments Based on Citizen Participation in a High Technological Society – Energy, Chemical Substances, and Water Management as Central Issues, Osaka University, March 7-8, 2015.

<sup>2</sup> Dr. Sven Rudolph, Associate Professor, Graduate School of Economics, Kyoto University, Japan.  
Contact: rudolph@econ.kyoto-u.ac.jp.

mediate action may avoid the most dreadful consequences and, according to Stern, lower the costs down to 1% of global GDP. In order to achieve this, the 2°C target acts as a guardrail. While this target calls for emission reductions of 80-90% in industrialized countries by 2050 and an almost complete de-carbonization of energy use by 2100, current emission trends paint a different picture.

In view of this trend, climate policy in the past has obviously failed in major parts and measures have to be stepped up significantly in the near future. The United Nations Framework Convention on Climate Change (UN FCCC) of 1992 and the Kyoto Protocol of 1997 were just first steps. And even though the Kyoto Protocol established absolute volume reduction targets for individual countries and offered market-based policy approaches for compliance, the Protocol failed in major parts. This was mainly due to the lack of participation by major emitting countries such as the US and China; and Kyoto II is even supported by less countries. However, in the Copenhagen Accord of 2009 and subsequent documents the global community at least acknowledged the 2°C target and named the 21<sup>st</sup> Conference of the Parties (COP 21) to the UN FCCC 2015 in Paris as the time and place for a new global climate treaty. Major goals of COP 21 will be to agree on sufficiently stringent absolute volume targets, a set of concrete policy proposals, and a mechanisms for supporting developing countries.

In terms of policies, many scholars agree that carbon markets – also often called cap-and-trade or emissions trading – should be the major pillar of future climate policy (Ranson/Stavins 2012). A global carbon market could either be established top-down by the global community based on the experiences with International Emissions Trading in the Kyoto Protocol; the more realistic structure, however, being the linkage of existing domestic schemes. Domestic carbon markets already exist in many jurisdictions on all governance levels such as the supra-national EU ETS in Europe, the national New Zealand ETS, the regional California Cap-and-Trade Program (internationally linked with Québec) and the Regional Greenhouse Gas Initiative (RGGI) in the US, as well as the local Tokyo Metropolitan Government ETS in Japan and some trial programs in Chinese cities. While the results of these schemes are ambivalent and range from significant emission reductions without intense trading in Tokyo (Rudolph/Kawakatsu 2013) to healthy markets with only minor emission reductions in the EU ETS (Ellerman et al. 2010), environmental economics has proven the theoretical merits of cap-and-trade: While an absolute emissions cap guarantees the exact achievement of pre-decided emission targets, trading minimizes overall compliance costs by establishing an efficient carbon price (Tietenberg 2006).

However, carbon pricing schemes usually increase energy costs for industry and households, thus raising questions of distributional effects, social justice, and the resulting political consequences. In Germany as well as in Japan energy system transformation processes have currently produced audible public debates on energy price levels. In both countries, carbon pricing schemes such as the Japanese carbon tax, the German Ecological Tax Reform, and the EU ETS have had their share in increasing electricity prices in addition to support systems such as feed-in tariffs (FIT). Amongst other factors such as industry pressure and interventions by superior political bodies, public debates on the fairness of the energy transformation have already led to a revision of targets and policy instruments, e.g. in the case of the recent switch from free CO<sub>2</sub> allowances allocation to full auctioning in the EU ETS, the amendment of the German FIT, or the revision of the FIT in Japan. So if ambitious climate policy combined with an energy transformation process calls for higher electricity prices, public support for this is indispensable.

Hence, due to the increasing need for stringent anti-global warming measures, the spreading of basically effective and efficient carbon markets, and the increasing need for public for higher energy prices, in this paper I will examine the role of public participation in modern market-based climate policy. In terms of methodology, I will apply Public Choice and test its main hypotheses on empirical grounds. Thus, first, Public Choice's normative assumptions, the decision making model, as well as relevant sub-concepts such as the Economic Theories of Democracy and Interest Groups will be described, before respective thinking is applied to climate policy instrument choice. In addition, a survey of econometric studies on respective issues will be provided. Second, I analyze case study data about citizen participation in decision making on carbon markets in Germany and Japan. The analysis is based on a case study multi-method approach (Yin 2003) and the triangulation of a literature survey, a document analysis, and more than 50 qualitative, semi-structured interviews with political stakeholders in Germany and Japan carried out between 2000 and 2010. Concluding, a summary of insights as well as policy recommendations for increasing public participation in modern market-based climate policy will be provided.

## **2 Public Choice and Environmental Policy**

### **2.1 Public Choice and Citizen Participation**

Public Choice tries to explain political decision making processes by economic reasoning and hence uses the normative assumptions of economic theory such as methodological individual-

ism and rational behavior, envisioning men to be *homines oeconomici* (Kirchgässner 2008). Methodological individualism recurs to individual political actors' behavior, so that collective phenomena such as policy outcomes can be explained by analyzing the interaction of individual members of society such as politicians, bureaucrats, or voters. However, for practical reasons, individual actors are grouped under the assumption that each group is represented by one specific individual preference order; the group is hence treated as a quasi-individual.

However, if a theory recurs to individual behavior, in order to build a model capable of explaining collective phenomena, assumptions have to be made about how individuals behave. In economics, individuals are thought to act rational: From alternative options of action individuals always chose the one they favor most. Technically, individuals maximize utility functions. Sufficiently plausible or revealed preferences are given and they are kept unchanged throughout the analysis – hence, in economics, changes in outcome cannot be explained by changes in preferences. Restrictions limit the possibilities of individual action.

Applying these basic principles of economic analysis, Public Choice models political decision making based on the assumption of individual, rational political actors. Hence, Public Choice is “the economic study of non-market decision-making, or simply the application of economics to ... the subject matter ... of political science” (Mueller 2003: 1). While welfare economics rely on a benevolent dictator to help the market functioning in the case of market failure, Public Choice also applies the *homo oeconomicus* assumption to political actors and envisions voters, politicians, or bureaucrats. Thus, self-interested voters maximize their utility from the provision of public goods, politicians maximize votes in order to be (re-)elected into power, bureaucrats maximize discretionary budgets, and interest groups maximize the group-constituting aim.

Public Choice usually views political arenas as markets in which four political actor groups exchange one thing for another: politicians, voters, bureaucrats, and interest groups. In this decision making system, citizens are basically active in two roles: They cast votes in elections and they might become members of special interest groups such as labor unions, consumer organizations, or environmental groups. Hence, two sub-theories of Public choice deal with the different role: The Economic Theory of Democracy analyzes the interaction of voters and politicians; the Economic Theory of Interest Groups examines, amongst other things, the role of citizens as members of political pressure groups.

