

The Role of Tokyo in Japanese Climate Policy
- from the Viewpoint of Multi-level Governance

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ABSTRACT

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Climate Change is becoming an increasingly important environmental issue these days. During the past ten years, Tokyo Metropolitan Government(TMG) has developed a proactive climate policy and have led to similar policies in other local governments, as well as the Japanese government. This paper attempts to deal with the research question directed at the roles of TMG and other actors in policy-making process of a specific policy field: What roles had TMG and other stakeholders played in solar thermal policy making process to revitalize stagnating Japanese market? Three data collection methods were used for this research such as document survey, participant observation and interviews. This study clarified the important roles of TMG and other stakeholders in solar thermal policy-making process. It is worth noting that TMG and several actors had strongly promoted its solar thermal policy without adequate support from national government. This study will shed further light on the role of TMG in Japanese climate policy with respect to multi-level governance.

I. Introduction

Climate Change is becoming an increasingly important issue these days as shown by the recent negotiations by national governments at COP15 in Copenhagen. While national governments play a very big role in these issues, cities have also increased their significance to tackle climate change. Cities cover less than one per cent of the earth's surface but are disproportionately responsible for causing climate change. Currently, around 50 per cent of the world's population lives in cities (set to reach 60 per cent by 2030). Yet cities and urban areas consume some 75 per cent of the world's energy and are responsible for up to 75 per cent of greenhouse gas emissions [C40, 2005]. It means that cities are main causes of climate change problem and they could be solutions at the same time.

Today, climate policy focusing on energy efficiency and renewable energy has increased in importance and some big cities have strongly promoted their climate policies (Schreurs M. , 2008; Keirstead & Schulz, 2009; Martinot E. , 2009). In Japan, the former national government by the Democratic Party of Japan (DPJ) had not adopted such policy schemes and most Japanese local governments have only conducted demonstrative projects such as green public buildings, “new energy” vision and energy efficient visions(Tanaka, 2008). During the past 10 years, however, Tokyo Metropolitan Government(TMJ) has developed a climate policy including the first local cap & trade scheme and strategic renewable energy promotion with a mid-term substantial target. In addition, TMJ's policies have led to similar policies in other local governments, as well as the national government (Aoki & Motoki, 2007; Sugiyama & Takeuchi, 2008). In addition, the relationship between Tokyo and the Japanese government are mentioned in viewpoint of multi-level governance (Corfee-Morlot, Kamal-Chaoui, Donovan, Cochran, Robert, & Teasdale, 2009).

However, previous studies have not dealt with the roles of TMJ and other stakeholders in policy-making process of a specific policy field. This paper attempts to deal with the research question directed at the roles of TMJ and other actors in solar thermal policy making process: What roles had TMJ and other stakeholders played in solar thermal policy making process to revitalize stagnating Japanese market? Three data collection methods were used for this research such as document survey, participant observation and interviews. This study will shed further light on the role of TMJ in Japanese climate policy with respect to multi-level governance. This study begins with a related literature.

Next, the research method will be presented. Furthermore, the analysis of the result and discussion will be presented. The study closes with the summary of the present study and then suggestions for future research.

II. Literature Review

This chapter is made up of three sections. In order to look at a TMG policy with respect to multi-level governance, the research on climate policies in cities are first reviewed, and next multi-level governance and cities are discussed. Finally, TMG's climate policy environment is shortly presented.

A. Climate policy in cities

Compared to the amount of research on national governments and international organizations, few studies indeed have been done to analyze cities in the climate policy field. Literature pointing out research on global climate change politics has focused heavily on questions of international regime formation and the policy positions of national governments (Schreurs M. , 2008). For example, review of the 206 papers published in *Energy Policy* in 2007 shows that 75% of papers could be said to focus on national and international policy issues, and only 10% are focused on sub-national and local policies and Urban energy policy as a separate field of analysis is relatively neglected (Keirstead & Schulz, 2009). Also, only 9% of papers even in 2009 are focused on sub-national and local policies. In short, studies of local climate policy have not received much attention rather than national and international ones.

