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Editorial

Regional Cooperation for the Sustainable Development and Management in Northeast Asia

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Abstract: The Northeast Asian countries are the most pro-active regions in the world to take on the challenges of sustainable development. With this background, there has been an annual series of Sustainable Asia Conferences (SAC) which date back to the first inaugural meeting in 2009. This special issue consists of selected papers from the SAC 2017, held in Nanjing, China, from 23–25 June. With ten years of accumulated experience, SAC became one of the leading international conferences for presenting innovative or fundamental advances in sustainable development issues for Asia. Over time, SAC introduced more performance-oriented approaches to handle the feasibility of the sustainable development solutions. In this special issue, most of the papers focused on the precise and accurate sustainable governance mechanism in harmonizing economic development with a healthier life, while enhancing the quality of all standards of living. The majority of papers in this special issue also deal with two important pillars of the sustainable development: regional cooperation and regulatory effectiveness. This special edition will propose unique implications and feasible or workable suggestions against global warming and environmental degradation.

Keywords: Sustainable Asia Conference (SAC); regional cooperation; green growth; role of regulation

1. Introduction

Against the rapidly aggravating environmental change over time, many countries in the world have been proactively promoting environmentally friendly sustainable development or green growth. In order to examine the global situation, the author conducted a field investigation during January of 2018 in the region of Patagonia, the southernmost point of South America. Patagonia is the region closest to Antarctica and thus, was filled with snow and glaciers everywhere, but not anymore. Ushuaia is located at the end of South America, (El Fin del Mundo), and is the closest city to the Antarctica. In the north of the city, there resides the famous Glacial Martial Mountain. As the name implies, it should be covered by glacial ice, but most of the glacier has already melted with little snow, as shown in Figure 1. Perito Moreno glacier in Patagonia is famous for its ice-breaking sound and beauty. The glacier in Moreno has broken several times, every day, but recently, it has broken down every minute. Every region in Patagonia has experienced the serious effects of global warming. The reason for this aggravated environmental problem may come from the urgent need for economic development, as well as rapid changes due to urbanization, which result in increasing air pollution. As shown in the Figure 2, Santiago, the capital of Chile and the gate to Patagonia, has been experiencing periodic, but persistent hazy toxic air problems. Since the city is located on the basin area, with the Andes Mountains in its backside, there is a lack in wind circulation out of or into the city. Thus, there is a zone of hazy smog all year around. Nonetheless, the smog is bearable during the summer season because it is located at a relatively high altitude, away from the ground surface. Due to the demands on heating by wood, and the low quality of charcoal, this hazy smog zone is moving closer to the ground surface

during the winter season. Even if the Chilean government strongly regulated the use of wood for heating during the winter season, the impact would be low due to the level of perceived risk of the hazy smog among the public.

Figure 1. Glacial Martial Mountain without glacier in Ushuaia.

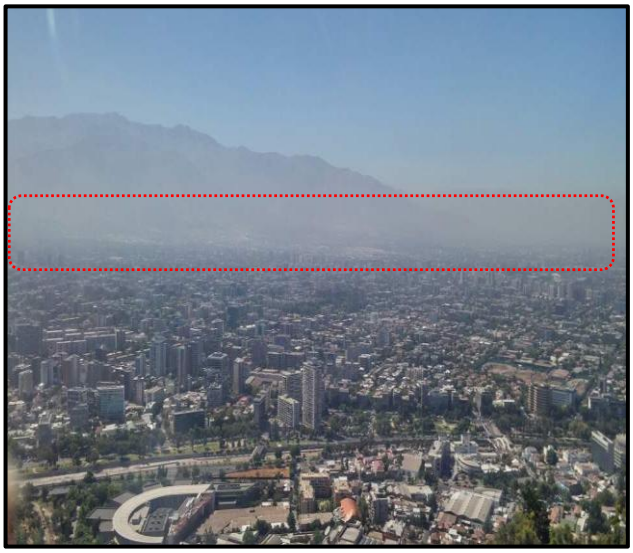

Figure 2. Hazy toxic air zone in Santiago, Chile.

