

International Environmental Cooperation between Japan and China towards East Asian Sustainable Development

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Abstract

Japan and China have a long history of environmental cooperation. In recent years, economic potential of environmental industry has been well recognized, besides the requirement of environmental protection. Both Japan and China have incorporated green growth into their dominant national strategies and set up high priority for promoting environment and energy related industries, which serves as the background for further mutually beneficial cooperation. In this article, we reviewed the history and found that Japan-China environmental cooperation has developed from government-oriented stage to business-oriented stage. It is more stable against the complex and volatile international political situation; but stable intergovernmental relationship is one of the key factors for initiating environmental cooperation projects. Later, we discussed the opportunities and challenges for Japan-China environmental cooperation considering the roles of state actor and business power. A systematic scheme was concluded to analyze the critical factors and dynamic relations for environmental cooperation and business. Business power has been exerting more and more influence on international and domestic environmental politics. Due to the political limitation of state actors, business power is expected to be more active in promoting stable and sustainable cooperation. Moreover, environmental cooperation could also be a key to mitigating the political tensions between Japan and China.

Keywords international environmental cooperation, Japan, China, environmental protection, environmental industry

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1. Introduction

In recent years, the demands have been raised by governments throughout the world for flexible cooperative approaches to environmental protection and energy problems. Besides the requirement of environmental conservation, the economic potential of environmental issues has been well recognized. Both Japan and China have incorporated green growth into their dominant national strategies and set up high priority for promoting environment and energy related industries, which serves as the background for mutually beneficial cooperation.

Regarding the different development levels of industrial technologies, the benefits of environmental cooperation were qualitatively analyzed and quantitatively calculated in many scientific scenarios, which may serve as the evidence of economic and environmental gains. Japan has achieved the world's highest level in energy saving and efficiency and it is costly to further reduce CO₂ emissions. In previous research (Zhou et al, 2013), it was found that if the efficiency of China's thermal power generation could be improved to the Japanese level in 2005, the CO₂ emission reduced would be almost equivalent to half of the total CO₂ emission of Japan in 2007. The technology transfer from Japan will help other East Asian countries to achieve their CO₂ emission targets. In the other words, there is a strong incentive for developing countries to adopt the low-carbon policy and industrial upgrading, in partnership with developed countries, if the relationship between economic growth and reducing pollution or co-benefits from low-carbon emissions is clarified. Thus, establishing an East Asia Low-Carbon Community including Japan, China and Korea is certainly worth considering as a priority measure.

However, East Asia is a region which is diverse and rapidly transforming in terms of politics, economics and militarily. The Japan-China tensions have even made on-going projects or proposals of such mutual cooperation doubted, especially from the perspective of international relations. In fact, many of the relevant projects with state actors involved have been postponed or ceased. At the same time, huge potential market keeps the communication of the environmental industry active. Non-state actors, especially the transnational enterprises of environmental industry are playing a more and more important role in environmental governance. Thus, the realization of international environmental cooperation is influenced by international relations, business models and so on, which require interdisciplinary and transdisciplinary perspectives to seek for the appropriate solutions.

This article aims to discuss the challenges and possibility for international environmental cooperation between Japan and China by reviewing related literatures and

case studies from the field of international relations, environmental policies and business review. We conducted analysis and discussion from government level and industrial level to explore the mechanism of international environmental cooperation.

2. Review of the Japan-China Environmental Cooperation

In this chapter, the history of international environmental cooperation of Japan and China was reviewed along the timeline from 1980s to present. The situation has been changing from one-way support to win-win cooperation, especially after 2005.

2.1 Japan-China Environmental Cooperation from 1980s to 2005

Japan has accumulated lots of valuable knowledge, technologies and experience, which Japan plans to introduce to the world for both contribution and economic gains. The needs of environmental protection and recovery of China implies a huge potential market of environmental goods and services. At the same time, Japan has the high risk to be influenced by the trans-boundary pollutants from China due to geographical proximity. The degrading of environment wasn't much concerned until later 1990s in China, and technological improvement and capacity building for environmental recovery and conversation were required to be accelerated by the national government, especially after several severe water and air pollution episodes.