However, papers focused on urban cities in industrialized countries have increased(Peter, 2008). Many examples of leadership by local governments are well known in the environmental policy field. For instance, in order to prevent environmental pollution in Japan, local governments have played a quite important role in both the agenda setting and implementation process since 1960's (Schreurs M. A., 2002). Also, there are some outstanding cases in the energy policy field. In Spain, Barcelona's "Solar Obligation" was adopted by more than 50 local governments and finally adopted by the national government six years after Barcelona's implementation in 2000 (Peters C. , 2007). Three preconditions to adopt the Solar Ordinance in Barcelona were pointed out by a local researcher: political will, technical capacity and people's involvement and public participation including all stakeholders(Puig, 2008). Moreover, comprehensive research on renewable energy policies on cities worldwide had conducted by Renewable Energy Network for 21st Century(REN21) (Martinot E. , 2009) . In addition, international networks and initiatives by big cities, such as C40 and the Cities for Climate Protection by ICLEI, actively promote climate policy (Bulkeley & Kern, Urban Studies, 2006; C40, 2005; Bulkeley & Kern,

Urban Studies, 2006). Thus, there are an increasing number of studies focusing on climate policy on cities.

B. Multi-level governance and cities

In order to investigate about local governments' climate policy, some perspective should be considered. The importance of a "bottom-up" approach has long been discussed from the context of urban sustainability (Expert Group on the Urban Environment, European Commission, 1996). Many papers focus on local government's policy-making process in response to a national policy framework. In other words, national policy framework is treated as precondition or exogenous variant. For example, some researchers analyzed London in regard to the U.K.'s policy framework(Hammer, 2008; Fleming & Webber, 2004). On the other hand, some point out the importance of a multi-level governance perspective when thinking about interactions between local governments, national ones or international organizations(Schreurs M. , 2008; Betsill & Bulkeley, 2006). In short, some studies consider local climate policy in national policy framework and others think about it from multi-level governance perspective.

The importance of multi-level governance perspective to analyze local climate policy is very high. Schreurs(2008) points out that "These countries or states are among the largest green-house gas emitters in the world, and thus understanding the multilevel governmental interactions in climate change mitigation within them is critical." Betsill & Bulkeley(2006) noted,

"these approaches obscure how the governance of global climate change takes place through processes and institutions operating at and between a variety of scales and involving a range of actors with different levels and forms of authority. We contend that it is only by taking a multilevel perspective that we can fully capture the social, political, and economic processes that shape global environmental governance."

Therefore, multi-level perspective is significant for research on climate policies on cities.

Multi-level governance holds two aspects. In a study of Keirstead and Schultz(2009), multi-level governance is used as a concept which "captures both the multiple levels at which governance takes place, and the myriad actors and institutions that act simultaneously across these levels" In addition, a study of Ian and Matthew et al. (2004), the multi-level governance concept hold both vertical and horizontal dimensions. Hooghe & Marks mentioned two types of

multi-level governance. Features of Type 1 are vertical one such as general-purpose jurisdictions, Non-intersecting membership, jurisdictions at a limited number of levels and system-wide architecture. On the other hand, that of Type 2 shows horizontal characteristics; task-specific jurisdictions, intersecting membership, no limit to the number of jurisdictional levels and flexible design. Thus, there are two types of form of multi-level governance.

In a study of local climate policy in Germany and the UK by Bulkeley & Kern(2006), four mode of urban governance is recognized; self-governing: the municipality as consumer, governing by provision; the municipality as provider, governing by authority; the municipality as regulator and governing through enabling; the municipality as a facilitator (Corfee-Morlot, Kamal-Chaoui, Donovan, Cochran, Robert, & Teasdale, 2009). In addition, local climate policies were classified in terms of energy, transport, urban planning and waste management (Bulkeley & Kern, Urban Studies, 2006). Table 1 shows a part of their work concerning energy and urban planning. It is helpful for analyzing TMG's climate policy. In short, four mode of urban governance have founded and urban climate policies were categorized.