In Patagonia, many people are worried about the rapidly changing environment, which could be seen in the melting glaciers, and the resulting El Niño and La Niña phenomena, but they do not think they should do something against this kind of global warming. Most developing countries may have the same problems. Governments have to put more emphasis on economic development and thus, they think that environmentally friendly sustainable development policies may provide an additional burden to the local economy. At the same time, the people in the region do not want this kind of regulation to protect the environment. Instead, they want to accelerate urbanization to improve infrastructure and public utilities.

Compared with these developing countries, the Northeast Asian countries are the most proactively sensitive to the perceived risks from hazy smog and other global warming phenomena. In 2017, the Chinese government proclaimed, so-called Xi-Jinpingism, as the new paradigm for future

challenges. One of the most important paradigms of Xi-Jinpingism is based on the new construction of 'Ecological Civilization' (Shengtai Wenming), implying that the Chinese government shall focus more on environmentally friendly, sustainable development 'to lead the global economy (Zhongguomeng, Dream of China)'. By the same token, the Korean government made a strong commitment that they will decrease greenhouse gases (GHGs) by 37 percent, or about 0.3 billion tones, from its expected business as usual (BAU) till 2030. The Japanese government also experienced the Fukushima nuclear power plant melt-down disaster in 2011, and thus, the public became more proactive toward the perceived risks of environmental catastrophes. Due to this public awareness, as well as a proactive government in the region, Northeast Asia became one of the most dynamic regions moving towards sustainable development or green growth.

Based on these practical backgrounds, the Sustainable Asia Conference (SAC) has promoted the academic network for Northeast Asian professors and researchers to share ideas and cooperate in facing new challenges in the field of sustainable development, green growth, and green IT, since its inauguration in 2009. Over time, there have been more than 100 papers published through the conferences. This special issue consists of these annual milestones, which are based on the SAC 2017, at Southeast University, Nanjing, China, during 23–25 June 2017 [1]. The conference provided diverse opportunities for researchers, specialists, and practitioners to share new ideas, experiences, and to collaborate with each other on future challenges. The scope of this special issue encompasses topics mainly related to sustainable governance in Northeast Asian countries, which were presented and discussed during the SAC 2017 conference. Many of the papers presented in SAC 2017 opened a new frontier of the new 2020 climate regime, and thus, this special issue, with selected papers from the conference, shall provide a new platform to promote sustainable governance towards the sustainable development or green growth in the region. The most common feature for this special edition could be summarized by two pillars; regional cooperation, and the role or functions of the regulations. Therefore, in the following section, we shall shed some light on these directions from the papers.

2. Feasibility Issues of the Regional Cooperation

Several papers examined the feasibility of regional cooperation in Northeast Asia. First of all, Chapman et al. analyzed key drivers for cooperation toward sustainable development in the six Northeast Asian countries, and found out that it is not easy for the countries to cooperate in the field of environmental protection and/or sustainable development, because key driving factors of CO_2 emissions change and energy portfolio trends are different among Northeast Asian countries. Sustainable development is positively related to economic growth in China and Korea, but negatively related with energy efficiency improvements in Russia and the Democratic People's Republic of Korea (DPRK), while it is relatively complicated in Japan and Mongolia due to a combination of these factors [2]. More specifically, in the analysis of total factor energy efficiency (TFEE) of 27 industries in the Jing-Jin-Ji region, Li et al. found the fact that the TFEE changes in the three major industries in the Jing-Jin-Ji region are caused by technological progress [3]. Contrary to this conclusion, Choi et al. concluded in the study of the Sustainable Performance of the Steel Industry in Korea, that most steel firms are increasing returns to scale, so they can enhance their efficiency by increasing their scale [4]. It is noteworthy that even if Korea and China share many common key drivers for green growth [2], the role of key drivers could differ [3,4]. Nonetheless, these two countries share a strong potential to cooperate together on sustainable development strategies such as the emission-trading scheme (ETS) in the macro-perspective, and regional green supply chain management in the micro-perspective.