Downs (1957) was the first to interpret democratic elections as markets. In these markets, politicians offer political programs, which are supposed to provide voters with beneficial pub-

lic goods, and they request votes for enabling them to implement these programs. Voters demand public goods, which provide them with benefits in addition to benefits from private goods, and offer their votes. Hence, on the political market, votes are traded for political program contents. In an analogy to the “Invisible Hand” (Smith 1776/1981) in a perfect private market, in a perfect political market the “List der Demokratie” (Herder-Dorneich 1959), or Trick of Democracy, would even lead to efficient policy outcomes and political program would perfectly fit voters’ preferences.

However, just as commodity markets, political markets suffer from imperfection. Major reasons for the inefficiency are asymmetric information (Downs 1957) and political business cycles (Nordhaus 1975). Following Downs, collecting and processing information on political issues is costly for voters. But for each voter the probability of influencing policy making by his or her single vote is very low. Hence, when casting votes in elections, voters are rationally ignorant: They only acquire easily accessible information until the point where marginal benefits equal marginal costs of information processing. Hence, voters often base their voting decision on political parties’ ideologies rather than on detailed program contents. Politicians willingly provide these ideologies in order to hide the actual program details and create leeway for maximizing their own utility. Summarizing Nordhaus, elections are only held every couple of years and politicians hold a quasi-monopoly in policy making in between. In addition, voters are considered myopic in so far as they greatly value benefits, which occurred to them in the near past, while they easily forget about hardships, which occurred in the far past. As a consequence, political business cycles are created, in which politicians implement policies that favor voters’ preferences briefly before elections, while burdensome policies are implemented just after.

In addition to participating in political decision making by casting votes, citizens can decide to participate in special interest group activities. In modern democracies interest groups exert an enormous pressure on politicians and bureaucrats. They exclusively provide the political system with specialized information, which cannot be obtained otherwise. And they are capable of significantly influencing voters’ decisions by directly recommending candidates and parties in elections as well as by indirectly informing the public via campaigns.

Olson (1965) and Tullock (1967) were the first to study interest groups from an economic point of view. Olson emphasized that interest groups only exist, because members share at least one common political interest, the group-constituting aim, and they only participate as long as marginal benefits are bigger than marginal costs. Costs include membership fees, time

etc., while benefits are derived from being able to influence political decision making continuously and more effectively as well as from receiving specialized information on respective topics. However, as in larger groups with more individual members the benefits tend to become public goods, the contribution of each individual in the group is less important, social control does not work well, and interests are more heterogeneous than in smaller groups, Olson claims that it is much harder to organize larger groups. Due to these “diseconomies of scale”, decisions by policy makers tend to be influenced to a larger extent by small groups. Already Olson points out that “diseconomies of scale” apply to some of the most viable interests in society, e.g. environmental protection. However, Becker (1983) implicitly provides a counter-argument, which was made explicit by Endres/Finus (1996): If politicians maximize votes, they mainly care for the preferences of groups that are capable of influencing the biggest number of voters. Thus, “scale economies in the production of pressure” favor larger groups’ interests once they are organized.

Tullock explicitly differentiates the process of political rent-seeking from private rent-seeking. While profit seeking aims at restructuring e.g. production processes in the market game for profits, rent-seeking aims at changing the rules of the game by influencing policy making. Other than profit-seeking, rent-seeking is considered to be inefficient, because resources are used for active and passive lobbying activities. But even more important, lobbying activities distort resource allocations and usually lead to welfare losses. Again, however, Becker (1983) argues that, starting from a situation of inefficiency, the competition of pressure groups, which are unsatisfied with a certain inefficient resource allocation might lead to efficiency gains.

## 2.2 Voters and Interest Groups in Market-based Climate Policy

Starting with Downs (1972) and Buchanan/Tullock (1975), Public Choice has analyzed decision making in environmental policy (Oates/Portney 2003). A major focus of the subsequent discussions was on political barriers of implementing market-based policy instruments such as environmental taxes or cap-and-trade (Hahn 1989, Schneider/Volkert 1999, Kirchgässner/Schneider 2003). The common notion of these studies is that “there is a market tendency for the political process to resist market mechanisms for rationing scarce environmental resources” (Hahn 1987: 289); the political market tends to avoid the wide-spread use of efficient and effective market-based environmental policies.

Summarizing major arguments on citizens' participation in climate policy (Kirchgässner/Schneider 2003; Michaelowa 1998; Hansjürgens 2000; Rudolph 2005, 2014), voters do not put a special emphasis on climate policy issues when casting votes in elections. While, a stable climate is a vital prerequisite for survival and well-being, at least five arguments support the view that climate policy is not of prior importance to them. First, public goods such as a stable climate compete with private goods such as jobs or low tax rates for rationally ignorant voters' attention in election decisions. In this situation, self-interested voters cast votes based on policy programs that provide private goods, and they act as free-riders on public good policies. Second, economic policy such as employment or tax policy provides immediately perceivable monetary benefits, while climate policy only promises non-monetary future benefits such as a long-term stable climate system. Third, the costs of climate policy are born by current generations, while the benefits oftentimes only occur to future generations. And, in any cases, consumers eventually have to pay the bill, because if price elasticity of demand is low, polluters would directly pass additional climate policy costs on to consumers. But even if price elasticity is high, while polluters would initially have to pay, in the end additional climate policy costs would lower profits, wages, and employment. Fourth, understanding future benefits of climate policy is subject to rigid information prerequisites, while higher costs due to increasing product prices or higher chances of unemployed are easily visible. Fifth, rationally ignorant voters focus their information efforts on political issues that are immediately most beneficial to them. As economic policies deliver immediate monetary benefits and climate policy does not, voters do not make efforts to gather sufficient information for understanding climate policy's long-term benefits.

The same pessimistic view applies to voters' perception of market-based climate policy instruments such as carbon taxes or carbon cap-and-trade. First of all, if climate policy in general is not a major political issue to voters, instrument choice is even less. Still, at first glance, voters should favor market-based policies, because those instruments are capable of minimizing the economic costs of achieving an environmental target and thus also voters' burden. However, rationally ignorant voters would surely not take the effort to process information on a sub-topic of an anyway less relevant policy area. This leads to three major misunderstandings: First, voters are subject to a cost-illusion with regard to command-and-control, because non-monetary environmental standards seem to be free of costs. Market-based policies, instead, generate easily visible price signals via emission tax rates or stock market prices for emission rights, which reveal the additional costs of climate policy. Second, voters fail to recognize the ecological effectiveness of market-based instruments, because such instruments are



less well-known and less-well understood than environmental standards. Especially the way of reaching environmental goals is more complicated in the case of carbon taxes and cap-and-trade than with command-and-control, where polluters simply obey laws and comply with emission or technology standards. Third, voters judge the effectiveness of climate policies by easily perceivable indicators. While the administrative input, e.g. the sheer number of environmental laws in command-and-control, is easy to perceive, the actual environmental output of e.g. carbon taxes in terms of absolute emissions is not. Also, other than command-and-control, market-based instruments simply put a price on emissions and let the market do the work, so that the number of individual laws necessary to reach a certain environmental goal is usually low.

