

Towards a “Green Detente” between Japan and China? The Case of Cooperation on Reforestation

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Japan and China present two interesting cases of reforestation policies implemented consecutively to address severe environmental damage for quite similar reasons, at different periods of their history. In parallel to their competition in different fields such as diplomacy and strategy, the two countries are also currently engaged in an increasing dialogue and cooperation on projects related to the protection of the environment and reforestation programs in China, not only as a consequence of a common perception of environmental security expanded to the regional level, but also depending on the political dialogue between the two countries. This article presents the legacy of Japan and China in reforestation, introduces the cooperation between the two countries as well as the exportation of their rivalry in other regions, and questions the relevance of a “green detente” in the case of the Tokyo-Beijing environmental dialogue as a factor of regional integration.

KEYWORDS: reforestation; deforestation; Japan; China; green detente; environmental security.

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In the past few years, the rivalry between Japan and China has been subject to an important number of works, particularly at diplomatic and security levels in the field of international politics (Emmott, 2008; Hsiung, 2007). The study of this rivalry has also been extended to various disciplines where the competition takes place, from history to geography and culture, including the implementation of soft power strategies and the growing involvement in various programs and investments towards developing countries. In parallel with the political and strategic tensions, the two countries however remain close economic partners and have increased their cooperation in the past three decades in environmental protection initiatives, most notably through reforestation programs in China, where Japan has been highly involved.

The term reforestation, or afforestation, designates the process of restoring and recreating areas of woodlands or forests that have existed but were deforested or otherwise at some point in the past, for various reasons (Hyde, Amacher, & Magrath, 1996). Sometimes the term re-afforestation is also used to make a distinction between the original forest cover and the later re-growth of forest in an area. Although it can be natural, human intervention is observed most of the time in this process, and is usually assimilated to tree planting or tree re-planting programs. However, reforestation activities may be extended to the protection of ecosystems through sustainable measures. It is also an initiative that involves mostly governmental structures, although private actors may participate in order to implement a sustainable development (Marten, 2001).

The implementation of top-down solutions appears to be indispensable in order to guarantee the effectiveness of reforestation programs, which are therefore identified as national plans, as both the Japanese and the Chinese examples clearly demonstrate. However, the central governments must be aware of the involvement of civil society, most notably by introducing incentives and benefits for the private actors, as well as the participation of local actors by teaching the potential benefits for the local populations. The governments must also, in some cases, be open

to suggestions and practices based on a bottom-up model, and generally be more adapted to a sustainable development and environmental policy. The combination of these two solutions is indispensable for forest conservation and tree planting initiatives to be successful in the long term.

A common approach to environmental security (Barnett, 2001; Dalby, 2002), in parallel with traditional security characteristics, is also necessary for the implementation of a bilateral cooperation in reforestation projects. It does not however guarantee its success in the long term in the case of Japan-China relations, considering the deep divergences as well as competition between the two countries. Yet both sides consider that the consequences of deforestation are not limited to the national territory, but have a regional impact. This common perception has had the effect of increasing bilateral actions, and cooperation involving Chinese and Japanese actors. The experience of Japan in the reforestation of its own territory, as well as in various programs in other countries meets with the Chinese government’s awareness of the environmental damage that has resulted in a series of measures adopted in the past three decades. As a result, the two countries have established a comprehensive dialogue on reforestation programs.

Several obstacles remain, however, in the implementation of a “green detente” between Tokyo and Beijing. First of all, the political divergences and the legacy in reforestation in the two countries suggest a different approach regarding top-down and bottom-up solutions and the involvement of local public and private actors. Second, the commitment of Japan and China in strict forest conservation policies comes along with an increase in the exploitation of resources in other countries, particularly in South-east Asia or Africa. China also imports massive quantities of timber from neighboring Russia. Finally, considering the level of competition between Tokyo and Beijing, the possibility of a “green detente”—which suggests a detente as a result of a comprehensive dialogue on environmental issues, comparable to the situation observed between Eastern and Western Europe in the 1980s (Ryle & Soper, 1989)—is challenged not only by other situations where the rivalry is more obvious, but also by the difficulties associated with implementing a regional dialogue on reforestation, instead of bilateral initiatives.

The objective of this article is to identify whether the concept of a green detente finds any relevance in the case of Japan-China's partnership on reforestation, considering the environmental and forestry specificities of these two countries, the different levels of cooperation, the perception of environmental security, as well as the consequences of the reforestation programs. It first analyzes Japan's legacy in reforestation, most notably under the leadership of the Tokugawa Shogunate. In the second part it explores Japan's commitment to other countries' reforestation projects in the past three decades, particularly in Southeast Asia. The third part examines the case of contemporary China in the process of reforestation, after an identification of the deforestation problems observed in this country in the second half of the 20th century. Finally, the fourth part questions the impact of the cooperation between Japan and China on reforestation, and whether it can be considered to be a relevant example of a green detente.

Japan's Legacy in Reforestation: The Tokugawa Shogunate and Its Impact

In his notorious book *Collapse: How Societies Choose to Fail or Succeed*, the American physiologist and geographer Jared Diamond develops a theory based on the idea that the collapse of some civilizations has been partly the consequence of the absence of a proper control of the forests, and a process of deforestation that has reached a point of no return (Diamond, 2005). The example of Easter Island, in the South Pacific, where it has been proven that all trees were cut by the inhabitants with a dramatic impact on the local culture, appears to be the most relevant in regard to the damage caused by deforestation. Diamond's assessment has overall been praised by academics, although some experts pointed out that the reasons that explain the collapse of Easter Island's civilization might instead be the consequence of its contacts with the Western explorers and the diseases they brought to the island in the 19th century (Peiser, 2005).