However, Japan may have different key drivers with these two countries, and thus, it is more difficult to cooperate on sustainable activities all together. Fujii et al. examined the trends in fishery technology innovations using data on patents granted as an indicator of changing R and D priorities focus among the major fishing countries in the Northeast Asia region of China, Japan, and Northeast Korea[5]. They concluded that the number of fishery technology patents granted increased between

1993 and 2015 in Korea and China, but the trend in Japan was the opposite, as the apparent priority given to aquaculture technology innovation decreased during the same period [5].

Using 203 samples collected from port stakeholders in the major ports in Northeast Asia, Kang and Kim examined the operative practices to accommodate current and future demands in a port, and concluded with the five-factor model clustering the relevant issues such as incorporating environmental technologies, process and quality improvement, monitoring and upgrading, communication and cooperation, and active participation [6]. According to them, each country could differ in its emphasis on the categories of the five factors, but all the countries in the region make more effort to promote active participation of the port operator. That is the spirit of public-private partnership (PPP). PPP is decisive for the sustainable development of the Northeast Asian region, because the countries in the region are based on government-led platforms for green growth, and thus, market-oriented support is a key factor for the sustainable governance in the feasibility of the policies [7]. Most of the Chinese resource-exhausted cities may face more severe environmental pollution problems than other cities. In addressing these problems, the way local officials (usually senior party and government leaders) operate is very important, as their focus on political achievements may complicate how they manage environmental pollution in these cities. Zhang et al. examined the relationship between political incentives and environmental pollution by applying the 2004–2014 panel data from 37 resource-exhausted cities [8]. They found that whether the officials are municipal party secretaries or mayors is very important because the former play a greater dynamic role in environmental pollution, and have stronger robustness than the latter [8]. It implies that the regulatory political regime is crucial to Chinese green growth. Nonetheless, the private partnership with mayors should be emphasized for better PPP performance [7].

Over time, the sustainability issues became much more micro-oriented and specific for the research subject. In the early 2010s, most of the research focused on the regional or provincial difference, while during the middle of the 2010s, major focus moved to the city or county level. Xie et al. analyzed the comparative advantages of the environmental incentives on the heavy metal-polluted farmland in China, based on farmers' willingness to accept (WTA) and its compensation for the land [9]. They compared the two provinces of Hunan, where the fallow policy has been implemented, and Jiangxi, where it has not been implemented yet. Even if the farmers' awareness of heavy metal pollution and pollution sources is higher in Jiangxi province than in Hunan province, the WTA of farmers in Hunan Province is a little higher at 934.39 (yuan/mu), than the 839.34 (yuan/mu) in Jiangxi Province. It implies that the factors affecting the WTA of farmers in Hunan Province are much diverse due to the compensation incentives [9]. This comparison showed that too strong intervention by the policy regime may result in moral hazard among farmers. We shall further discuss in the following section, the kinds of roles and limits of the regulation policies for sustainable development.

3. Regulation Toward Green Technology

All policies have two aspects which effect private economic activities: promotion or regulation. Diverse subsidies and incentives for the environmentally friendly activities may give the platform for the private sector to participate in new challenges on the sustainable issues more proactively, while the regulative measures such as ETS or environmental penalties may result in the compulsory decision for the private sector to comply with. That is the same for the development of green technology. Some green technologies, such as LED lights, may not suffer any additional cost to utilize, at least in the long run. Rather, they may give additional benefits (negative costs) to households. These technologies could be utilized easily and effectively if only the government would provide subsidies and/or other incentives to use these free or near-free green technologies. Some more advanced technologies, such as carbon capture and storage (CCS) technology, require risky investment cost, and thus, strong regulatory policies are desperately needed for the private sector to participate [10] (pp. 3–4). The question is how we can identify the turning point between these promotion and regulation policies, in terms of

governance and workable mechanisms for sustainable performance [10]? Many papers addressed this turning point in terms of the role and functions of the regulatory policies in this special issue.