Figure 1 indicates the brief introduction of important historical events of Japan-China environmental cooperation from 1981 to 2008, which is characterized by form of one way support from Japan to China. In 1981, the joint statement on protecting migratory birds was issued by Japan and China. There were few cooperative activities in environmental fields in 1980s, when environmental problems didn't occur at large scales. Communications on environmental protection started to be more frequent since 1994, when the joint committee on environmental protection and cooperation was launched. In 1996, Sino-Japan Friendship Center for Environmental Protection was established to provide policy and institutional support and technology transfer, and it still functions now. In 1997, Kitakyushu City implemented ODA project with Japan International Cooperation Agency (JICA) to improve and evaluate Dalian's environmental conditions from technologies, administrative operations and city planning, together with Chongqing and Guiyang supported by Yen loan and technical cooperation. The first comprehensive forum on environmental cooperation was held the same year to address the fast increasing environmental concerns in China.

In the early 2000s, Japan supported China through official development assistance (ODA) in mainly using the 3 methods: Yen loan, grant aid and technical cooperation.

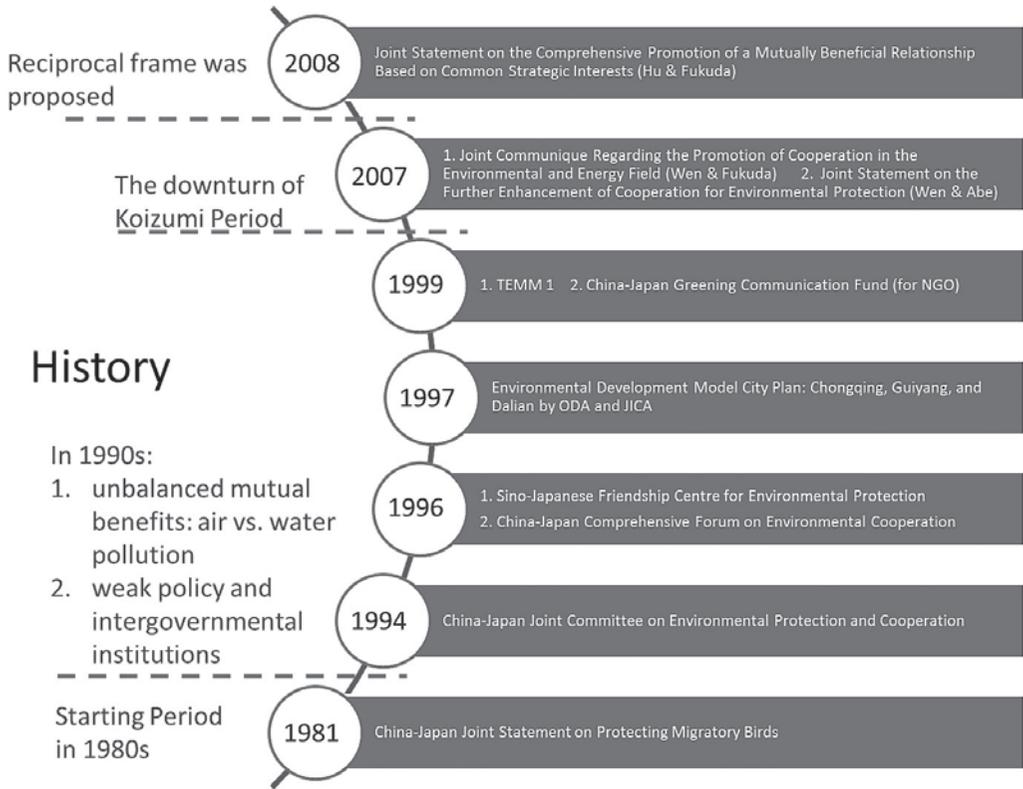


Figure 1. History of Japan-China Environmental Cooperation

tion provided by JICA. Capacity building of environmental protection turned to be the main field of ODA, which can be found from the increase of proportion of environment-related projects in Table1.