Mostly due to the size of its territory and its topography, its relative isolation and its significant population, Diamond argues that Japan has also been one of the first societies to experience a major risk of deforestation. His thesis on the Japanese archipelago is mostly based on Conrad Totman's previous works (Totman, 1989, 1993, 1995). More than natural factors, human development is identified by Totman and Diamond as mainly responsible for Japan's exposure to an ecological disaster. As early as during the period 600-850 AD, construction in the Nara and Heian regions, along with higher demands of the ruling elite for timber to supply armies and build castles and religious structures, had caused serious deforestation in the Kinai region. For several centuries, the use of Japanese forests was simply considered exploitative. In order to build growing cities, timber and other forest products were taken without regard to replenishing the supply (Totman, 1995).

The situation started to change around 1570. By then, Japan's population had increased to an estimated ten million people, and villagers' needs for subsistence forest products had increased correspondingly. Large-scale military conflict during the 1500s also required important quantities of timber for the armies. With the advent of the Tokugawa Shogunate and peace implemented over the archipelago, followed by the rapid growth of cities and monumental construction projects for castles, temples, and shrines, logging increased during the 1600s to a scale never before experienced in Japan. The isolation of Japan, ordered by the Shogunate, also had the effect of potentially damaging the forests even more rapidly, considering the absence of timber imports and relations with other countries. The consequences at the domestic level soon became obvious. Conflicts between villagers and rulers over the use of forest lands—subsistence products for the villagers versus timber for the rulers—became more intense as a consequence of the increasing exploitation of forests. By 1670, the population had increased to nearly thirty million, and with the exception of Hokkaido, the old growth forests had been completely logged. The supply of timber and other forest products was running out. Soil erosion, floods, landslides, and barren lands (*genya*) were also becoming more common, as a direct consequence of deforesta-

tion (Roberts, 1998). Kumazawa Banzan, a 17th century scholar, noted that about 80 percent of the country's forests were gone (Marten, 2005; McMullen, 1999). Japan was headed for an inevitable ecological disaster similar to the one that Easter Island experienced, probably around the same period, but on a much larger scale.

This alarming situation led to important reforms introduced under the leadership of the Tokugawa Shogunate, and the implementation of what appears to be the first national reforestation plan in world history. Japan responded to this environmental challenge with a "positive tip" from unsustainable to sustainable forest use that began around 1670 (Marten, 2005), with the introduction of what Conrad Totman refers to as a system of "regenerative forestry" (Totman, 1989). This reform was based on several major transformations: the central role of catalytic actions and mutually reinforcing positive feedback loops in the local community; outside stimulation and facilitation; letting nature and natural social processes do the work; demonstration effects; social/ecological co-adaptation; and using social/ecological diversity and memory as resources. Jared Diamond argues that "the first phase of the Tokugawa-era response to Japan's forest problem emphasized negative measures that didn't restore lumber production to previous levels, but that at least bought time, prevented the situation from getting worse until positive measures could take effect, and set ground rules for the competition within Japanese society over increasingly scarce forest products" (Diamond, 2005, p. 310).

At the same time, although it is difficult to single out the initial tipping point with certainty, it seems to have derived from the centuries-old tradition of cooperation among villagers for protection against bandits, allotting rice fields and irrigation water, and storing rice. Until then, village cooperation had not extended to forest management, but villages started responding to the forest crisis by refining the management of Satoyama secondary forests for subsistence needs (McKean, 1982, 1986). This local management proved indispensable, considering the extreme variations of climate in the archipelago, from a Siberian influence in the North to a tropical one in the South. Although decisions could be taken at the

national level, they would have remained ineffective without the participation and the knowledge of the local populations. We may therefore question the conditions in which reforestation programs could have been implemented at local levels, even without any decision coming from above, and with different interpretations and attitudes depending on local factors, such as the climate, the level of development, or the perception of perils caused by deforestation. Therefore, although the Tokugawa Shogunate reform is a good example of top-down solutions, it proved successful largely thanks to the capacity of the local populations to adapt depending on the characteristics of their region, climate and/or topography. Other critical approaches point out that Diamond eschews Rousseau’s notion that societies are the product of a social contract in his thesis, and fails in developing the importance of local initiatives in both damage and protection of the environment (Brätland, 2005, p. 13). One may consider that without an active involvement of the local actors, the Tokugawa reforms would perhaps have proven far less effective.

However, both Totman and Diamond are most certainly right when they point out that the Tokugawa Shogunate reform and its impact marks the beginning of a new era in Japan’s relation with its environment. Managed forestry continued to develop and expand in conjunction with a “virtuous cycle” of mutually reinforcing silviculture improvements, social institutions for forest land use, and timber marketing institutions (Marten, 2005). The “positive tip” that began with extending village cooperation to managing forests lands had stimulated a series of mutually reinforcing changes that slowed down deforestation and eventually led to the reforestation of Japan. Considering how severe the deforestation was, the reforestation process took a long time, only reaching completion in the 1920s (Totman, 1993, 1995). The evolution of Japanese forests during the past three centuries has also been complex and subject to variations and adjustments. The main point, however, is that Japan adapted to a deforestation crisis as early as in the late 1600s by changing from unsustainable forest exploitation to managed and sustainable forestry. Adaptation featured a tipping point that turned the nation from ecological disaster toward ecological health, restoring a natural resource base that put Ja-

pan in a strong position for its economic development that started in the second half of the 19th century. It also had the effect of reinforcing the role of the central government, nearly two centuries before the Meiji restoration, and put an end to local conflicts subsequent to the need to fight for resources.