An OECD study on cities, climate change and multi-level governance provides a significantly beneficial basis of analysis. The study illustrates key actors, functions and tools at different scales of action (Table 1). Furthermore, three types of relationships between national and subnational government are pointed out. First, there are nationally led or top-down enabling frameworks with predominant influence moving from national to local action. This uses national policy to steer local or regional authorities to take climate change into account at the local level. Frameworks can include national mandates that leave wide latitude for local authorities to shape policies on climate change to fit local contexts. Second type is locally led or bottom-up action that influences national action. In this model, learning and experience acquired through autonomously initiated successful local programmes inform and steer policymaking at higher levels of government. Finally, hybrid models showing features of both (Corfee-Morlot, Kamal-Chaoui, Donovan, Cochran, Robert, & Teasdale, 2009). And Japanese case is introduced as hybrid model, as shown in Table 3. Thus, the study by OECD is useful for considering TMG's case.

Table 1

Modes of governing and local climate change policy

Self-governing	Governing by Authority	Governing by Provision	Governing through enabling
Energy			
<ul style="list-style-type: none"> - Energy efficiency schemes within municipal buildings (such as schools) - Use of CHP within municipal buildings - Purchasing green energy - Procurement of energy-efficient appliances - Eco-house demonstration projects - Renewable energy demonstration projects (Internal) contracting (Germany) 	<ul style="list-style-type: none"> - Strategic planning to enhance energy conservation - Supplementary planning guidance on energy efficiency design - Supplementary planning guidance on CHP installations or renewable - Supplementary (private) contracts to guarantee connection to CHP or renewable energy installations (Germany) 	<ul style="list-style-type: none"> - Energy efficiency measures in council housing - Energy Service Provider (Stadtwerke) (Germany) - Energy Service Companies (UK) - Community energy projects (UK) 	<ul style="list-style-type: none"> - Campaigns for energy efficiency - Provision of advice on energy efficiency to businesses and citizens - Provision of grants for energy efficiency measures - Promote the use of renewable energy - Loan schemes for PV technology HECA report (UK)
Planning			
<ul style="list-style-type: none"> - High energy efficiency standards in new buildings - Use of CHP and renewables in new council buildings - Demonstration projects_house or neighbourhood scale. 	<ul style="list-style-type: none"> - Strategic planning to enhance energy conservation - Supplementary planning guidance on energy efficiency design - Supplementary planning guidance on CHP installations or renewables - Supplementary (private) contracts to guarantee connection to CHP or renewable energy installations (Germany) 		<ul style="list-style-type: none"> - Guidance for architects and developers on energy efficiency - Guidance for architects and developers on renewables

Table 2

Climate Change and multilevel governance: key actors, functions and tools at different scales of action