Table1. ODA Support and the Proportion of Environment-related Projects (100M JP Yen)

| Year | Yen Loan | Grant Aid | Technical Cooperation (JICA) |
|------|----------------|---------------|------------------------------|
| 2000 | 2143.99(68.2%) | 47.80(1.2%) | 81.97(26.2%) |
| 2001 | 1613.66(54.3%) | 63.33(32.9%) | 77.77(35.7%) |
| 2002 | 1212.14(72.6%) | 67.87(51.8%) | 62.37(34.3%) |
| 2003 | 966.92(25.6%) | 51.50(83.1%) | 61.80(34.4%) |
| 2004 | 858.75(94.1%) | 41.10(13.2%) | 59.23(40.8%) |
| 2005 | 747.98(80.3%) | 14.75(100.0%) | n.a. |

International Environmental Cooperation between Japan and China towards East Asian Sustainable Development

In this period, the most significant intergovernmental activity related to environmental cooperation in East Asia region is the Tripartite Environment Ministers Meeting (TEMM), which was first held in Seoul in January 1999. Since then, the environment ministers of the three countries have been hosting the meeting every year in turn. The TEMM has become a platform of highest level for the 3 countries to promote regional environmental management. The platform is quite effective since many concrete projects have been conducted under TEMM, such as the development of environmental education network, joint environmental training, freshwater (lakes) pollution prevention, collaboration in environmental industry development, and ecological conservation in Northwest China. A broad network of government, academia, industry and NGO/NPO has been developed through these projects.

Although political relations often cooled down between Japan and China in this period, the official and private sectors communication and cooperation made the Sino-Japanese environmental relations one of the hot spots inside cooler Sino-Japanese relations (Weston, 2008). To understand the cooperation at this period, we employ the theory related to 'risk management', which was suggested by several scholars in analyzing bilateral and regional relations in East Asia (Wishnick, 2009; Nesadurai, 2009). Risks are unintended results of economic and technological decisions, which are previously undertaken with fixed norms of calculability, connecting means and ends or causes and effects (Beck, 1999). Not only the expansion of trans-boundary pollution, but also the transfer of pollution-intensive industries results in the risks to the environmental commons as well as growing uncertainty about consequences for Japan, China and Korea (Yoshimatsu, 2010). Bilateral and regional environmental cooperation are required to cope with such risks.

2.2 Strategic Change and Ambitious Objectives in Environmental Industry after 2005

The commonality of objectives is one of the prerequisites to start and realize sustainable cooperation. In the early stage, Japan wanted to reduce the Trans-boundary air pollution through technology transfer and other ODA support, whereas domestic water pollution was the biggest concern of the Chinese government, which resulted in much more allocation of ODA funds into water than air projects. The unbalanced mutual benefits impeded the cooperation to some extent (Yoshimatsu, 2010). Since 2005, the situation has been changed, with more market-based mechanisms being introduced to ensure the economic gains for both countries. The Clean Development Mechanism (CDM) market grew rapidly from February 2005 with the coming into force of the Kyoto Protocol, the approval of the decision on unilateral CDM, and the launch of the EU

ETS linked with CDM/JI (IGES, 2006). The CDM projects from China took up 60.76% of the total greenhouse gas (GHG) emission reduction by July 2014 (Kyoto mechanisms information platform, 2014).

Japan-China relation recovered quickly from the downturn of Koizumi since 2007. Environmental protection and energy was one of the high-priority functional areas that two countries focused for promoting cooperation. In this period, the tops of Japan and China showed great interest and decision of promoting promotion in environmental and energy field as follows: Joint Statement on the Further Enhancement of Cooperation for Environmental Protection (Wen & Abe, 2007); Joint Communiqué Regarding the Promotion of Cooperation in the Environmental and Energy Field (Wen & Fukuda, 2007); Joint Statement on the Comprehensive Promotion of a Mutually Beneficial Relationship Based on Common Strategic Interests (Hu & Fukuda, 2008).