As a result of this reforestation management, and its legacy until nowadays, about 67 percent of Japan's territory remains covered by forests (including nearly half consecutively to reforestation programs), mostly in the mountain areas, while the vast majority of the population and agricultural activities are concentrated in the remaining 20 percent of the land, composed of plains and coastal areas (Karan, 2005). Japan also currently has 30 National Parks (*kokuritsu-koen*) covering 20,869 square kilometers, or 5.5 percent of the land area; 56 Quasi-National Parks (*kokutei-koen*) covering 13,614 square kilometers or 3.6 percent of the land area; and 309 Prefectural Parks covering 19,608 square kilometers or 5.2 percent of the land area (Ministry of the Environment of Japan, 2012). Considering the extremely high density of population in the archipelago, above 360 inhabitants per square kilometer (International Monetary Fund, 2013), and its fast-growing economic development based on industrial production in the second half of the 20th century, the reforestation of Japan and its impact is a remarkable success-story that may serve as an example for other countries, and whether or not one interprets it as an example of a top-down solution, the legacy of the Tokugawa Shogunate therefore appears to be not only still extremely present in contemporary Japan, but also potentially relevant in other cases.

Japan's Commitment to Other Countries' Reforestation Projects

If the Tokugawa Shogunate increased the isolation of Japan from its neighbors for two centuries, the restoration of the emperor's authority and the post-Second World War democratization process have had the effect of enhancing the involvement of Japan far beyond the archipelago. With-

in the past 150 years, Tokyo has experienced an imperialist expansionism, foreign occupation for the first time in its history, a "miraculous" economic development, and more recently an increasing implication in various development programs abroad that comes along with massive investments led by both public and private actors. In the past three decades in particular, Japan's foreign policy has also been based on a constant adaptation to the evolution of international relations, as well as the need to establish new and durable partnerships (Berger, Mochizuki, & Tsuchiyama, 2007). Japan has also increased its investments in other Asian countries, particularly in Southeast Asia (Doherty, 1987), in parallel with its economic development, and in order to respond to its growing needs. It has also massively invested in China, from as early as in the 1960s, although the two countries had not yet implemented official diplomatic relations. Regarding the protection of the environment, the Japanese government sponsored an important number of public initiatives and bilateral agreements with countries that needed its assistance, and promoted actions taken by Japanese private actors (Warford, Cruz, & Fukui, 2002). Japanese banks, companies and NGOs have also increasingly contributed to various reforestation programs. The reason for this shift can be found in the diversification of activities related to environmental protection, including financial and technical aspects. Projects include ecosystem protection, tree planting and/or tree re-planting, and forest management, and have taken place not only in Southeast Asian countries (Dauvergne, 1997), but also in Mongolia and Northern China, in order to combat desertification in these regions. They have also been implemented in partnership with local public and private actors, and remain open to cooperation with NGOs from other countries (Moon & Park, 2004). Thanks to its legacy and its technological level, Japan has become a model of resource management in several states.

These increasing efforts in international cooperation are also the result of the change of attitude of the Japanese public actors regarding the forest policy. The Japanese government has gradually been shifting the focus of its forest policy from timber production to land conservation. This shift has had the double effect of expanding the public involvement

and multiplying the number of actors, including companies and NGOs, with an increase in public-private joint initiatives. It is therefore in parallel to the transformations of its own forest policy that Japan started to play a significant role in providing assistance to other countries. A significant number of Japanese forest experts and consultants have also participated in various tree planting programs in Southeast Asian countries, most notably Indonesia and the Philippines.

We will observe in the fourth part of this article that Japan's participation in other countries' forestry policies comes along with an "ecological shadow" that has the consequence of affecting Japan's image and offers a more contrasted approach to the Japanese forest protection policy and its implications. Japan's involvement in other countries' forest policy has in fact been driven by the imperative of shifting environmental damage from the archipelago to other parts of the world. It has also been justified by economic reasons. However, the role of Japanese NGOs, individual initiatives as well as public decisions in accordance with a new international legal framework regarding forest policy cannot be underestimated.

New orientations and a growing mobilization at the international level regarding environmental issues have also had the effect of increasing Japan's involvement in forest protection and management in other countries. Among the important international treaties related to the protection of the environment, we may in particular mention the 1992 United Nations Conference on Environment and Development (UNCED); the 1992 Biodiversity Convention and Climate Change; and the 1997 Kyoto Protocol on Global Warming and Reduction of Greenhouse Gases, International Waters, Management of Wetlands, Combating Land Degradation and Desertification, Prevention of Persistent Organic Pollutants, Afforestation, Reforestation, Re-vegetation and management of cropland and grazing land. During the UNCED, a non-legally binding document that makes several recommendations for conservation and sustainable development forestry has been produced. This document, known as "Forestry Principles," most notably stipulates in its chapter 7, paragraph B that "Specific financial resources should be provided to developing countries with significant forest areas which establish programs for the conserva-

tion of forests including protected natural forest areas.” It also mentions in its chapter 12, paragraph A that “Scientific research, forest inventories and assessments carried out by national institutions which take into account, where relevant, biological, physical, social and economic variables, as well as technological development and its application in the field of sustainable forest management, conservation and development, should be strengthened through effective modalities, including international cooperation” (United Nations General Assembly, 1992).

Under the agreement reached at the Seventh Session of the Conference of Parties to the UN Framework Convention on Climate Change in Marrakesh (COP7) in 2001, industrialized countries also agreed to meet a part of their emission reduction commitments under the Kyoto Protocol by financing Reforestation and Afforestation activities in developing countries through the clean development mechanism (Smith, 2002, p. 323). The Kyoto Protocol states that various projects should assist developing countries in achieving sustainable development (United Nations Framework Convention on Climate Change, 1997). These treaties therefore provide opportunities for innovative financing for environmental products and services, creating a framework in which states aim at increasing their cooperation, and inviting the private sector to take part in activities related to environmental protection (International Institute for Sustainable Development, 2000).

In accordance with the obligations contained in these treaties, Japan has considerably increased its cooperation with developing countries, most notably by dispatching specialists, accepting trainees and offering materials. Japan has also been carrying out several research and development programs in seedling fields, afforestation, agro-forestry, and natural forest management. Finally, the Japanese government and Japanese banks have increasingly supported and financed reforestation programs in developing countries, mostly in Southeast Asia and Africa. These initiatives have come along with growing importations of wood from these countries, which are subject to various criticisms considering their impact on the environment, as we will develop in the fourth part of this article.