	Local/city	Sub-national regions (e.g. states or provinces)	National	International
Government functions and roles	<p>Implement local decisions as foreseen under national or regional law</p> <p>Where authority exists – act autonomously <i>e.g.</i> through land use planning, decisions on local infrastructure (<i>e.g.</i> local roads, urban planning and zoning, flood control, water supply, local parks/reserves/green-spaces, sanitary waste)</p> <p>Identify local priorities – enhance local/regional understanding working with local actors</p> <p>Raise awareness, create deliberative “space” for decision making</p> <p>Develop locally adapted policies and measures <i>e.g.</i> public private partnerships and local public procurement policies</p>	<p>Implementation of national laws, standards</p> <p>Regional climate policy framework – near and long-term targets – regional strategic orientation</p> <p>Regional laws and policies in key climate-related sectors (<i>e.g.</i> energy, air pollution, water).</p> <p>Regulate performance in key sectors where permitted by national law to do so (<i>e.g.</i> building or appliance standards)</p> <p>Prioritise and set out time frames for regional action (<i>e.g.</i> by sector)</p> <p>Provide incentives, funding and authorisation to enable local action on climate change</p> <p>Risk characterisation at regional scale; definition of risk management rules or guidance, funding, and principles.</p> <p>Establish a monitoring system to track GHG emissions and policy performance over time</p> <p>Fund core analytic inputs to facilitate regional and local decision making</p> <p>Ensure that decision-makers have the tools, information and appropriate institutional context to deliver good decisions</p>	<p>National climate policy framework – near and long-term targets – strategic orientation for policy</p> <p>National laws, policies & standards in key climate-related sectors (<i>e.g.</i> energy, air pollution, water).</p> <p>Regulate performance (<i>e.g.</i> building or appliance standards)</p> <p>Prioritise and set out time frames for national action (<i>e.g.</i> by sector)</p> <p>Infrastructure funding and authorisation for construction (<i>e.g.</i> national roads, sitting power or transmission facilities, water supply and quality, parks or reserves)</p> <p>Establish a national inventory system and build understanding of nation-wide mitigation opportunities and their costs</p> <p>Risk characterisation at national scale; definition of risk management rules or guidance, funding, and principles.</p> <p>Monitor performance of climate policies – national scale</p> <p>Fund core analytic inputs to facilitate sub-national (regional and local) decision making</p> <p>Provide regions, local governments with tools and support to make good decisions (<i>e.g.</i> inventory methods)</p>	<p>Set out timeframe and priorities for cooperative action, collaborative framework to guide national action</p> <p>Provide seed resource to support action</p> <p>Monitor and peer-review and where appropriate, compliance assessment (<i>e.g.</i> FCCC)</p> <p>Facilitate sharing of experience between nations</p>

	Local/city	Sub-national regions (e.g. states or provinces)	National	International
Key Institutions or Actors	Public: city, county or other public authorities Private sector: local industry and business, tourists, households Local environmental or consumer organizations Local and regional experts	Public: state or provincial governmental authorities Semi-autonomous public or public-private institutions (<i>e.g.</i> school boards or issue-based commissions) Private sector: regional industrial federations; major corporations Environmental organisations Academic networks, universities Worker unions	Public: national governmental authorities Semi-autonomous public or public-private institutions (<i>e.g.</i> school boards or issue-based commissions such as for water or air pollution management) Private sector: national industrial federations; major corporations Environmental organisations Academic networks, universities Worker unions	Public intergovernmental organisations and institutions (<i>e.g.</i> MEAs) Private: multinational companies, <i>e.g.</i> insurance, energy, telecommunications. Major environmental and development non-governmental organisations (<i>e.g.</i> WWF, Greenpeace, WRI, Red Cross, etc)
Tools for decision making	Deliberative or participatory policy processes (perhaps linked to ongoing policy processes <i>e.g.</i> urban planning and infrastructure decisions) Local GHG inventories – standardised and linked with national inventory methods Urban vulnerability mapping or risk assessment (<i>e.g.</i> flood risk and key infrastructure)	Funding for research Regional climate modelling – building on national research Impact science – regional centres of expertise Policy research – regionally tailored Harness academic resources and facilitate networks Regional GHG inventories Project funding structures to support regional and urban scale action	Funding for research Climate modelling – national research (<i>e.g.</i> NOAA, UK Hadley Centre) Support for impact science – regional (sub-national) centres of expertise Policy research – including support for regionally tailored research Harness academic resources and networks National GHG inventories Project funding structures to support urban scale action	Funding for research International research collaboration and science-policy networks (<i>e.g.</i> IPCC) Harmonised GHG inventory methods Harmonised reporting systems (<i>e.g.</i> FCCC) to provide oversight for international carbon markets