In 2009, both countries declared their ambitious objectives in environmental industry. Japan placed green innovation in the New Growth Strategy as one of the main economic driving forces. Green innovation aims to create over 50 trillion JP Yen in new markets and 1.4 million new jobs, and to reduce worldwide GHG emissions by 1.3 billion tCO₂e using Japanese technology by 2020. China's government identified seven 'strategic emerging industries' that serve as the backbone of next phase of industrial modernization and technological development. Among them, the first one is about the industry of energy efficiency and environmental conservation. Besides, new energy industry and New-energy vehicles industry are also in the list. The economic scale is indicated in next chapter.

The strategy about environmental industry has been changed since the economic potential of environmental issues was well recognized by the society. To promote the business matching and business to business exchange, the Japan-China Energy Conservation Forum was organized by Ministry of Economy, Trade and Industry (METI), Japan-China Economic Association (JCEA, general incorporated foundation) at Japan side, and National Development and Reform Commission (NDRC), Ministry of Commerce (MOC) at China side. The forum was held 6 times, in Tokyo and Beijing in rotation, and the participators included the representatives from the private and public sectors (Table2). 7 or 8 Working sessions were conducted, focusing on energy, water, waste management and other topics based on interests from both sides. As an important section of the forum, model joint projects were signed. As indicated in Table2, the number of participants is about 1000 and the number of joint projects increased from 5 to 47. It proved that the forum has attracted wide attention and promote the progress of Japan-China environmental cooperation. Regarding the detail of joint projects, Japan side was mainly private enterprises, whereas, China side consisted of industrial

International Environmental Cooperation between Japan and
China towards East Asian Sustainable Development

associations, government agencies, research institutions and state or private enterprises. The projects also presented a wide variety of local areas and cooperation fields.

Holding such forums and implementing joint projects significantly accelerated the progress from comprehensive cooperation agreements to specific practices. However, the Japan-China Energy Conservation Forum was not held in 2013. Even there was no clear statement about the reasons; it was probably influenced by the Japan-China tensions.

In this period, the Japan-China-Korea environmental cooperation has expanded to more administrative fields. The National Development and Reform Commission of China, the Japanese Ministry of Economy, Industry and Trade and the Korean Ministry of Environment established communication channels at the working level on circular economy model projects. The Ministry of Science and Technology of China, the Ministry of Education, Culture, Sports, Science and Technology of Japan and the Ministry of Education, Science and Technology of Korea jointly supported six programs in two phases, covering areas from sewage treatment, new materials and disaster prevention to climate change and energy-saving technologies (Ministry of Foreign Affairs of China, 2012). The themes of TEMM have been extended from pollution control to

Table2. Japan-China Energy Conservation Forum (2006-2012)

| Year/Place | Participants | Projects | Main Areas |
|---------------|--------------|----------|--|
| 2006, Tokyo | 850 | 5 | 1. regulation, policy, standard, products certification for energy-saving and environmental protection; 2. ESCO and loan system; 3. steel; 4. glass, concrete, new construction materials; 5. renewable energy, electricity, gas; 6. vehicle; 7. Long-term trade |
| 2007, Beijing | 1000 | 10 | 1. electricity; 2. vehicle; 3. electronic equipment; 4. steel; 5. environment; 6. energy-saving policy; 7. building energy-saving; 8. long-term trade |
| 2008, Tokyo | 1100 | 19 | 1. chemistry; 2. vehicle; 3. seawater desalination, water treatment, water reclamation; 4. energy-saving technologies; 5. electricity generation; 6. cyclic economy; 7. long-term trade |
| 2009, Beijing | 1000 | 42 | 1. top runner system; 2. cyclic economy; 3. seawater desalination, water treatment, water reclamation; 4. vehicle; 5. coal and thermal power generation; 6. chemistry; 7. sludge treatment |
| 2010, Tokyo | 1100 | 44 | 1. LED, eco-building; 2. cyclic economy; 3. water treatment, sludge treatment, waste to energy; 4. vehicle; 5. low carbon technologies (carbon capture and storage); 6. coal and thermal power generation; 7. energy-saving for small and medium enterprise and ESCO; 8. long-term trade |
| 2011, Beijing | 1000 | 51 | 1. top runner system; 2. green building; 3. water treatment and sludge treatment; 4. cyclic economy; 5. new energy vehicle; 6. coal and thermal power generation; 7. long-term trade |
| 2012, Tokyo | 1000 | 47 | 1. Distributed energy; 2. energy management; 3. vehicle; 4. green building, LED; 5. cyclic economy; 6. water treatment and sludge treatment; 7. coal and thermal power generation; 8. long-term trade |