But anyway, Public Choice considers voters' influence in climate policy very low. If voters do not cast votes based on climate policy issues, not to mention instrument choice, vote-maximizing politicians do not care about voters' climate policy preferences, as they do not generate additional or bind existing votes to the individual politician. As a consequence, first, political program design puts more emphasis on economic topics rather than climate policy issues. And, second, if politicians have to make decisions on climate policy, they tend to focus on interest groups' preferences and influence.

However, Public Choice argues that in climate policy polluters' industry organizations are significantly more influential than citizen-based environmental non-governmental-organizations (NGOs). First, NGOs suffer from diseconomies of scale, while industry groups represent a rather small and homogenous group of emitting companies with only minor incentives to free-ride. Second, NGOs goal of protecting the environment promises only future, non-monetary effects, while industry groups argue with current jobs and incomes. Third, in environmental politics frequently polluters' interests are aligned with their employees' concerns about production costs and jobs, making industry groups and labor unions natural allies in climate policy. Fourth, industry groups execute market-power on the labor market and can threaten to transfer production and job opportunities abroad. Fifth, polluters are quasi-monopolists in providing political decision makers with company internal technical information on production and abatement technology as well as on related costs. NGOs provision of information e.g. on the harmfulness of emissions or ecosystem viability are, in turn, is less exclusive. Sixth, the financial resources both of industry groups and their labor union allies are usually substantially bigger than those of their NGO counterparts. And finally, seventh, polluters and their industry groups oftentimes possess well established formal and informal contacts to policy makers in the legislative and executive branch of the government, which

originate from years and years of information exchange in different policy fields such as tax, labor, or industrial policy. In contrast, most NGOs only possess relatively recent networks amongst the few ecologically-minded political stakeholders.

In terms of interests, while profit-maximizing polluters can be expected to reject ambitious market-based climate policy (Buchanan/Tullock 1976), citizen-based NGOs are supposed to support stringent climate policy, because protecting the environment is the ultimate shared interest amongst members. In terms of policy instruments, NGOs should be able to overcome rational ignorance of unorganized voters by carefully providing its members with useful information on climate policy and its instruments. Hence, NGOs prefer market-based climate policy instruments and particularly cap-and-trade for several reasons. First, amongst all instruments, cap-and-trade promises to achieve emission targets most accurately, because, by government decision, the pollution maximum is fixed in absolute volume terms for an entire economy and only the respective amount of emissions rights are distributed amongst polluters. Second, the cost efficiency of cap-and-trade not only allows for the accomplishment of a given environmental goal at minimum cost. It also facilitates the achievement of maximum environmental effects at pre-set expenditures. This, in turn, can be used as an argument for more stringent climate policy targets. Third, by making pollution abatement economically rewarding by allowing surplus emission allowances to be sold on the market, a permanent incentive to further improve abatement technology is created. Fourth, the possibility of generating revenue by auctioning emission allowances allows for additional environmental effects if the revenues are used for respective measures of climate protection. Furthermore, revenues could be used for lowering overall inefficiencies in an economy via a double dividend (Bovenberg 1999) or for cushioning unwanted social distortions created by higher energy prices (Rudolph et al. 2012). And fifth, although environmentalists tend to be skeptical about the allocation of fully-fledged property rights to polluters as this would mean a recognition of the natural environment as a marketable commodity, making industry purchase the right to use natural resources corresponds with the strong polluter-pays principle often supported by NGOs.

In sum, Public Choice is pessimistic about citizens' participation in the decision making on actually environmentally effective and economically efficient market-based climate policy. Citizens might support stringent climate policy targets and carbon market in their role as NGO members, but in their role as voters they are indifferent toward the topic in general and rather opposed to cap-and-trade. But anyway, neither voters nor environmental NGOs execute any relevant political bargaining power, according to Public Choice.

This pessimistic notion is at least partly supported by selected empirical studies on respective issues. Public opinion analysis undertaken by the EU Commission at the beginning of the Kyoto Protocol's first commitment period convincingly shows the general support of climate policy by voters in Europe (EU Com 2008, 2009). However, comparing policy fields, other issues still seem to be more important to voters (Wüstenhagen/Bilharz 2006). In the discussion on social discount rates, several studies show that voters care about the present more than about the future (van der Bergh 2009). In the case of global warming, Halla et al. (2008) find that parents worry significantly more about CO<sub>2</sub> emissions than citizens without children, which again shows that only immediate effects are relevant. Also, there is empirical evidence that politicians' dependence on voters' opinion is subject to political business cycles (List/Sturm 2006, Tellier 2006, Franzese 2002). List/Sturm (2006) argue that politicians' 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. This view is also supported by Franzese (2002).

Voters' lack of information about market-based environmental policy instruments was shown in several studies on energy taxes (Beuermann/Santarius 2006, Clinch/Dunne 2006, Deroubaix/Leveque 2004, Klok et al 2006). The view that "familiarity breeds affection" (Dresner et al. 2006) and hence voters prefer policies such as command-and-control over less well-known instruments such as cap-and-trade is empirically supported as well as voters' general dislike of the word "tax" (Brännlund/Persson 2010, Clinch/Dunne 2006). Voters' opposition to environmental taxes is also shown by the rejection of three proposals for energy taxes on fossil fuels in Switzerland in 2000 (Kirchgässner/Schneider 2003). The data set on the Swiss referenda was further analyzed by Thalmann (2004) finding that citizens with an affinity to green and left-of-center parties as well as citizens with higher education had higher rates of participation and approval, whereas income had no significant influence. Using the same data, Bornstein/Lanz (2008) found that socially accepted norms and ideologies played a role and that price and income effects are not the only factors taken into account by voters.

Concerning interest groups, Eisling (2007) shows that if an interest group's budget is at least 7.5 million Euro the probability of having weekly contact with the European Commission is 50% higher than for interest groups lacking such a financial backing. Concerning the EU ETS, Markussen/Svendsen (2005) also found that while industry groups' main objective to install a voluntary system was not realized, lobbying led to a final policy design that benefited industry more than any alternative design; a view also supported by Anger et al. (2008).