Table 3

Frameworks and Institutional Models of Multilevel Governance on Climate Change

Location and implementing institutions	Type of initiative	Incentives for local action	Programme (s)	Key actors	Monitoring and assessment	Outcomes
Japan: • National government (Enabling) • Regional and local authorities	Hybrid	<ul style="list-style-type: none"> • National enabling legislation for local and regional governments • Inaction in GHG reduction policy-making. 	Among others: <ul style="list-style-type: none"> • Tokyo ETS • Kyoto Labelling System • Regional and municipal emission targets • Saga feed-in tariffs 	i) Policy advocate <ul style="list-style-type: none"> • National policymakers • Local and regional policymakers • Local and regional public institutions ii) Targeted audience <ul style="list-style-type: none"> • Businesses • Industries / factories • Energy producers • Consumers 	Local action plans <ul style="list-style-type: none"> • Yearly or periodic sectoral reviews done by monitoring group Tokyo ETS <ul style="list-style-type: none"> • Monitoring and reporting every year Fifty-fifty programmes <ul style="list-style-type: none"> • Municipalities and energy producers 	<ul style="list-style-type: none"> • National implementation of eco-labelling program building on Kyoto local experience • GHG emission reductions from regional and municipal actions

C. TMG’s climate policy environment

In Japan, TMG has been highly evaluated by some researchers because its climate policy is much innovative and efficient rather than that of other local governments and national government policy. The former national government by DPJ had been reluctant to adopted effective policy schemes and most Japanese local governments have only conducted demonstrative projects such as green public buildings, “new energy” vision and energy efficient visions (Tanaka, 2008). Local climate change policy-making in Japan started in the middle of the 1990s. Most local governments have drawn up action plans but have dealt with only raising public awareness. The most advanced local governments, such as Tokyo and Kyoto, have used local ordinances in order to reduce their greenhouse gas emissions. Two key roles of Japanese local governments have been made clear (Sugiyama & Takeuchi, 2008). The first one is the development of policy ideas and actions. The second role is as a regulator but only a small number of prefectural and city governments have played this role. Moreover, TMG brought about policy dissemination to other local authorities and, sometimes to the national government. Thus, TMG are greatly assessed in these days.

The TMG’s climate policy-making process in these past 10 years was analyzed through detailed interviews and review of public documents (Aoki & Motoki, 2007). The features of climate policy development by TMG are listed below: a policy scheme more aggressive than the national level, imitation of its policies by other local governments and the national government. According to Aoki & Motoki, some factors which were necessary in developing TMG’s climate policy were: an ambitious vision and successful experience in former campaign for pollutant reduction from diesel fuel, an inability to reach consensus concerning a Cap & Trade scheme 10 years ago, institutional changes

within both TMG and the national government and external changes in climate policy.

However, previous studies have not dealt with the roles of TMG and other stakeholders in policy-making process of a specific policy field. This paper attempts to deal with the research question directed at the roles of TMG and other actors in solar thermal policy making process: What roles had TMG and other stakeholders played in solar thermal policy making process to revitalize stagnating Japanese market?

In order to investigate TMG policy with respect to multi-level governance, the research on climate policies in cities, multi-level governance and cities, TMG's climate policy environment was reviewed and research question was proposed in this chapter.

III. Method

Three data collection methods were used for this research. First, a survey of papers and articles, public documents and websites about Tokyo and other cities, the Japanese government, international negotiations were conducted. Second, participant observation has done because the author has strong connections with TMG staffs and has taken part in its policy process from 2005 to 2010, especially in terms of promotion of solar thermal installations. Third, several interviews of stakeholders were took place with note taking and recording, a TMG staff for two times, a solar thermal company and a Japanese expert of climate policy governance. Interviewees were asked semi-structured questions concerning roles of TMG and other stakeholders from April to September 2010.

IV. Results

In this chapter, most of description was based on survey of public document and my participant-observation.

A. Solar thermal status in Japan

Solar thermal market in Japan is stagnating these twenty years because of less support by the national government, while the market worldwide has grown based on China and European contribution. After the second oil shock, solar thermal market in Japan was its peak in 1980. At that time, more than eight hundred thousand of solar thermal appliances were installed in a year. However, the market has shrunk afterwards. In 2008, the number of installations of solar thermal appliance is only sixty thousand. It means less than a tenth of that in 1980 and stock has decreased these fifteen years. There are some causes of this stagnation. The only specialized magazine for solar thermal industry pointed out less national support, low cost reduction effect after the oil shock, some problematic sales method. Thus, solar thermal has kept decreasing in Japan.