When Korea was suffering from hazy toxic GHG in 18th January of 2018 with an air quality index (AQI) of 157, the sky in Beijing was clear and transparent with an AQI of only 55 during the winter season. Most of the population of Beijing recognized that this was a result of the strong regulation of the Mayor of Beijing, who was Minister of Environmental Protection appointed by Xi Jinping, to overcome the terrible air pollution. Based on the urgent priority placed on air pollution, the new Beijing administration replaced all the charcoal heating systems, with gas-driven ones. Beijing city also regulated the absolute number of new car registrations to 100,000, which was much less than demand. Moreover, more than 60 percent of these new car registrations should go to electric cars, resulting in 120,000 electric cars in Beijing. This number implies that Beijing is now the global hub for the electric car, because it now has 12 times the number of electric cars as Jeju island (10,000 electric cars) and 21 times that of Seoul (5500 electric cars) in Korea. Of course, it is not easy for cars registered in other cities to enter Beijing, because these cars are only permitted to drive in Beijing for a period of one week. This could happen, especially in China, due to the strong government leadership of the Communist party. Certainly, there have been many studies which have shown the effective role of regulation by the Chinese government for sustainable development [11–14].

As shown in Beijing, the public have been exposed to heavy-polluting enterprises. Much of the negative social concern forced heavy-polluting enterprises to take downward earnings management to reduce corporate exposure [11]. Zhu et al. showed in their empirical test that heavy-polluting enterprises have stronger preference for downward earnings management, especially in those enterprises that are large in scale, non-state owned, or have a direct relationship with consumers [11]. It implies that strong leadership with rigid regulation on air pollution may lead the private sector to participate in a more effective manner. In the study to assess carbon reduction potential in the heavily resource-dependent Shanxi Province in China from 1990 to 2015, Li et al. concluded that the carbon intensity could drop by 18.78% by 2020 [12]. This potential exceeds the 18% expectation of the Chinese government in its '13th Five-Year Work Plan' for controlling GHG emissions. Unfortunately, this regulation on the carbon intensity of the province could further be reduce by 0.97 GHG ton per 10,000 yuan GDP. Due to this reduction on the local GDP, they suggested a flexible mechanism for reducing emissions, instead of the too strong and rigid regulation [12]. In order to examine the relationship between Beijing's urbanization efficiency and economic growth rate over time, Qi et al. developed a comprehensive index system for assessing Beijing's economic growth rate and urbanization efficiency at the district (county) level for the period 2005–2014 [13]. They concluded that local governments should promote technical change and scale efficiency change, to improve urbanization levels, with optimal strategies entailing strengthening policy support and encouraging investments in technology in specific areas such as Urban Function Development, and City Development Zone [13]. Zhang et al. utilized STIRPAT model to conduct analysis about the driving factors for future carbon emission in Henan Province for the period of 1995–2014 [14]. According to them, every 1% increase in the population, GDP per-capita, energy intensity, and the level of urbanization development will contribute to the growth of emissions by 1.099, 0.193, 0.043, and 0.542%, respectively [14], implying that 'smart regulation' is necessary.

All these arguments imply that regulation could be necessary in the first stage of highly risky green technology development, but the regulation could face another undesirable effect by reckless intervention. Using the average concentration of PM 2.5 in China's major cities from 2000 to 2012, as measured by aerosol optical depth, Zhengning Pu tested the time spatial convergence of fine particulate matter pollution in China [15]. He showed that the growth rate of PM 2.5 in the middle and western zones is significantly higher than that of the eastern zone and the correlation test between regional economic growth and PM 2.5 emissions suggests a significant positive N-type Environmental Kuznets Curve (EKC) [15]. It implies a kind of balloon effect that the strong regulation on the eastern zone caused an exodus of the energy-intensive or heavy GHG-emitting industries into the western

and central zones. Therefore, the government should always consider that they cannot override the market or private sector, and that the regulatory policies should be more market-friendly.

Based on the affordability framework of the housing market in Ho Chi Minh City in Vietnam, Seo et al. investigated the price determinants of affordable and unaffordable apartment units using the hedonic regression model [16]. They found common factors between the two types of apartments, such as vertical shared access and proximity to downtown, as well as unique factors for each, such as more high-rise towers, foreign development, proximity to main roads, and shopping malls only for the affordable segments [16]. In order to promote the PPP, they strongly suggested regulatory reforms with revised housing laws and subsidized financial programs, because the market-friendly regulatory reform will result in a variety of beneficial effects on the housing market in developing countries such as Vietnam.