The Case of China: From Massive Deforestation to a Spectacular Reforestation Campaign

Although environmental damage and natural disasters have occurred throughout the history of China regardless the nature of the political regime (Déry, 1996, p. 33; Trac, Harrell, Hinckley, & Henck, 2007, pp. 275-276), it is generally acknowledged that three important periods of forest losses can be identified in China's recent history (Elvin, 2004; Hyde, Belcher, & Xu, 2003). During the Great Leap Forward in the late 1950s, forests were allocated to villages for local management, but were almost always quickly destroyed, in a chaotic race for increased agricultural production in order to achieve the national or provincial plans. Although it had already started during the Great Leap Forward, the second major period of loss particularly occurred less than a decade later, during the Cultural Revolution, when villages and communes were encouraged to smelt iron and large forest areas were felled to fuel the smelters (Qu & Li, 1994). The responsibility of the central government and the economic and social reforms adopted under Mao Zedong's leadership are identified as the main factor behind the rapid and catastrophic deforestation, one of Mao's most significant slogans being known as "Man must conquer Nature" (Shapiro, 2001). The third major period of forest damage occurred after the opening up of the economy and the implementation of important reforms in the early 1980s (Smil, 1984, 1993). These three periods—perhaps the third one in particular—can be compared to the years that preceded the Tokugawa Shogunate reforms in Japan, and are characterized by an increase in population until the implementation of the "one child policy" in 1979; urbanization and modernization; rapid industrialization; increasing needs for natural resources; and competition among local—in that case provincial—actors for prestige and benefits, that boosted various types of construction, causing an increasing number of environmental challenges such as flooding, soil erosion and desertification (Z. Fang, 1987; He, 1991).

The Chinese leaders' attitude regarding the protection of its environment stated to change however as early as in 1972, when China sent a

delegation to the First United Nations Conference on the Human Environment, and established the Leading Group for Environmental Protection, which in 1998 became the State Environmental Protection Administration. Beijing also completed its first National Forests Inventory (NFI) in 1976, covering the evolution in the 1973-1976 period. Several NFIs have been conducted in the past forty years, and provide important information regarding the evolution of the reforestation programs that are compiled by the Ministry of Forestry (MOF) in the *China Forestry Yearbook*, published every year (MOF, 2012). Lastly, the MOF has since the late 1990s been publishing a *China Forestry Statistical Yearbook* that aims at compiling all data regarding the forest management throughout the country (MOF, 2011).

The Chinese leaders have also implemented a series of regulations that aim at protecting the environment in general and the forests in particular. In 1979, China promulgated its first "Environmental Protection Law" (Rozelle, Huang, & Zhang, 1997, p. 236) that has been expanded several times since. In parallel with its vast economic reforms, Beijing in 1983 also declared environmental protection to be a basic national principle, which can be seen as a simple rhetoric or, on the contrary, as a major shift in China's attitude regarding its environment, and particularly the urge to engage in reforestation programs. Several rules state that timber cutting quotas are to be established exclusively under the national plan, causing, in theory, all logging activities in China's forest areas to be determined by the central authorities. It is therefore a good example of vast top-down measures to respond to a major environmental challenge, justified by the ecological damage caused by the three periods mentioned above, and implemented through extremely strict regulations inherent to the nature of the Chinese regime. For instance, the former Chinese President Jiang Zemin announced in 1999 that any enterprise not in compliance with environmental regulations by 2000 would be closed. As a result, more than 2,000 papermaking companies were forced to shut down within the following few months (Hyde, Belcher, & Xu, 2003, p. 7).

By 1980, the country's forests were largely made up of degraded natural forest or sparse and inaccessible materials (Hyde, Belcher, & Xu,

2003, p. 118). In order to implement coherent and enforceable measures, the Chinese government identified certain provinces particularly affected by environmental damage, examining the increase in soil erosion, flooding or desertification. The Yangzi basin has been subject to particular attention, as well as the provinces and territories in the north of the country, having been exposed to massive deforestation and desertification (Y. Wang, 1987; Yuan, 1991; Zhu, 1994). We may, however, consider that the entire country has been subject to analysis and concerned with the implementation of new regulations, as well as tree planting programs.

The results have been quite spectacular. Between 1980 and 1993, China's forest stock was reported to have increased from 79.8 to 90.9 million cubic meters (Hyde, Belcher, & Xu, 2003, p. 114). By the mid-1990s, a WWF study of China's biodiversity pointed out that "at the same time that natural forests were being destroyed, large scale planting of artificial forests has been occurring. Logged forests in the major forest regions of the northeast and southwest were given post-logging treatments of various types that have resulted in new secondary or plantation forests. Extensive forests have been planted over the original scrub in the south and southeast of the country and very large areas of temperate forests have been planted across northern China in efforts to combat desertification. Today the area of forest in China is increasing annually but it is clear that as far as biodiversity is concerned, the replacement of native forests with artificial forests fails to offer the complex habitats required to conserve many important species. New forests are almost always monocultures, often of exotic species and generally of conifers. Fires and pest attacks of these plantations has been a constant problem" (McKinnon et al., 1996). The Chinese perception of environmental security has played a crucial role in the implementation of a forest policy based on protection and reforestation. We may consider that "the essence of the new national forest strategy lies in its paramount emphasis on the role of forests in ecological safety" (S. Wang, van Kooten, & Wilson, 2004, p. 78).

The awareness of the need to set up nature reserves for biodiversity conservation, to increase timber supply by means of commercial invest-

ment, and to promote rural well-being and poverty reduction through agro-forestry has led to a rapid and continuous growth of protected areas in China (J. Y. Fang, Piao, He, & Ma, 2004; Harkness, 1998; Ross, 1988). As some experts have stated, “the Chinese forestry sector has also undergone a radical transformation through institutional restructuring, the formulation and delivery of programs, and changes in societal values with respect to the forest” (S. Wang et al., 2004, p. 72). Before the turn of the century, over 1,000 protected areas had been established and managed at national, provincial and municipality levels. In total these reserves covered as much as 8.62 percent of the national land area and the target was to reach more than 10 percent coverage (State Environmental Protection Administration, 1998). The following table indicates the increasing forest coverage in China after the end of the Cultural Revolution and Mao Zedong’s death, although it does not include the improvements observed since the 1990s.