B. Overview of TMG's climate policy

The climate policy by TMG was started in 2000 by adopting Tokyo Metropolitan Environmental Security Ordinance. The word "Global warming" was shown in this ordinance for the first time in TMG'S institution. TMG started two programs. "Tokyo CO2 Emission Reduction Program" required large emitter to submit CO2 emission data and "Tokyo Green Building Program" make large buildings report their action for environment. Next year, "TMG Environmental Basic Plan" and "Stop Global Warming! Tokyo project" was published. However, the much emphasis was on energy conservation program and less importance on renewable energy at that time. The only innovative program for renewable promotion in this term is green power purchasing. Thus, the ordinance was the first step to promote climate policy in Tokyo.

Promotion of renewable energy was fully run from 2006. TMG Renewable Energy strategy was made through strong support by Institute for Sustainable Energy Policies(ISEP) (Aoki & Motoki, 2007). The most significant feature of this strategy was to set an ambitious target, which was "20% renewable energy share of energy consumption in 2020". Furthermore, important concept was proposed in this strategy. It was called "Demand-pull policy." There is little potential of renewable energy installation compared to huge demand in Tokyo.

TMG staffs and ISEP members considered the characteristic feature of Tokyo and they concluded to utilize the demand as buying power to promote renewable energy. This concept has been adopted following policy measures. Moreover, the target of 1 million kW solar energy installations in 2016 was proposed in “10-Years Project in Tokyo.” Therefore, TMG Renewable Energy strategy accelerated renewable energy policies.

In 2007 and 2008, TMG had significant progress on climate policy. TMG published “Tokyo Climate Change Strategy” and announced introducing CO2 cap and trade scheme for large-emitting business establishment, promoting 1 million kW solar energy. Through tough negotiation with business associations, industrial associations, Tokyo Metropolitan Environmental Security Ordinance was successfully amended in 2008. An expert of Japanese climate policy governance pointed out these progresses in Tokyo has a certain impact to Japanese climate policy, but it could be larger if other local governments follow the policy. As a result, TMG decided introducing original local CO2 cap and trade scheme from 2010. Then, climate policy on Tokyo was strongly promoted.

Based on Table 1, the governing of TMG is shown below.

Table 4
Modes of governing and local climate change policy

Self-governing	Governing by Authority	Governing by Provision	Governing through enabling
Energy			
<ul style="list-style-type: none"> - Energy efficiency schemes within municipal buildings (such as schools) - Purchasing green energy - Procurement of energy-efficient appliances - Eco-house demonstration projects - Renewable energy demonstration projects (Internal) contracting 	<ul style="list-style-type: none"> - local cap and trade scheme for large-emitting business establishment - Strategic planning to enhance energy conservation - Supplementary planning guidance on renewable for large scale development 		<ul style="list-style-type: none"> - Campaigns for energy efficiency and renewables - Provision of advice on energy efficiency to businesses - Provision of grants for energy efficiency measures and renewables
Planning			
<ul style="list-style-type: none"> - Guidance for architects 	<ul style="list-style-type: none"> - Supplementary planning 		<ul style="list-style-type: none"> - Guidance for architects

and developers on energy efficiency and renewables	guidance on renewable for large scale development		and developers on renewables
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C. Development of TMG’s solar thermal policy

TMG’s solar thermal promotion was accelerated from 2006. Table 5 shows the relationship between TMG climate policy development and solar thermal promotion. Solar thermal promotion was set with solar PV as one million kW solar energy target in “10-Year Project in Tokyo”. Next, Solar Energy Promotion Committee has held with stakeholders such as solar thermal companies, gas provider, NGO, Academic expert. Based on a report of the committee, quality certification system for solar thermal appliances, green heat certificate system and solar energy promotion cooperative project had begun to negotiate. Thus, solar thermal promotion in Tokyo has started.