The sustainable energy consumption in Northeast Asia has a huge impact on regional stability and economic growth, which shows the severe bias of the global price volatility. That is the reason China is called the black hole of global resource. In order to investigate the price volatility pattern in different thresholds, Zhang et al. utilized the stretched exponential function to fit the pattern of the recurrence intervals of price fluctuations and found that the probability density functions of recurrence intervals in different thresholds [17]. They utilized a hazard function to introduce the recurrence intervals into the value at risk (VaR) calculation, and concluded that the Chinese government should improve energy futures market construction and promote risk control to enhance the global influence of China's energy futures market [17] (p.11). Here, the prudent regulation is emphasized regarding the fuel oil futures market as well. Xi Jinping, the leader of China claimed the 'dream of China (Zhongguomeng)', to lead the global economy. One of these dreams is focused on Chinese cultural and creative industries, such as animation and online games. Based on a case study of three animation companies, Hao Jiao et al. examined how innovation could be promoted as the profit model [18]. The study uncovers two critical factors that promote profit model innovation in animation projects: the quantity of consumers, and their consumption intention. They emphasized the governance factors of integrating capital resources and channel resources, strategic integration of partners, and industrial chain expansion capabilities into the animation industry as the survival kit of PPP [18].

The role of regulation is important not only in the environmental issues, but in the strategic industries for the country's future. Vietnam, as a new emerging market, especially in e-business, has been promoting its emerging e-commerce market in Asia using aggressive players such as Lazada. Nonetheless, Vietnam has a strong cultural background of risk-averse attitudes, like many other developing countries, thereby deferring sustainable transformation into the e-business revolution. To overcome this cultural barrier of risk-avert attitude, Choi and Mai showed that it is crucial to promote e-trust as a vital element, because Vietnamese consumers lack an initial e-trust in general, and thus the appropriate PPP by the balanced regulation of the government should be emphasized at least in emerging economies such as Vietnam and China [19].

4. Conclusions

Due to the new protective policies of the Trump administration, all countries in the world are experiencing much higher risks and uncertainties in their future challenges. Especially, the United States shifted its paradigm from eco-friendly, sustainable development, to job-creating traditional economic development, without any environmental protection. It is another serious burden and bottleneck for the global economy. The United States will not provide eco-friendly leadership towards a survival kit for sustainable development on Earth. One hopeful sign of new leadership may come from the Northeast Asian countries. Korea and China have promoted the ETS nationwide and this new paradigm shift of countries may bring in diverse new challenges as well as opportunities. The most important thing is the regional cooperation between Korea and China, because these two countries have just begun the ETS in local economies, and due to its adjacent spill-over effect, there are diverse fields of cooperation possible even without any regional integrated

ETS market yet. In order to decrease trial and error in the ETS policies, as well as the future regional challenges, we should emphasize harmonized network management to create values in this region.

All the papers in this special issue give us greater insights, and open new frontiers to handle the contemporary challenges for the regional cooperation in Northeast Asia, one of the most dynamic regions in the world. Since sustainable development requires complex procedural approaches in order to grasp workable mechanisms for all the conflicting issues and interests in the cooperative network, the role of government as the network manager of this collaborative network could not be emphasized enough. Clarifying the causal relations in this cooperative network is not easy, but it is essential for the network manager to guarantee that all parties create and share the values appropriately. This is the slogan of the Sustainable Asia Conference (SAC): Once a friend, forever a friend.

In order to promote the sustainable governance factors, relevant issues should be evaluated for their feasibility in these rapidly evolving Asian economies. Especially, Northeast Asian countries have emphasized more harmonized interrelationship from its historical and cultural background [10]. As addressed in the diverse perspectives on the regional cooperation and regulation-related issues in this special edition, we should work together to find the appropriate Asian models for this sustainable cooperation network mechanism in the future. For this purpose, all the professionals and experts, as well as the policy makers and business men are invited to share the Asian models for the sustainable development at the SAC 2018, held in the Chinese Academy of Science at Beijing, China on 18–21 May 2018 (official websites: http://abf.inha.ac.kr/).

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