This table indicates overall a stability of the forest cover, which may be considered a success considering the period. It also clearly distinguishes the provinces where deforestation was not yet considered a major challenge—notably in the Southern part of the country—and the provinces or territories where tree planting programs had already occurred, such as Inner Mongolia or Gansu. The vast Sichuan province also experienced rapid expansion of its forest cover as early as in the 1980s, with an increase of 40 percent in less than a decade. This gap between the Chinese provinces tends to demonstrate not only the importance of the local actors, but also the slow process of implementation of national measures. Since the 1990s, the improvement has been quite impressive in terms of the number of trees planted and areas covered by forests, in parallel with China’s growing concerns regarding environmental issues. As early as in 1998, the land used for forestry in China amounted to 263.29 million hectares, of which the forest area totaled 158.94 million hectares, ranking China fifth in the world after Russia, Brazil, Canada and the United States in terms of forest area (State Forestry Administration, 2000). Since the late 1990s, the total area of newly-afforested timber plantation has reached 53.992 million hectares accounting for 46.8

Table
Forest Coverage in Chinese Provinces in 1976, 1981 and 1988 (1,000 hectares)

Province	1976	1981	1988
Beijing	200	144	215
Tianjin	30	30	62
Hebei	2,010	1,677	2,011
Shanxi	1,090	810	993
Inner Mongolia	10,700	13,740	13,836
Liaoning	3,420	3,653	3,939
Jilin	6,510	6,079	6,231
Heilongjiang	16,660	15,294	15,615
Shanghai	10	8	9
Jiangsu	340	325	386
Zhejiang	3,960	3,429	4,037
Anhui	1,750	1,792	2,261
Fujian	5,900	4,496	5,003
Jiangxi	6,100	5,462	5,992
Shandong	1,320	905	1,596
Henan	1,790	1,420	1,571
Hubei	4,360	3,779	3,854
Hunan	6,580	6,872	6,754
Guangdong	7,480	5,879	4,864
Hainan	—	—	866
Guangxi	5,510	5,227	5,227
Sichuan	7,460	6,811	10,872
Guizhou	2,561	2,309	2,221
Yunnan	9,560	9,197	9,327
Tibet	6,320	6,320	6,320
Shaanxi	4,580	4,471	4,708
Gansu	1,870	1,769	2,029
Qinghai	190	195	266
Ningxia	60	95	118
Xinjiang	1,440	1,121	1,497
Taiwan*	2,069	1,970	1,970
Total	121,860	115,277	124,653

Note. Source from Chinese Ministry of Forestry (1989). The presence of Taiwan in this list is explained by Beijing's political claim over the island.

*The Republic of China (ROC) has not been ruled by the People's Republic of China (PRC) since 1949. However, the PRC figures include the ROC data in this table.

percent of that developed since the founding of the People's Republic of China. The afforested fast-growing and high-yielding timber plantation covers 8.234 million hectares, accounting for 15.4 percent of the timber plantation in the same period.

To this date, there have been 8 NFIs in China, the most recently completed one covering the period from 2009-2013 (Zeng, Tomppo, Healey, & Gadow, 2015). Although the original definition of forest in China's NFI has changed somewhat during different inventory periods, the implementation of the NFI indicates both the growing concern regarding forest management and protection in China, and the need to rely on valuable inventory in order to engage in various protection programs. It therefore shows the importance of such inventories to the authorities, even if we remain skeptical regarding the possibility of making some adjustments in the data, as we can observe by looking at the different NFIs since the 1970s.

The Chinese government usually cites the improvement regarding the forest-covered areas as a proof of the success of its reforestation policy. According to the Chinese Ministry of Forestry, China's forest coverage reached 20.36 percent in 2009, up from 18.21 percent in 2006, and some 20.54 million hectares of forests have been restored so far in the country, which is by far the most important improvement in the world. However, several experts warn of possible irreversible destruction of rich natural forests and environmental damage in China, and point out the acceleration of the damage in parallel with the implementation of the reforestation programs based on quantity instead of quality (Economy, 2004; He, 1991; Smil, 1984, 1993). By 2020, according to the Eleventh Five-Year Forest Plan and the National Plan for Long- and Medium-term Forestry Development issued by the SFA, China's forestry will have basically achieved the strategic goals of establishing an improved forest ecology system, a developed forest industry system, and a flourishing ecological culture system, thereby entering a new era of sustainable development. The major development indicators include a newly-afforested area of 29.60 million hectares, with the forest coverage rate reaching 23.46 percent of the total land area; an area of nature reserves through-

out China of 161.2 million hectares, accounting for 16.80 percent of the total land area of the state, with the total number of nature reserves of various types (e.g., forests and wildlife) reaching 2,300, thereby providing a good standard of protection to 95 percent of the wildlife species of national protection importance, and all typical bio-systems; the number of wetland reserves across the country reaching over 600, including around 80 wetlands of international importance, and the effective protection of over 60 percent of the natural wetlands; an area of desertification control of 20 million hectares; urban tree coverage reaching 35 percent in 70 percent of cities throughout China; the rate of quality seeds in plantations reaching 65 percent; the unit stock volume per hectare of existing timber plantations reaching approximately 100 m³; and the contribution rate of science and technology advancements to forest economic growth reaching 50 percent. Although spectacular, these improvements are also criticized for hiding the degradation experienced during the early reform period, “when over a third of China’s old-growth timbers were mined, drastically decreasing the stock of high-quality forests” (Rozelle et al., 1997, p. 231). These experts usually mention corruption problems, lack of resources for the national agencies and a lack of expertise on the part of the officers in charge of implementing the Environmental Protection Law as the main reasons explaining the absence of good results. In Chapter 12 of his book, Jared Diamond also focuses on China’s environmental challenges and considers that “China is lurching between accelerating environmental damage and accelerating environmental protection” (Diamond, 2005, p. 386). As a consequence, “China’s overall record in forestry looks good despite the ravages of the Three Great Cuttings. Between 1949 and 2003 China’s forest coverage has reportedly increased from 8.6 to 18.21 percent. The 9.6 percent increase is attributable to two factors: forestry and accounting” (Trac et al., 2007, p. 277). Diamond remains optimistic, however, regarding the perception of environmental damage as being a greater threat to the Chinese leaders, and the implementation of top-down measures in order to reverse the process of the deforestation and destruction of ecosystems. Yet, the commitment of the local actors remains highly uncertain and subject to important variations. Experts notice that “there is