Source: HP of the Japan China Business Alliance for Energy Saving and Environmental Protection

sustainable planning, policy and legal system enhancement. Among the tripartite cooperation programs, TEMM activities are highly regarded by the leaders of Japan, China and Korea as a leading example (TEMM, 2014).

In summary, Japan-China environmental cooperation has been changing from one-way support to win-win cooperation by employing business-based approaches, especially after 2005. However, the communication institution of government level is still not stable due to the changing international relations. Regarding the international environmental cooperation, Ministry of Environmental Protection of the People's Republic of China (MOEP) adopts three predominant principles to review the international environmental cooperation, which are to be subject to national foreign affairs, to serve domestic environmental protection principal missions, and to strengthen environmental protection capability. The order of the three principles wasn't mentioned in the official statement. In the context, it could be perceived that the policy of national foreign affairs would be the decisive factor.

3. Business Power in China-Japan Environmental Cooperation

The business power has been showing increasing influence on international environmental politics including lobbying in international negotiations, implementation and technological innovation, shaping public discourses, private norm and rule-setting (Falkner, 2008). Business power is an important part of non-state actors, which has been discussed more in the context that states are declining in importance and that non-state actors are gaining status and influence. Following the traditional classification, non-state actors are divided into two categories: international intergovernmental organizations (IGOs) and transnational enterprises (TNEs) or international non-governmental organizations (NGOs) (Brown, 1995; Miller, 1994). The first group consists of the non-state actors that are created by nation-states and officially documented by government agencies, such as TEMM. The second group of non-state actors is established not by nation-states, but by certain group of individuals, businessmen and other societal forces. Besides TNEs, small and medium enterprises (SMEs) are also taking an active part in developing global markets. Therefore, we include SMES as part of the non-state actors for consideration.

In China, the state-owned enterprises (SOEs) dominate the economy of the country, especially in infrastructure, energy, bank and insurance fields. Most of the SOEs are also expanding their business globally just as transnational enterprises. According to the definition, it is difficult to classify Chinese SOEs simply into state or non-state group due to its complex ownership and operation forms. However, most of the

International Environmental Cooperation between Japan and China towards East Asian Sustainable Development