### **3 Carbon Market Policy Making in Germany and Japan**

#### **3.1 Carbon Markets in Japan**

In Japan, carbon markets have been discussed with ambiguous results since the beginning of the new millennium (Rudolph 2014, Rudolph/Schneider 2013). While the Ministry of the Environment was capable of establishing and maintaining at least the partially successful Japan Voluntary Emissions Trading Scheme (JVETS) between 2005 and 2012, the Cabinet-based Integrated Domestic Market of Emissions Trading (IDMET) of 2008 never really took off. And the initiative of the Democratic Party of Japan (DPJ) led by former Prime Minister Hatoyama to implement a mandatory cap-and-trade scheme based on a Basic Act on Global Warming Countermeasures in order to reach the proposed 25% reduction target (by 2020 compared to 1990) finally failed in December 2010 (Rudolph/Schneider 2013). Later the current Abe government even reduced the 2020 target to 3.8% compared to 2005 emissions, an actual emission increase by 3.1% compared to 1990 levels. However, Japan's capital successfully established the Tokyo Metropolitan Government Emissions Trading Scheme (TMG ETS) in 2010 as a part of its climate change strategy to reduce emissions by 25% by 2020 (compared to 2005), and the early results of the first compliance period are even promising (Rudolph/Kawakatsu 2013).

Concerning voters in Japan, climate change is a relevant political topic, but it does not generate enough momentum to be decisive in elections (Morotomi et al. 2009-2012, Kiko Network et al. 2009-2012). Starting with the severe environmental problems of the 1960s and 1970s, environmental issues have steadily gained importance in the Japanese public (Imura/Schreurs 2005). From 1988 surveys also show the increasing awareness of global environmental issues with a high of more than 90% in 2007 (CAO 2007). Global warming became specifically important in the public debate as a reaction to the 1997 Kyoto climate conference with climate measure support rates of more than 80% (CAO 2001). However, comparing policy areas, still political priorities of Japanese citizens are rather centered on topics such as jobs and social security than on environmental issues. And the recent economic crises have even intensified the emphasis on the former. In 2005, environmental issues only made it to the 4<sup>th</sup> rank of relevant societal problems to be tackled (CAO 2005). Hence, in general elections environmental issues are not capable of significantly determining voters' decisions (Imura/Schreurs 2005, Schröder 2003). And while in surveys Japanese citizens overwhelmingly support climate protection, politicizing the issue effectively is still difficult. Negative effects are thought to mainly burden less developed countries and future generations, while costs have to be shouldered

by current generations. Hence, a major fear is the additional financial burdens of domestic action against global warming; the willingness-to-pay for those climate protection is below 1,000 Yen per month per family for the vast majority of the respondents (JfS 2010, JPC 2010). This trade-off between climate and economic issues became most obvious, when the great support of the 25% climate target of the former Hatoyama-led DPJ government deteriorated as soon as the economic crisis hit in 2009. In addition, knowledge on climate change and concrete policies is neither deep nor widespread, as specific questions on program contents show (CAO 2005, JfS 2010, JPC 2010).

Concerning instrument choice, the Japanese public does seem rationally ignorant. While there is a general agreement on the necessity of additional mandatory measures especially for industry, particular interests towards policy instruments do not exist (JPC 2010, COJ 2005). However, according to the data, there seems to be a prejudice against the immoral trading of pollution rights, and price incentives are anyway deemed dispensable, because moral-based collective action is considered sufficient by many Japanese.

The political influence of Japanese citizens in policy making is generally considered rather low (Schröder 2003). Reasons for that can be already found in Public Choice's arguments on rational ignorance and political business cycles. However, due to its centralized and hierarchical structure, some authors consider the Japanese specifically weak and speak of the „entmachtete Öffentlichkeit“ (Mishima 2011), the disempowered public. Hence, it is not surprising that voter turnouts in general elections are often low, e.g. 60-70 % in the 2000s. In climate policy, this is even more true as votes in general elections are not cast based on environmental considerations but rather on economic and social issues. A vivid example for this is the fact that in the 2009 electoral campaign just before the important 2009 climate summit in Copenhagen, while the DPJ used climate policy for differentiating itself from competitors, still this issue was only fifth amongst the most important political challenges in the DPJ manifesto; some other parties did not even mention the topic at all (WWF 2010). And also Hatoyama's attempt to stick to his campaign promise of stringent market-based climate policy target in order to bind votes was unsuccessful, because soon after his return from Copenhagen, economic recovery became the predominant issue in public opinion, preventing an ambitious market-based climate law to be implemented.

The most relevant interest groups in Japanese market-based climate policy are certainly supportive environmental organizations and mostly opposed industry groups. Relevant climate policy organizations are Kiko Network, World Wide Fund for Nature Japan (WWF), Japan

Center for a Sustainable Environment and Society (JACSES), and Friends of the Earth Japan (FoEJ). Recently, Japanese climate protection organizations have become largely homogeneous in their view on climate policy goals and measures (Kiko Network 2008). In order to contribute to reaching the global 2°C target, they demand greenhouse gas emission reductions of 6% by 2008-2012, 30% by 2020, and 80% by 2050 (base 1990) and call for a Basic Climate Policy Act including a clear roadmap on how to achieve the targets. At the instrument level, while being skeptic towards market-based approaches in the 1990s, now, Japan's climate organizations basically support a policy mix of a domestic emissions trading system in combination with a carbon tax and a feed-in tariff for renewable energy. While they appreciate the environmental effectiveness and the economic efficiency of cap-and-trade, the major reason for support is the instrument's mandatory character; a characteristic desperately wanted in the presence of mainly voluntary and subsidy based measures in the past. Still, absolute emission limits, incentives to innovate, and cost minimization properties of cap-and-trade are also considered major advantages.

Despite of the relative homogeneity in interests, Japanese environmental groups' influence in climate policy is very low, especially compared to their powerful industry counterparts (Imura 2005, Schröder 2003, Schreurs 2005). First, Japanese environmental organizations lack members. In 2009, membership in Japanese climate protection organizations accounted for only 21,000 individual and 450 institutions, while Germany's biggest environmental organization with a focus on climate policy, Friends of the Earth Germany (BUND), alone has around 500,000 members. But small membership numbers significantly lower the organizations capacity to create political pressure utilizing scale economies in the production of pressure or to give ideology orientation to voters. Small membership numbers in Japan can be attributed to incentives to free-ride and the lack of a civil society tradition. Second, the budget of Japanese climate protection organizations is very small with only about 10 Million US\$ in 2009 – e.g. compared to a budget of 45 million US\$ for Greenpeace and WWF alone in Germany. A lack of tax incentives for donations is one reason, small numbers of members paying membership fees are another. Third, staff numbers of Japanese climate protection organizations are small with only 70 full-time employees in the relevant climate groups – comparable to the number of employees at Friends of the Earth Germany (BUND) alone – and only 10 working exclusively on climate issues. Fourth, the majority of staff members have not received an academic training in economics, because Japanese environmental organizations cannot afford to pay adequate salaries and jobs at environmental groups are not considered worthwhile by many graduates. Fifth, as a consequence of the former, lobbying activities as well as the participa-

tion in governmental hearings and commissions are strongly limited. Sixth, Japanese environmental organizations suffer from not being able to create a pro-environmental network with the Ministry of the Environment or ecological research institutes, because the latter are rather reluctant to cooperate; and a green party does not exist on the national level. One reason for this is, seventh, a general distrust in anti-government protest movements, which also plays a role in reducing membership numbers of and donations to environmental organizations. Another consequence of this is, that Japanese environmental groups are often excluded from discussion arenas such as working groups and commissions, which play a central role in policy making in Japan. And finally, eighth, the access to relevant information is still limited for environmental groups, as the 2001 Information Disclosure Law offers many loopholes.