no independent watchdog-type agency." Production-oriented bureaus and agencies have obvious conflicts of interest (Rozelle et al., 1997, p. 240). The participation of the civil society is also difficult to examine at the national level, to the point that there is no evidence regarding efficient and large-scale bottom-up responses to the deforestation problems. It is also therefore hard to evaluate the sustainability of the top-down measures in the long term, considering the absence of comprehensive information regarding how it is perceived at the local level.

Although one may challenge its success, there is no doubt that the Chinese leaders have been engaged in vast projects of reforestation and tree planting (McKinnon et al., 1996). The most ambitious project, known as the Three-North Shelter Forest Program, or the "Green Wall of China," is an attempt to limit the expansion of the Gobi Desert. It is planned to be 4,500 km long and to be completed by 2050. The project was launched in 1978 with the objective of raising northern China's forest cover from 5 to 15 percent and thereby reducing desertification. The 4th and most recent phase of the project, started in 2003, has two parts: the use of aerial seeding to cover wide swaths of land where the soil is less arid, and the offering of cash incentives to farmers to plant trees and shrubs in areas that are more arid. An oversight system including mapping and surveillance databases is also to be implemented. The "Green Wall of China" is also based on human participation, determined by awareness and legal duties. For instance, every March 12, an estimated three million party members, civil servants, model workers, and state leaders take up shovels for the country's biggest green propaganda event. As well as raising awareness, they are fulfilling a legal duty for everyone over the age of eleven to plant at least three Poplars, Eucalyptus, Larch or other saplings every year. Most of the trees are planted in the Northern provinces, from Xinjiang in the west to Heilongjiang in the east, along the "Green wall of China" line. As a result of this vast campaign, China plants more trees each year than the rest of the world combined. Although critics remain regarding the quality of the trees planted that are exposed to weather conditions and do not offer a long-term guarantee of efficiency to prevent desertification, the "Green Wall of China" is a good example of how top-down decisions are

implemented quite effectively in an authoritarian state-centered regime like China.

Several organizations also play a significant role in reforestation in China. The U.S.-based non-profit organization, the Jane Goodall Institute, through its Shanghai Roots & Shoots division, launched the Million Tree Project in Kulun Qi in Inner Mongolia to plant one million trees to stop desertification and help curb climate change. This initiative is a good example of a partnership between national and local public authorities, and private organizations. Chinese public officials have become very oriented to attracting private investment in its forest protection plans. The investor community is also overall becoming much more attentive to social and environmental issues, and aware of the potential gains in participating more actively in the reforestation programs, at the economic level by receiving incentives, and at the political level by working closely with local and national public actors.

Partnership between Japan and China in Reforestation: Green Detente or Delocalized Competition?

Both Japan and China have experienced important natural disasters in the past few years that have had a deep impact on public policies as well as increasing the emphasis on the need for cooperation. In May 2008, an earthquake ravaged the northern part of Sichuan province in China, just a few days after President Hu Jintao became the first Chinese official to visit Tokyo in a decade. Japan's response to the catastrophe, which included sending emergency rescue and medical teams, tents, and emergency supplies, was well received by the Chinese victims and Beijing announced that it would accept "emergency rescuers from Japan." By the end of May, Japan's contributions to relief efforts reached 1 billion yen and this assistance had the effect of reinforcing the dialogue between the two countries. In March 2011, a tsunami submerged coastal areas in the Northeast of Honshu in Japan and caused major damage. China promptly proposed strengthening regional cooperation in disaster prevention and

mitigation, and post-disaster reconstruction. Hu Jintao also visited the Japanese embassy in Beijing to express condolences to earthquake and tsunami victims. These two disasters have been analyzed both in China and in Japan as a call for a necessary bigger cooperation to increase what has been defined in the 1980s—notably by the Copenhagen School—as “environmental security” in the field of securitization (Buzan, Waever, & de Wilde, 1998; de Wilde, 2008; Myers, 1986; Romm, 1993; Ullman, 1983).

Japan and China did not wait for the 2008 and 2011 disasters to engage a bilateral dialogue on environmental security. During Hu Jintao’s visit to Japan in May 2008, prior to the Sichuan earthquake, a number of cooperation projects related to environmental protection and management were mentioned and enhanced cooperation was agreed upon, which tends to demonstrate that the cooperation is not directly linked to natural disasters, but to a common understanding of the need to identify common objectives. In fact, the two countries have established a cooperation for two decades, as the first agreement between Japan and China on environmental protection was signed in March 1994 in Beijing. Its main purpose was to establish the Japan-China Joint Committee on Environmental Protection and Cooperation, which serves as a means to exchange views on environmental issues, as well as bilateral and multilateral cooperation in the field. Two years later, in May 1996, the Sino-Japan Friendship Center for Environmental Protection and the Japan-China Comprehensive Forum on Environmental Cooperation were established. Since then, Tokyo and Beijing have reaffirmed their commitment to environmental security in Northeast Asia and developed several levels of cooperation, including reforestation projects in China and exchanges of information and techniques (Harris & Lang, 2015). Private and public funds have also been allocated to the joint programs. For instance, a 10 billion-yen fund was initiated in 1999 by the then Japanese Prime Minister Keizo Obuchi for the two countries’ exchanges in forestation, known as the “Japan-China Greening Exchange Fund” (Ministry of Foreign Affairs of Japan, 2001). Most of the money has been channeled into the Save the Mother River Project launched by the Chinese Communist Youth League (CCYL) Central