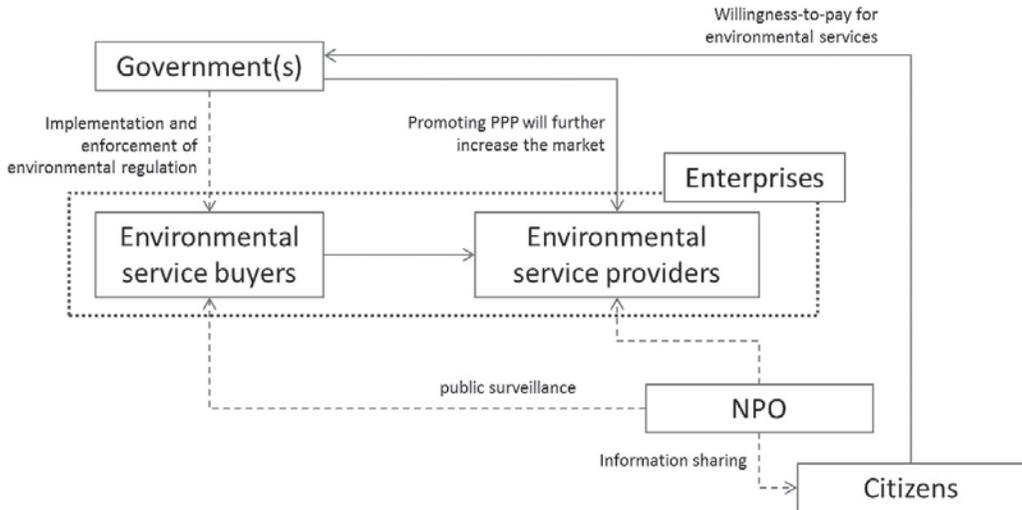


Figure 2. Scheme of Environmental Market and Industry

industrial GHG emissions are generated by SOEs and they are playing a significant role in sustainable development as main operators and largest environmental service buyers. Hence, we use business power to cover the role of SOEs, TNEs and SMEs, while we should not ignore the special characteristics of SOEs in politics and policy interaction. In this chapter, we discuss the participation of business power in Japan-China environmental cooperation.

First, we form the scheme of environmental market and industry, shown in Figure 2. Enterprises here are divided into 2 groups: the environmental service buyers, which refer to the enterprises producing wastes that may cause environmental pollution; and environmental service providers, which refer to environmental industry. Environmental service providers receive contracts mainly from the buyers and governments, which refer to mainly provincial and municipal governments. Rather than cooperate responsibilities, the implementation and enforcement of environmental regulation and administration is the direct force that makes the buyers to purchase environmental services such as end-of-pipe treatment. Provincial and municipal governments purchase environmental services to provide public service such as the construction, operation and maintenance of waste water treatment infrastructures. Public Private Partnership and Third party governance are widely used in environmental infrastructure projects; therefore, the citizens need to pay for such service directly. The willingness-to-pay for environmental services should be considered in planning such projects. In the scheme, NPOs help do public surveillance and share environmen-

tal information and provide environmental education to the citizens, which help to improve the citizens' environmental awareness and make appropriate decisions.

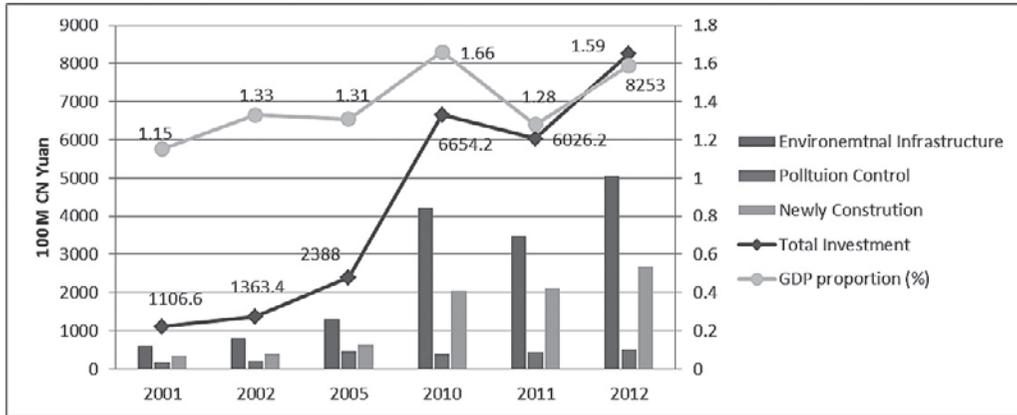


Figure 3. Investment on Environmental Protection in China

Source: Ministry of Environmental Protection of the People's Republic of China (MOEP), 2013.12

*Newly construction stands for the investment on pollution control facilities required to be introduced in the construction of new and reformed factories.

Then, we look at the scale of environmental market in China, which also suggests the potential economic gain for environmental cooperation. Figure3 indicates the total investment to environmental protection. It consists of the investment to environmental infrastructure, pollution control and the investment on pollution control facilities required to be introduced in the construction of new and reformed factories due to Environmental Protection Law. It shows a rapid growth after entering the 2000s. But its proportion in GDP remains around 1.5%, which is much less than the targeted 2% and even far from 3% suggested by environmental experts. It is predicted that there will be an annual increase of 15% by MOEP.

As the first one of the seven 'strategic emerging industries', the industry of energy efficiency and environmental conservation includes the following aspects. It helps to foresee the high-priority fields of the main environmental market and industry, which are about to grow quickly in China (The US-China Business Council, 2013).