In sum, Japanese citizens so far do not create sufficient political pressure for stringent domestic market-based climate policy. While voters only seem to support climate policy in a period of economic prosperity, environmental organizations generally appreciate ambitious climate protection targets. But only environmental groups specifically support carbon markets, while voters seem to be indifferent at best, with even a slight tendency of skepticism towards carbon markets. But anyway, neither in their role as voters nor in their role as members of environmental organizations do Japanese citizens execute enough political power to advance effective and efficient climate policies.

However, what is particularly interesting is that in the case of the Tokyo Metropolitan Government Emissions Trading Scheme (TMG ETS), citizen participation made a major difference (Nishida/Hua 2011, Rudolph/Kawakatsu 2013). While again business groups were opposed, environmental groups were capable of voicing their strong support and so did the general public. The Tokyo government initiated a consultation process including all relevant political stakeholders. Closely cooperating with environmental groups in the preparation and the implementation stage, the government was capable of rebut all of industry's arguments. In addition, all three major stakeholder meetings between July 2007 and January 2008 were held publicly. The basically supportive audience consisted of approximately 200 citizens of Tokyo in each session. Also all data and the stated interest of stakeholders were made public by the government. This particular setting prevented industry from openly stating its narrow self-interest, so that eventually the TMG ETS was unanimously approved by the Metropolitan Assembly in June 2008.

### 3.2 The EU Emissions Trading Scheme

In Europe, the EU Emissions Trading Scheme (EU ETS) has been in use since 2005 with ambiguous results (Ellerman et al. 2010). While the first and the second trading periods (2005-2007, 2008-2012) have only produced minor emissions reductions, the third phase (2013-2020) aims at a reduction of 21% by 2020 (compared to 2005) as a contribution to achieving the EU's climate target of -20% GHG by 2020 (base 1990). The market for EU emissions allowances is active and competitive, but due to generous initial allocations of emissions rights and the economic downturn after 2008 carbon prices have dropped to a level that does not create effective innovation incentives. However, currently major revisions are on the way in order to stabilize the price level.

Germany, being the biggest economy in the EU, was a major player in the political discussion on the EU ETS. So, while multi-level governance played a significant role (Braun/Santarius 2008), the following analysis focusses on the public debate in Germany at the beginning of the new millennium (Rudolph 2005, Rudolph 2009). Especially until 2003, the general environmental consciousness as well as the specific awareness of global warming was particularly high (UBA 2006). And even when asked to name most important societal problems, the German public ranked environmental protection second only to creating jobs. While global warming basically belongs to the type of problems not easily perceived by the public, the intensified communication of scientific studies on climate change in the 1990s, e.g. the reports of the IPCC and the German Enquête Commission (Enquête 1995, IPCC 2001) had led to a better understanding of the issue and possible solutions. Terms such as "greenhouse effect" and "global warming" also made the subject more graphic and easier for citizens to understand (Reiche/Krebs 1999). Not least, at the beginning of the millennium, global warming became directly perceptible to the German public. In addition to the global doubling of climatic natural disaster since the 1980s, in Germany severe storms in spring and fall, snow-free winters, and increasingly hot summers culminating in an extreme heat wave in 2003 gave a first indication of a possible future. Of particular importance was the flood of the Elbe River during the general election campaign in the summer of 2002, which can be interpreted as an environmental shock that by itself created demands for stringent environmental policy (Reiche/Krebs 1999). However, after this peak of awareness in 2002/2003, from then end of 2003 increasingly worrying data on the state of the German economy and the job market displaced climate policy as a priority societal topic from the public perception.

Concerning policy instruments, while the German public did not have particular preferences for specific climate policy measures, public acceptance of cap-and-trade suffered from inconsistencies with basic values and from past experiences with price incentives. In many ways,



Germany's cultural roots can be found in the Prussian tradition with a strong trust in government (Gerhards 2000). Thus, Germans continue to hold the government responsible for caring about societal problems by law, e.g. by standards for environmental protection (Meyer 1996). In addition, emission trading was repeatedly compared with the historical selling of indulgences by the Catholic Church, Martin Luther's criticism of which started the Protestant Reformation in the early 16<sup>th</sup> century and established an ethic code across Germany still prevalent today (Vorholz 2000). Not least, having experienced energy price increases induced by the Ecological Tax Reform of 1999 left Germans particularly sensitive to price incentives in energy and environmental policy.

The political influence of the German public on climate policy was indirect though remarkable. Generally, although citizen apathy in general elections is also apparent, voter turnouts are still relatively high, e.g. 70-80% in the 2013. Increased problem awareness in the early 2000s created considerable public pressure on politicians. As a consequence, after having visited the Elbe River flood sites in his election campaign of 2002, chancellor Schröder promised ambitious climate policies (Schröder 2002). Against the background of an imminent danger of not complying with national CO<sub>2</sub>-commitments and a very close election race, Schröder felt compelled to comply with his campaign promises. But all established instruments' had failed to provide enough and secure emission reductions, so the EU ETS was the only reasonable alternative (DIW 2002). Thus, public opinion also indirectly influenced instrument choice. However, in 2004, when details of the national implementation of the EU Directive were discussed, the German economic situation deteriorated, and climate issues lacked public support. Job creation was the major topic, and as conservative political forces and industry continued to raise fears for job loss as a consequence of ambitious climate policy, public opinion swung to skepticism. While this swing hampered a stringent national design in Germany, the EU ETS as a whole had already been implemented at the supra-national level.