Since TMG launched practical promotion from 2009, there had been great progress for solar thermal market in Japan, but still sufficient growth of installation of solar thermal appliances has not occurred. TMG started Subsidy scheme for solar thermal appliances linked with green heat certificate system. In addition, several solar thermal companies developed new products. Furthermore, Tokyo gas utility made new solar thermal appliance system for collective housing and established a new network for solar thermal promotion. These changes were quite positive in stagnating market. Compared to 2008, production of solar thermal appliances increased 30% in Japan. Based on interview to staff of solar thermal company, TMG was highly evaluated because TMG made trend of this increasing in stagnating solar thermal market. However, the application number of solar thermal subsidy in Tokyo was only 233, while that of solar PV was 11,145 on 10th September, 2010. That number is quite small, on the other hand, the target of 40 thousand intallation of solar appliances until the end of fiscal 2010 is also difficult. Therefore, TMG has made several progress but solar thermal market has not expanded yet.

Table 5

The relationship between TMG climate policy development and solar thermal promotion

Fiscal year	TMG climate policy	Relationship with solar thermal promotion
2000	Tokyo Metropolitan Environmental Security Ordinance	-(No specific program)
2002	TMG Environmental Basic Plan	-
	Stop Global Warming! Tokyo project	-
2006	TMG Renewable Energy strategy	-20% renewable energy use target in 2020 was set - Demand-pull concept for promotion of renewable energy was discussed - Green heat certificate system was considered
	10-Year Project in Tokyo	The target of 1 million kW solar energy installation in 2016 was proposed
2007	Tokyo Climate Change Strategy	
	Solar Energy Promotion Committee	Stakeholders such as solar thermal companies, gas provider, NGO, Academic expert discussed promotion plan.
	Action Program 2008 for “10-Year Project in Tokyo”	The target of 400 thousand solar appliances in 2010 was set.
2008	Amended Tokyo Metropolitan Environmental Security Ordinance	Obligation to planning solar energy installation for large scale development was adopted.
2009	Subsidy for solar energy was launched	Subsidy for solar thermal appliance started.(approximately thirty thousand yen to one hundred thousand yen)

D. The roles of Actors

Based on the interview on TMG staff, main actors and their roles are shown in Table 6. Furthermore, wards and cities in Tokyo cooperated to promote exhibition of solar thermal appliance in 2009. It became three times as much as that in 2008.

Table 6

The role of actors in TMG's solar thermal policy-making process

	Actor	TMG Renewable Energy strategy (2006)	1 million kW solar energy installation (2007-)		
			Solar Energy Promotion Committee	quality certification system	green heat certificate system
National	METI (NEDO)	Budget provider Observer			Observer
	MoE				Observer
Industrial association or institute	SSID			Original CO2 reduction estimation	Providing data
	Better Living Association			Making new quality certification system	
	Green Energy Certification Center				Making new quality certification system
Regional actors	ISEP	Advocating concepts, project plan	Committee member Policy research	Expert Negotiation	Policy research Committee member
	Solar thermal company		Committee member	Committee member	Committee member Development of new appliance

	Gas company		Committee member Development new appliance for collective housing		Committee member
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V. Discussion

A. the role of TMG and other stakeholders

Based on Table 2, the role of Tokyo covered in solar thermal promotion is below; Regional climate policy framework – near and long-term targets – regional strategy orientation; Regional laws and policies in energy sectors; Prioritise and set out time frames for regional actions; Provide incentives, funding and authorization to enable local action on climate change; Establish a monitoring system to track GHG emissions and policy performance over time. In addition, TMG took some role of national government. TMG staffs negotiated with industrial federations and major corporations. On the other hands, national government such as MoE and METI has little impact on solar thermal promotion. ISEP and other private actors have strongly supported TMG policy making, as illustrated in Table 6.

B. The relationship between TMG and national government

The data in the present study was contrary to the finding shown Table 3 reported by OECD. There is no national incentive for local action and no existence of national actors. The results in the present investigation suggest that there is locally led or bottom-up action that influences national action in solar thermal field. Although outcome is not sufficient yet, TMG still promote some more programs.