1. to research, develop, and promote energy-efficient technology products in order to make technology breakthroughs and raise overall energy efficiency;
2. to accelerate the R&D and production of broadly applicable technology that can be used for resource recycling and remanufacturing industrialization;
3. to test and promote advanced environmental technologies and products;

International Environmental Cooperation between Japan and China towards East Asian Sustainable Development

4. to promote a market-oriented service system for environmental protection and energy efficiency;
5. to employ advanced technology to create a recycling system for recyclable materials;
6. to promote clean coal and seawater use

Furthermore, it was addressed in a recent speech of Ma Rong, a high-rank official of the National Development and Reform Commission (NDRC), that environmental technologies will be strongly supported by national government, focusing on water treatment and waste management, desulfurization and denitrification, high-density organic waste, soil remediation and environmental monitoring (China Environmental Investment Union, 2014). NDRC plays a lead role in the governance of developing policies for strategic emerging industries. The Department of Resource Conservation and Environmental Protection of NDRC handles the specialized field of energy efficiency and environmental protection.

4. The Scheme of China-Japan Environmental Cooperation

Chapter2 and chapter3 discuss the China-Japan Environmental Cooperation from the perspectives of state and non-state (mainly business) respectively. It is necessary to take into account the collective involvement of both countries' stakeholders, such as government (national and local), industrial sectors (environmental service providers and the others), research sectors, NPO/NGO and citizens. Thus, we conclude a scheme for the consideration of realizing stable and sustainable cooperation, shown in Figure4.

The relationship between Japan and China government was mentioned in chapter 2. Based on mutual benefits, they established and led cooperative projects and environmental protection is one of major functional areas for such cooperation. It is usually criticized that very limited government information is publicly available in China, making information gathering difficult; so Japanese environmental enterprises are prone to work with governments through various associations. The platforms organized by governments are very important for them to initialize transnational business projects, such as Japan-China Energy Conservation Forum and some international organizations. However, the relationship is unstable, which made the related platforms not function well in the period of Japan-China tensions.

In China, provincial and municipal governments will be the primary drivers of the development of environmental industry and have significant authority to draft plans, funding schemes, preferred technology catalogues, and pilot projects. In Japan,

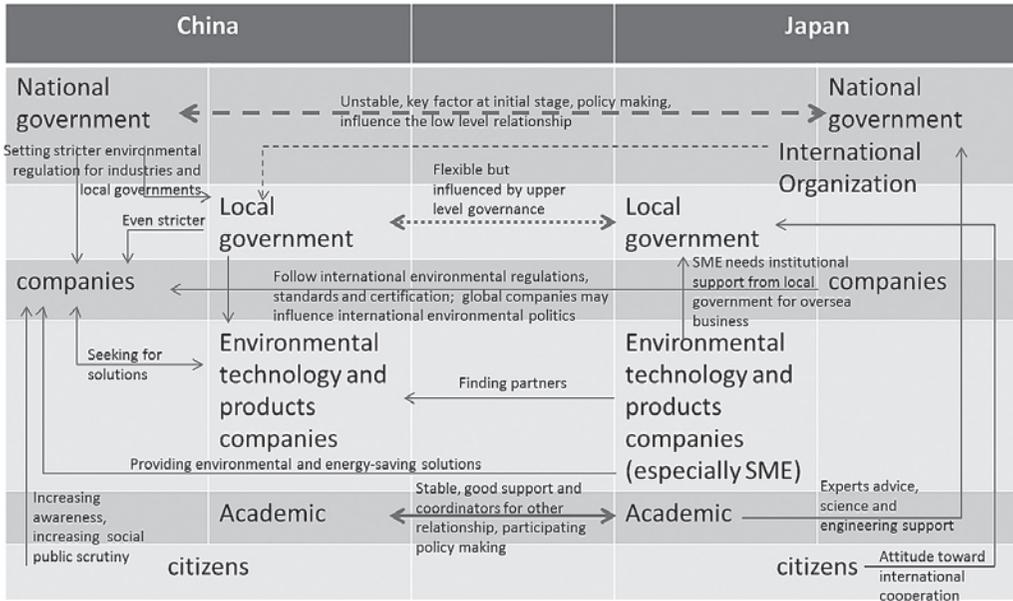


Figure 4. The Scheme of International Environmental Cooperation between Japan and China