Concerning German interest groups, skeptical industry groups were faced with strongly supportive environmental organizations. The most important groups were World Wide Fund for Nature Deutschland (WWF), Germanwatch, and Friends of the Earth Germany (BUND), and they unanimously supported the EU ETS in the early 2000s (BUND 2003, Germanwatch 2002, WWF 2002). The pivotal demand was compliance with Germany's national CO<sub>2</sub> target of -25% (by 2005 compared to 1990) made by an earlier government, while other actors, including the then German government, only intended to comply with the weaker Kyoto commitment of -21% GHG (by 2008-2012 compared to 1990). Mid-term (-40% by 2020) and long-term (-80-90% by 2050) targets should be reached by a clear emission reduction and

policy instrument roadmap based on a Basic Climate Protection Act. Environmentalists appreciated the absolute emission cap as the main ecological advantage of the EU ETS. Economic cost reduction was also seen positive, because it promised easy enforcement and more stringent targets in the future. This unanimously positive evaluation of the EU ETS by German environmental groups in the early 2000s was made possible by a steep learning curve on market-based environmental policies during the Kyoto negotiations and the implementation of the German Ecological Tax Reform as well as a general change of the German environmental movement from an anti-capitalist protest to a more well-informed cooperative one (Michaelis 1996, Reiche/Krebs 1999, Vorholz 2000). Against the background of increased public awareness of global warming, the threat of not achieving the national -25% CO<sub>2</sub> target, and the partial failure of established instruments in the early 2000s, this strategically newly aligned movement saw the chance and the necessity to lobby for more effective policy instruments especially for industry. Not least, environmentalists' hoped that the EU ETS would help overcoming the deadlock in European climate policy caused by the blocking of the EU Energy Directive.

The political influence of environmentalists varied over time. Until 2003, environmental groups were very influential and significantly helped the implementation of the EU ETS against industry's opposition. In addition to above mentioned and in comparison to Japan higher membership and staff numbers as well as bigger budgets, major reasons were, first, an increased public demand for climate protection by the German public. Second, the 25% CO<sub>2</sub> reduction target was still in place and called for additional action. Third, the environmental movement was homogenous in their demand for ambitious emission reduction targets and policy instruments, while industry was split. Fourth, the Working Group on Emission Trading for Mitigating Climate Change, the major discussion forum on the EU ETS in Germany, offered institutionalized exit to political debates and a chance to challenge industry's arguments openly (AGE 2001). Fifth, German environmental groups benefited from a well-established network with staff members of the Ministry of the Environment, a multitude of green research institute, and members of the green party. Sixth, personal will and skill (Jänicke 1996) of the campaigners largely compensated for environmental groups' general disadvantages in financial capacity. Climate policy staff within the groups was well educated and even partly trained in economics. Further knowledge was supplied by affiliated scientific economic advisory boards such as BUND's Study Group on Economic and Fiscal Policy.

However, the deterioration of the German economy in late 2003 changed the power balance in favor of industry and left environmental groups with only minor influence on the concrete

national implementation of the EU ETS Directive. First, as economic growth slowed and unemployment increased, climate protection lost its importance in the German public, which deprived environmental organizations of their political backing. Second, the German government failed to explicitly stand by the national CO<sub>2</sub> target, depriving environmentalists of an important threat potential towards industry: the threat of demanding even more excruciating instruments in order to achieve the CO<sub>2</sub> target in case of a political failure of the EU ETS. Third, the main discussion forum was moved away from the ETS Working Group, initially to the Council of State Secretaries. There, besides State Secretaries from the affected ministries of the environment and economic affairs, industry representatives participated, while environmental groups were excluded. This robbed environmentalists of their institutionalized access to policy making. Later, the final decision was made amongst the affected ministers of the environment and economic affairs as well as the German chancellor. While the former had already accepted a compromise between economic and environmental necessities, the latter two openly and solely supported economic growth and job arguments provided by industry. Thus, while the latter acted as an extension of industry interests, environmentalists' interests were not strongly represented in the end.

In sum, public participation in Germany was partly beneficial for the implementation of the main European market-based climate policy instrument to date. While the voting public supported ambitious climate policy in an economic situation of prosperity, voters turned their back on the issue as soon as the economy deteriorated. Instrument choice was not considered a decisive topic for voting decisions, but a general trust in the government and criticism of the “selling of indulgences” led to a skeptical perspective on the EU ETS. German environmental groups, however, supported both stringent policies and a cap-and-trade scheme. But different from Japan, German environmental groups had significant political influence at least in the early phase of the political discussions on the EU ETS and even outweighed industry's opposition. The lack of environmentalists' influence in later stages then promptly led to an insufficiently stringent national design.

## **5 Conclusions**

Global warming is one of the major threats to our global society and the policy response has been insufficient so far. As damage costs are increasing the longer we wait, further action is immediately needed. Market-based policies such as cap-and-trade provide an environmentally effective and cost-efficient policy option. But as the necessary de-carbonization by 2010 will

still increase the financial burden of households and already high energy prices mobilize citizen opposition, public support will become more and more important.

Unfortunately, Public Choice, the economic theory of politics, provides a rather skeptical perspective on public participation in climate policy. Following major arguments, basically, citizens can be active in two roles: as voters and as members of non-governmental environmental organizations (NGO). In both cases, however, public engagement for ambitious market-based climate policy faces serious barriers such as unfavorable cost-benefit-relations and the predominant power balance amongst interest groups. Hence, according to Public Choice, citizens are neither willing nor capable of effectively supporting ambitious market-based climate policy by putting pressure on political decision makers. This pessimistic view of Public Choice is also supported by some empirical studies on voter and NGO behavior in environmental policy.

However, the empirical data shows that the pessimistic view of Public Choice is not in every case supported by carbon market policy making in practice. Voters' support seems to help ambitious climate policy targets and can bind politicians to given campaign promises, but support very much depends on the economic situation. So while in Japan support had declined before ambitious policies were implemented, in Germany basic decision had already been made before public support faded. Still, due to rational ignorance, explicit policy instrument preferences do not exist. But in both countries there seems to be a mainly culturally based skepticism towards carbon markets. In sum, while ambitious climate policy target setting might be facilitated by voters' support, market-based policies such as cap-and-trade will not.

Interest groups, however, played the decisive role in public participation in market-based climate policy. Both in Japan and in Germany environmental groups favored ambitious targets and market-based policies such as cap-and-trade. However, while in Japan the political influence of environmental groups was negligible, in Germany, at least temporarily, it was even stronger than industry influence. But as soon as environmental groups' influence faded, the stringency of the national implementation of the EU ETS deteriorated. Major reasons for environmental groups influence in Germany were the temporarily strong support by public opinion, the homogeneity in policy demands, well-trained staff, a well-established network with other supportive governmental and scientific actors, and the direct access to the main discussion arena. In comparison, Japanese environmental groups especially lacked the latter three.

As a consequence, major policy recommendations for increasing public participation in market-based climate policy include

- decreasing information costs for citizens, e.g. by increasing educational efforts

- setting incentives to participate in the civil society, e.g. via tax exempts for donations
- accepting environmental groups as important civil society actors
- opening policy arenas for environmental groups, e.g. via public commission meetings
- facilitating inter-actor networks of climate policy supporters

It remains to be hoped that public acceptance of effective and efficient market-based climate policy as well as public participation in policy making can be increased to an extent that would allow the sustainable transformation to a low carbon society.