Committee in early 1999 in an attempt to improve the environment of the Yellow River. Fourteen ecological forestation sub-projects have been established in eleven local areas in the Inner Mongolia Autonomous Region, Liaoning and Jiangxi Provinces. As a result, some 3,420 hectares of green areas have been created at a cost of 276.4 million yen since 2000. This project is a good example of an efficient partnership between Japan and China on reforestation programs. Important Japanese organizations such as the Japan Federation of Economic Organizations—known as Keidanren—or the car manufacturer Toyota have also been involved in reforestation projects in China. Keidanren Chairman Takashi Imai met China's President Jiang Zemin twice, in August and November 1998, and Keidanren has been involved in tree planting activities, having sponsored fora and other activities in order to raise public awareness in Japan to promote reforestation in China. From 2001, Toyota, the Chinese Academy of Sciences, Hebei Province Forestry Bureau and the NPO Green Earth Center have been conducting a prevention of desertification project by planting trees in a 3,000-hectare area on the front lines just outside Beijing in Hebei Province.

The agreements between the two countries and the improvement in cooperation in environmental security suggest three observations. First, environmental protection is seen in Beijing and in Tokyo as a common interest and as a means to strengthening bilateral and regional cooperation. Both countries therefore seek to benefit when they engage in a closer partnership on reforestation programs, which means as a consequence that the “green detente” is mostly driven by national interests instead of shared values. Second, the dialogue on environmental issues appears to be an opportunity to avoid a conflictual situation and increase the links between the two countries. On the one hand, when political relations are tense, environmental cooperation is rarely mentioned, mostly because of a lack of communication. The diplomatic use of environmental cooperation therefore implies that the impetus required to start major projects needs a relatively improved political dialogue and mutual willingness to advance by changing the basic framework of bilateral relations. This political situation that made the “green detente” between Japan and China possible has

been observed on several occasions in the past few years, most notably in 2006, 2008 and 2011, in parallel with bilateral meetings, or subsequent to major natural disasters. On the other hand, diplomatic relations have been much more distant in the past three years, in parallel with the territorial and maritime disputes in the East China Sea, the modernization of China’s armed forces, and the re-interpretation of Japan’s Constitution.

The two countries also see the reforestation programs as a means of reducing their carbon emissions, and meeting the international standards. Streck and Scholz explain how a group of scientists from various institutions have developed a compensated reduction of deforestation approach which would reward developing countries that disrupt any further act of deforestation. Countries that participate and take the option to reduce their emissions from deforestation during a committed period of time would receive financial compensation for the carbon dioxide emissions that they avoided (Streck & Scholz, 2006, p. 875). This is generally a solely government-to-government agreement, since private entities do not participate in the compensation trades. The official Japan-China agreements are therefore the indispensable first step in implementing a “green detente” situation, and require common perceptions on mutual gains.

The partnership between Japan and China potentially covers a variety of activities directly related to the tree planting and reforestation programs:

- production shifting from native forest to plantations;
- technological developments allowing more efficient processing, less waste and more recycling;
- end-use products becoming less dependent on the specific wood characteristics of raw materials;
- demand increasing, but fluctuating according to technologies in non-forest sectors;
- better information for decision makers, through the integration of remote sensing, GIS, and other technologies into decision-support systems;
- more rapid shifts in production and transformation as industries seek out areas of comparative advantage;

- more pragmatic and efficient options for conserving biodiversity. (Sayer, Vanclay, & Byron, 1997, p.162)

We may therefore evaluate not only the current programs where Japanese and Chinese actors are engaged, but the possibility of the expansion of the cooperation to several fields, involving both private and public actors, and suggesting a durable “green detente” in parallel to the remaining rivalry in other spheres. Regarding this prospect, a more comprehensive dialogue and bilateral actions on reforestation programs are welcomed in Japan as well as in China.

As a paradox, the cooperation between Japan and China on the reforestation of their own forests comes along with the increasing damage in other territories, where both countries have an important responsibility. It is, in the case of Japan, a consequence of the environmental protection rules implemented three centuries ago. As Jared Diamond accurately recalls, “part of the Tokugawa solution for the problem of resource depletion in Japan itself was to conserve Japanese resources by causing resource depletion elsewhere, just as part of the solution of Japan and other First World countries to problems of resource depletion today is to cause resource depletion elsewhere” (Diamond, 2005, p. 309). The exploitation of the forests of Hokkaido Island—which was not officially considered a part of Tokugawa’s Japan, but a territory under its control—replaced the deforestation of the rest of the archipelago until Japan expanded its domination towards other parts of Asia, including the Korean Peninsula, Taiwan and Northeast China. The situation in contemporary Japan has not fundamentally changed, it has just been exported to foreign countries where Japan’s involvement in the timber industry and forest management is particularly important, suggesting an “ecological shadow” in parallel with the implementation of international, national and even local measures. This “ecological shadow” can be evaluated as the environmental impact of one country’s economy on the resources of another country. As Peter Dauvergne states in his book published in 1997, “all countries cast ecological shadows. But Japan’s is perhaps the world’s largest. This is in part because of limited Japanese natural resources and rapid economic

growth since World War II. It is, however, also a result of the tactics and economic function of Japan's sixteen general trading companies" (Dauvergne, 1997, p. 5). The environmental damage caused by major Japanese companies is partly compensated for by the implications of the same companies within important ecological projects, but they offer a contrast between a nationalist, if not selfish, forest conservation policy at home and the lack of consideration for the countries where forests are overexploited (Knight, 1997, p. 711). Overall, this environmental damage also affects the image of Japan, and its soft power's capacity in various countries (Peng, 2007). It also creates a simple shift of the problems related to deforestation from a country to another, and therefore suggests the need for a more global approach, most notably by identifying common objectives and setting up rules and norms to guarantee the protection of the forests. It is also subject to different interpretations regardless of whether it is observed from a Japanese perspective, or elsewhere, as Tokyo proudly claims the possibility of exporting its reforestation model as a response to the consequences of the exploitation of the soil in other regions (Knight, 1997).