provincial and municipal governments accumulated construction and management experience of environmental infrastructures in partnership with environmental enterprises. And recently, they sought to organize and lead the group of environmental enterprises to provide package sale of environmental services, such as recycling industry of Kitakyushu City, water related industry of Yokohama City. The activity of this level is regarded flexible and efficient. As sustainability has become a comment objective of city development, the communication and cooperation within the cities network is quite active. For example, International Council for Local Environmental Initiatives (ICLEI) founded in 1990, now is leading a network of more than 1,000 local governments of in 84 countries by conducting programs related to the sustainable concepts such as resilient, low-carbon, and resource-efficient city. However, different from Japan, Chinese provincial and municipal governments are not independent in dealing with international affairs and have to follow up-level indications.

The huge market potential attracts more and more the private actors. Besides environmental enterprises, banks, trade companies and consultant companies are participating actively into it. They may utilize their accumulated networks and resources to help environmental enterprises in business matching, negotiation, planning and operation. To some extent, environmental business is policy derived business, which

requires the coordinators to be keen to the policies. The environmental policies and regulation keep changing in the progress of promoting strategic emerging industries. However, the communication and activities at this level is promising and can be effective alternative way for environmental cooperation.

The scheme focuses only on Japan and China. If looking at the global environmental market, the situation becomes more dynamic and complicated. First, there is a “shelf life” for most technologies, as evidenced by the rapidly shrinking “gap” between two countries, in case that there is not big break-through of integrated solution. Therefore, environmental leading countries are competing to occupy global market, especially in developing countries. EU water major seized many water related contracts in China. And recently, the United States has signed the partnership with China. Environmental and energy cooperation is highlighted. Second, regarding different economic levels, there are developing countries such as China that can afford advanced technologies, whereas, there are still many countries that can't afford and require low-cost solutions. In those targeted area, China may become a new competitor by selling the mature technologies that are low cost but efficient to satisfy lower standards. As for industrial-academic-government cooperation, it is an urgent issue to facilitate the overseas expansion of industrial technologies.

5. Conclusion

As the economic globalization increases, the environmental issues are influencing wider area. Trans-boundary water and air pollution problems have received broad attention in recent years. At the same time, pollution caused by foreign invested factories in developing countries should not be ignored in the industry migration. So, the responsibility for environmental problems shall be shared through reasonable cooperative mechanism among nations, not just be utilized for negotiation leverage.

China-Japan environmental cooperation is changing from government-centered stage to business-centered stage, which will be more stable against the changeable international relations; but stable intergovernmental relationship is one of the key factors for initializing international environmental cooperation projects. Innovative policy and business models are needed to reach the goal of mutual benefits and common development. Environmental-friendly technologies need business-friendly environment such as enhanced public-private partnership to smooth the international environmental cooperation projects. On the contrary, Business power has been exerting more and more influence on international environmental politics.

Environmental cooperation could also be a key to mitigating China-Japan ten-

sions. In 1978, Deng Xiaoping visited Japan, which is regarded the starting point of the golden age of China-Japan relation. One of his objectives was to seek for the support to rebuild industries and improve production capability, so he visited the factories of Nippon Steel Corporation and Panasonic. In the following decades, Japan helped Chinese industrial modernization, and in return, they benefited from the economic growth of China (Vogel, 2012). It evidenced trade promoting peace. In 2008, Hu Jintao visited Kawasaki Eco-town and the recycling factory of JFE group (Ministry of Foreign Affairs, 2008). In 2009, Xi Jinping spent half a day in visiting Kitakyushu City to see its recovery from pollution and environmental protection high technologies, which was later elected as one of the OECD green growth model cities (People's Daily, 2009). It gives an up-to-date snapshot of what China needs from developed countries. Environmental cooperation will probably bring the second "Golden Age" of bilateral relations.

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International Environmental Cooperation between Japan and
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