## References

- Anger, N. et al. (2008): Public Interest vs. Interest Groups – Allowance Allocation in the EU Emissions Trading Scheme. Mannheim: ZEW (Discussion Paper 08-023)
- Arbeitsgruppe Emissionshandel zur Bekämpfung des Treibhauseffektes (AGE) (2001): Aufgabenstellung. Berlin
- Becker, G. S. (1983): A Theory of Competition among Pressure Groups for Political Influence. In: 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. In: Energy Policy 34(8), 917-929
- Bornstein, N./Lanz, B. (2008): Voting on the environment – price or ideology? Evidence from Swiss referendums. In: Ecological Economics 67(3), 430-440
- Bovenberg, A. L. (1999): Green Tax Reforms and the Double Dividend – an Updated Reader's Guide. In: International Tax and Public Finance 6(3) 421-443
- Brännlund, R./Persson, L. (2010): Tax or no tax? Preferences for climate policy attributes. Umeå: Umeå University Department of Economics (Umeå Economic Studies 802)
- Braun, M/Santarius, T. (2008): Climate Politics in the Multi-Level Governance System. Wuppertal
- Buchanan, J. M./Tullock, G. (1975): Polluters' Profits and Political Response – Direct Controls Versus Taxes. In: American Economic Review 65(1), 139-147
- Bund für Umwelt und Naturschutz e.V. (BUND) (2003): BUNDhintergrund: Der EU-Emissionshandel mit Treibhausgasen. Berlin
- Cabinet Office Japan (CAO) (2001): kyoto giteisho teiketsu ni taisuru nihon no taibo. Tokyo
- Cabinet Office Japan (CAO) (2005): chikyu ondanka taisaku ni kansuru yoron chosa. Tokyo
- Cabinet Office Japan (CAO) (2007): chikyu ondanka taisaku ni kansuru yoron chosa. Tokyo
- Clinch, J. P./Dunne, L. (2006): Environmental tax reform – an assessment of social response in Ireland. In: Energy Policy 34(8), 950-959
- Deroubaix, J.-F./Leveque, F. (2004): The rise and fall of French Ecological Tax Reform – social acceptability versus political feasibility in energy tax implementation process. In: Energy Policy 34(8), 940-949
- Deutsches Institut für Wirtschaftsforschung (DIW) (2002): Internationale Klimaschutzpolitik vor großen Herausforderungen. DIW-Wochenbericht 34
- Downs, A. (1957): An Economic Theory of Democracy. New York: Harper & Row
- Downs, A. (1972) Up and Down with Ecology. In: Public Interest 28, 38-50

- Dresner, S. et al. (2006): Social and political responses to ecological tax reform in Europe – An introduction to the special issue. In: *Energy Policy* 34, 895–904.
- Eisling, R. (2007) Institutional Context – Organizational Resources and Strategic Choices. *European Union Politics* 8(3): 329-362
- Ellerman, A. et al. (2010): Pricing Carbon – The European Union Emissions Trading Scheme. Cambridge: Cambridge University Press
- Endres, A./Finus, M. (1996): Zur Neuen Politischen Ökonomie der Umweltgesetzgebung – Umweltschutzinstrumente im politischen Prozeß. In: *Zeitschrift für angewandte Umweltforschung*, Sonderheft 8, 88-103.
- Enquête (1995): Mehr Zukunft für die Erde. Bonn
- EU Com (2008): Attitudes of European Citizens towards the Environment. Special Eurobarometer 247. Brüssel
- EU Com (2009): European's Attitudes towards Climate Change. Special Eurobarometer 313. Brüssel
- Franzese, R. J. (2002): Electoral and Partisan Cycles in Economic Policies and Outcomes. *Annual Review of Political Science* 5, 369-421
- Gerhards, J. (ed.) (2000): Die Vermessung kultureller Unterschiede – USA und Deutschland im Vergleich. Wiesbaden: Westdeutscher Verlag
- Germanwatch (2002): Emissionshandel. In: *INKOTA-Brief* 122
- Hahn, R. W. (1987): Jobs and environmental quality – some implications for instrument choice. In: *Policy Sciences* 20(4), 289-306
- Hahn, R. W. (1989): Economic Prescriptions for Environmental Problems – How the Patient Followed the Doctor's Orders. In: *Journal of Economic Perspectives* 3(2), 95-114.
- Halla, M./Schneider, F./Wagner, A. F. (2008): Satisfaction with Democracy and Collective Action Problems – The Case of the Environment. Linz: Kepler Universität (IZA Discussion Paper 3613)
- Hansjürgens, B. (2000): Symbolische Umweltpolitik – Eine Erklärung aus Sicht der Neuen Politischen Ökonomie. In: Hansjürgens, B./Lübbe-Wolf, G. (ed.): *Symbolische Umweltpolitik*. Frankfurt: Suhrkamp, 144-183
- Herder-Dorneich, P. (1959): Politisches Modell zur Wirtschaftstheorie. Freiburg: Franz Goerlich
- Imura, H./Schreurs, M. A. (ed.) (2005): *Environmental Policy in Japan*. Cheltenham, Northampton: Edward Elgar

- Intergovernmental Panel on Climate Change (IPCC) (2001): Climate Change 2001: Synthesis Report – Summary for Policy Makers. Geneva
- Intergovernmental Panel on Climate Change (IPCC) (2013): Working Group I Contribution to the IPCC Fifth Assessment Report Climate Change 2013 – The Physical Science Basis (Summary for Policymakers). Geneva
- Jänicke, M. (1996): Erfolgsbedingungen von Umweltpolitik. In: Jänicke, M. (ed): Umweltpolitik der Industrieländer. Berlin: Edition Sigma
- Japan for Sustainability (JfS) (2010): Public Says Japan Should Move Quickly on Climate Change. In: <http://www.japanfs.org/en/pages/029702.html> (Feb. 23, 2010)
- Japan Policy Center (JPC) (2010): The Internet Survey on Global Warming. In: [http://www.jpc-net.jp/eng/research/2010\\_04.html](http://www.jpc-net.jp/eng/research/2010_04.html), Stand: 15.7.10
- Kemfert, C. (2005): Weltweiter Klimaschutz – Sofortiges Handeln spart hohe Kosten. In: DIW Wochenbericht 72(12-13), 209-215
- Kiko Network (2008): The NGO Approach towards a Low Carbon Society. Kyoto
- Kiko Network et al. (2009-2012): Interviews with climate policy campaigners at Japanese environmental groups (Kiko Network, JACSES, WWF Japan, FoE Japan). Tokyo/Kyoto
- Kirchgässner, G. (2008): Homo Oeconomicus – Das ökonomische Modell individuellen Verhaltens und seine Anwendung in den Wirtschafts- und Sozialwissenschaften. Tübingen: Mohr
- Kirchgässner, G./Schneider, F. (2003): On the political economy of environmental policy. In: Public Choice 115(3), 369-396
- Klok, J. et al. (2006): Ecological Tax Reform in Denmark – History and social acceptability. In: Energy Policy 34, 905-916
- List, J. A./Sturm, D. M. (2006): How Elections Matter – Theory and Evidence from Environmental Policy. In: Quarterly Journal of Economics 121(4), 1249-1281
- Markussen, P./Svendsen, G. T. (2005): Industry lobbying and the political economy of GHG trade in the European Union. Energy Policy 33, 245-255
- Meyer, S. (1996): Ökonomische Theorie der Umweltpolitik – Der Erklärungswert der Neuen Politischen Ökonomie für umweltpolitische Entscheidungsprozesse. Bergisch Gladbach/Köln: Josef Eul
- Michaelis, P. (1996): Ökonomische Instrumente in der Umweltpolitik – eine anwendungsorientierte Einführung. Heidelberg: Physica