C. Further discussion

This study shows the role of TMG and other actors in solar thermal policy-making process in stagnating Japanese market. At the same time, it shed further light on the role Japanese climate policy with respect to multi-level governance.

VI. Conclusion

The purpose of this study was to clarify the roles of TMG and other actors in policy-making process of a specific policy field from the perspective of governance. The following were the main findings: (a) TMG and several private actors had played its solar thermal policy without adequate support from national government and (b) TMG partly played important role instead of the national government. Significant points are to provide its pragmatic information from participant-observation and interview and to dispute the role of TMG from multi-level governance perspective. This study will shed further light on the role of TMG in Japanese climate policy with respect to multi-level governance. The researcher confined solar thermal policy-making process to the activity of TMG staffs and person in charge in stakeholders. A further study of climate policy of big cities should be conducted in viewpoint of multi-level governance.

Reference

- Aoki, K., & Motoki, Y. (2007). A Policy Process Analysis of the Tokyo Metropolitan Government's Global Warming Prevention Measures: Importance and Implications of the Policy Dynamics Emerging from the Progressive Local Initiatives. *The Fudai keizai ronshu : the journal of economic studies* , 53 (2), 247-297.
- Betsill, M., & Bulkeley, H. (2006). Cities and the Multilevel Governance of Global Climate Change. *Global Governance* , 12, 141-159.
- Bulkeley, H., & Kern, K. (2006). Local government and the governing of climate change in Germany and the UK. *Urban Studies* , 43 (12), 2237.
- C40. (2005). *C40 cities -Climate Leadership Group -Cities and climate change*. Retrieved February 11, 2010, from C40 cities -Climate Leadership Group: <http://www.c40cities.org/climatechange.jsp>
- Corfee-Morlot, J., Kamal-Chaoui, L., Donovan, M., Cochran, I., Robert, A., & Teasdale, P. (2009). Cities, climate change and multilevel governance. *OECD Environment Working Papers* .
- Expert Group on the Urban Environment, European Commission. (1996, Jan 1). European sustainable cities: report. 303.
- Fleming, P., & Webber, P. (2004). Local and regional greenhouse gas management. *Energy Policy* , 32 (6), 761-771.
- Hammer, S. A. (2008). Renewable Energy Policymaking in New York and London: Lessons for other 'World Cities'? In P. Droege, *Urban Energy Transition: From Fossil Fuels to Renewable Power* (pp. 143-172). Elsevier Science.
- Keirstead, J., & Schulz, N. (2009, Jan 1). London and beyond: Taking a closer look at urban energy policy. *Energy Policy* .
- Martinot, E. (2009, June 12). *REN21 Publications*. Retrieved February 13, 2010, from REN21: http://www.ren21.net/pdf/REN21_LRE2009_Jun12.pdf
- Peter, D. (2008). *Urban Energy Transition: From Fossil Fuels to Renewable Power*. Elsevier Science.
- Peters, C. (2007). Solar thermal legislation on municipal, regional and national level in Spain. Success and remaining barriers. *3rd European Solar Thermal Energy Conference* (pp. 310-314). European Solar Thermal Industry Federation.
- Puig, J. (2008). Barcelona and the Power of Solar Ordinances: Political Will, Capacity Building and People's Participation. *Urban energy transition: from*

fossil fuels to renewable power , 433-449.

Schreurs, M. A. (2002). *Environmental Politics in Japan, Germany, and the United States*. Cambridge University Press.

Schreurs, M. (2008). From the Bottom Up: Local and Subnational Climate Change Politics. *The Journal of Environment & Development* , 17 (4), 343.

Sugiyama, N., & Takeuchi, T. (2008, Jan 1). Local Policies for Climate Change in Japan. *The Journal of Environment & ...* .

Tanaka, M. (2008). The construction of energy municipality: Development based on policy matrix. *The TOSHI MONDAI* , 99 (8).

Weidner, H., & Mez, L. (2008). German Climate Change Policy: A Success Story With Some Flaws. *The Journal of Environment & Development* , 17 (4), 356.