In the case of contemporary China, and considering both the important needs and the more restrictive environmental policy at the domestic level, we observe similar attitudes. As a result, Diamond notes that "China, like Japan, will be conserving its own forests, but only by exporting deforestation to other countries, several of which (including Malaysia, Papua New Guinea, and Australia) have already reached or are on the road to catastrophic deforestation" (Diamond, 2005, p. 381). We may also mention the case of Russia, a major exporter of timber to China, where the effects are more difficult to measure in the short run considering the size and the timber reserves of this country.

One may not ignore the intense debate at present about the problem of finding enough agricultural land to meet world food needs in the 21st century, and China's needs in particular will keep on expanding, mostly as a consequence of both the diminution of agricultural activities in China and the rise of a middle class (Brown, 1995). The impact is unlikely to be limited to China, considering the expansion of world population (Degeest &

Pirages, 2003; Waggoner, 1996). As a consequence, the competition for good lands will be intense and forestry will inevitably be pushed into poorer areas that appear to be highly productive for agricultural exploitation at the same time (Asche & Schüller, 2008). Japan and China are already investing important resources in regions such as Southeast Asia, Africa and South America to meet the increasing needs. It is also important to notice that although the independence of wood production has been identified as an objective by 2015, China's industries still cannot respond to the needs of its wood industry. That means that China needs to import large quantities of wood from other countries, mostly its Southeast Asian neighbors (Canby, 2008). Although the Chinese and other Asian governments have participated in these initiatives and some have even signed bilateral memorandums of understanding to address illegal logging and trade, there has been little substantive movement to date. The partnerships with neighboring countries like Myanmar and Laos are particularly interesting in understanding the difficulties of implementing a comprehensive partnership on a sustainable forest management outside of China's borders, notably through problems related to monoculture (Kahrl, Weyerhaeuser, & Su, 2005; Mottet, 2013; Shi, 2008; Zhang, 2003).

China is also particularly active through the activities of the Center for International Forestry Research (CIFOR) that aims at advancing human well-being, environmental conservation and equity by conducting research to help shape policies and practices that affect forests in developing countries. Beijing notably contributes to the efforts of reforestation in African countries. A number of recent studies also explore how China's growing wood-processing sector is shaping the global timber trade and related impacts in several countries (Canby, 2008; McKenzie, 2006). However, Chinese firms are often criticized for violations of anticorruption, environmental, labor and social standards in Africa (Asche & Schüller, 2008), raising concerns about the sustainability of extractive activities (de Wit, 2007). Analyses of the contributions of Chinese investments to long-term economic development in Africa suggest a high degree of variation between sectors, fail to derive clear conclusions on welfare impacts from existing data or else analyze local social and environmental impacts with-

out a balanced consideration of social benefits (White et al., 2006). Additional research is clearly needed to clarify China's role in shaping long-term development prospects in the region. However, these examples can be interpreted as a manifestation of China's "ecological shadow" comparable to that of Japan.

Conclusion

The examples of Japan and China in regard to their reforestation policies converge not only in the identification of environmental damage and the need to implement top-down solutions, but also in the collateral damage that occurs in other regions as a consequence of more restrictive national forest conservation policies. For this reason we may mention the possibility of converging agendas and needs between the two countries, for better and worse, depending on the state of the political relations between Beijing and Tokyo (Weston, 2006).

The public actors have been, in Japan like in China, at the center of the reforestation programs. However, the importance of local responses and adaptations to top-down solutions cannot be underestimated, as the Tokugawa Shogunate reforms demonstrate. Some political scientists, most notably Elinor Ostrom (1999), have also found evidence that small communities can find bottom-up solutions to solve common pool resource problems. However, these solutions are more difficult at the national level, and therefore "the bottom-up approach fails because of scale issues" (Page, 2005, p. 1059). Considering the size of China, the accumulation of public actors and the hierarchy of political power, this "scale" issue is multiplied. Does that suggest that only national programs with a strong involvement of public actors may prove efficient in the case of China? Perhaps not, as the importance of local actors tends to be crucial, not only in the identification of relevant tree planting programs, but also in the mobilization of populations. As a consequence, besides top-down solutions, the reforestation programs in China must be accompanied by a stronger involvement of the civil society, and the example of the Tokugawa Shogunate

as well as contemporary Japan is highly relevant.

The common perception of environmental security as the foundation of a bilateral partnership between Japan and China is also subject to various criticisms. Daniel Deudney, for instance, in relation to environmental security opposes the securitization of environmental problems and their linking with national security, and fears that it would reinforce the “us” versus “them” thinking, which he sees as inherent to nations and apt to intensify interstate tensions (Deudney, 1999). The case of Tokyo and Beijing, with remaining tensions and nationalist postures, is a good example of this assessment. Does this mean, as Christian Wirth suggests, “that the cooperation in environmental security is meaningless for the improvement of the security-political relations between Japan and China?” (Wirth, 2010, p. 81). Probably not, but one may consider that although environmental security cooperation may serve as a substitute for the lack of confidence and security building measures in the traditional security sphere and certainly contributes to the improvement of Japanese-Chinese relations, there is no guarantee, however, that this improvement can potentially serve as a basis for a durable and effective “green detente,” or for a complete transformation of the Japan-China bilateral relationship.

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