- Michaelowa, A. (1998): Übertragung des Demokratiemodells der Neuen Politischen Ökonomie auf die Klimapolitik. In: Zeitschrift für Umweltpolitik und Umweltrecht 4, 463-491
- Mishima, K. (2011): Des Pudels Kern. In: Die Zeit (19)54
- Morotomi, T. et al. (2009-2012): Interviews with climate policy researchers (K. Ueta, H. Niizawa, A. Morishima, H. Imura, T. Morotomi, S. Ikkatai, S.-J. Park, T. Otsuka etc.). Tokyo/Kyoto/Kobe
- Mueller D. C. (2003): Public Choice – A Handbook. Cambridge: Cambridge University Press
- Nishida, Y./Hua, Y. (2011): Motivating Stakeholders to Deliver Change. In: Building Research & Information 39(5), 518-533
- Nordhaus, William D. (1975): The Political Business Cycle. In Review of Economic Studies 42(2), 169-190
- Oates, W. E./Portney, P. R. (2003): The Political Economy of Environmental Policy. In: Mäler, K.-G./Vincent J. R. (Ed.) (2003): Environmental Degradation and Institutional Response, Vol. 1, Handbook of Environmental Economics. Amsterdam: Elsevier. 325-353
- Olson, M. (1965): The Logic of Collective Action – Public Goods and the Theory of Groups. Cambridge: Harvard University Press
- Ranson, M./Stavins, R. N. (2012): Post-Durban Policy Architecture Based on Linkage of Cap-and-Trade: Cambridge: Harvard Project on Climate Agreements (Discussion Paper 12-51)
- Reiche, D./Krebs, C. (1999): Der Einstieg in die Ökologische Steuerreform – Aufstieg, Restriktionen und Durchsetzung eines umweltpolitischen Themas. Frankfurt et al.: Peter Lang
- Rudolph, S. (2005): Handelbare Emissionslizenzen – Die politische Ökonomie eines umweltökonomischen Instruments in Theorie und Praxis. Marburg: Metropolis
- 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. (Ed.), Critical Issues in Environmental Taxation – International and Comparative Perspectives, Vol. VII. Oxford: Oxford University Press, 587-606
- Rudolph, S. (2014): Marktbasiert Klimapolitik in Japan – Eine Fallstudie zur politischen Ökonomie nachhaltiger Treibhausgas-Emissionshandelssysteme Marburg: Metropolis
- Rudolph, S./Kawakatsu, T. (2013): Tokyo's Greenhouse Gas emissions trading scheme – A Model for Sustainable Megacity Carbon Markets? In: Kreiser, L. et al. (ed.): Market-Based Instruments – Experiences in Environmental Sustainability – Critical Issues in Environmental Taxation, Vol. XIII, Cheltenham/Northampton: Edward Elgar. 77-93

- Rudolph, S. et al. (2012): Towards Sustainable Carbon Markets. In: Kreiser, L. et al. (ed.) (2012): Carbon Pricing, Growth and the Environment – Critical Issues in Environmental Taxation XI. Cheltenham/Northampton: Edward Elgar: 167-183
- Rudolph, S./Schneider, F. (2013): Political barriers of implementing carbon markets in Japan – A Public Choice analysis and the empirical evidence before and after the Fukushima nuclear disaster. In: Environmental Economics and Policy Studies. In: Environmental Economics and Policy Studies 15(2), 211-235
- Schneider, F./Volkert, J. (1999): No chance for incentive-oriented environmental policies in representative democracies? A Public Choice Analysis. In: Ecological Economics 31(1), 123-138.
- Schröder, G. (2002): Redemanuskript Johannesburg Gipfel. Berlin
- Schröder, H. (2003): Climate Change Policy in Japan – From Dusk To Dawn. Berlin: Freie Universität
- Stern, N. (2007): The Economics of Climate Change – The Stern Review. Cambridge: Cambridge University Press
- Thalmann, P. (2004): The public acceptance of green taxes – 2 million voters express their opinion. In: Public Choice 119(1-2), 179-217
- Tellier, G. (2006): Political expenditures in Canadian provinces – An empirical study of politico-economic interactions. In: Public Choice 126, 367-385
- Tietenberg, T. (2006): Emissions Trading. Washington D.C.: Resources for the Future
- Tullock, G. (1967): The Welfare Costs of Tariffs, Monopolies, and Theft. In: Buchanan, J. M./Tollison, R. D./Tullock, G. (ed.) (1980): Toward a Theory of the Rent-Seeking Society, College Station: Texas A&M Press, 39-50
- Umweltbundesamt (UBA) (2006): Umweltbewusstsein in Deutschland 2006. Berlin
- van den Bergh, Jeroen C. J. M. (2009): Safe climate policy is affordable – 12 reasons. In: Climate Change 101, 339-385
- Vorholz, F. (2000): Schmutz im Angebot. In: [http://www.zeit.de/2000/48/Wirtschaft/200048\\_emissionlizenz.html](http://www.zeit.de/2000/48/Wirtschaft/200048_emissionlizenz.html) (Nov. 12, 2004)
- World Wide Fund for Nature Deutschland (WWF) (2002): Positionspapier: Treibhausgas-Emissionshandel. Frankfurt
- World Wide Fund for Nature Japan (WWF) (2010): Comparison of Manifestos. Tokyo
- Wüstenhagen, R./Bilharz, M. (2006): Green energy market development in Germany – effective public policy and emerging customer demand. In: Energy Policy 34, 1681-1696
- Yin, R. K. (2003): Case Study Research – Design and Methods. Thousand Oaks: Sage