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Korea's policy towards pollution and fine particle : a sense of urgency

pollution

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Air quality in South Korea has become an increasing source of concern for the nation. According to the survey conducted by the Seoul Development Institute, 51.8% of Seoul's residents consider air pollution to be the most imminent environmental issue, and 68,3% of them consider that the level of air pollution is « serious » (« very serious » 13,0%, « quite serious » 55,3%). The pollution is due to both sandstorms and small particles, which have multiplied with the heavy industry-led economic growth of the country and the fast increase in the number of auto vehicles on the road, which grew from 790,000 in 1983 to 18.8 millions in 2012. This pollution is in apparent contrast with the will of former president Lee Myung-bak to make « green growth » the driving force of the South Korean economy.

Starting in 2013, there has been a marked interest and attention on the issues of « particulate matter » or « fine dust » by the media, government and general public alike. From October onwards, all major news media published reports on core causes and trends, as well as required

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actions towards this « silent killer ». Faced with a belated awareness of the authorities, the strengthening of the cooperation among the neighbors of the Korean peninsula is necessary, in particular with China.

Sandstorm vs. particulate matter (PM)

The woe over PM and raise of awareness on the danger they represent among the general public have come about only in the last few years. The use of the terminology « fine dust » and « PM » is also a recent phenomenon. Indeed, the main source of pollution until the present has been dust and sandstorm (DSS) or « yellow dust ». Although DSS and PM are both small particles in the air, hampering visibility and causing harmful health effects, the two terms are used distinctively, notably because their causes and effects are different.

The term DSS qualifies a widespread environmental phenomenon in Northeast Asia. The so called « yellow dust » (*hwangsa*) are tiny sand dust smaller than $20\mu\text{m}$ (micrometer: a millionth of a meter), consisting mainly of non-ferrous ground components such as calcium, iron and aluminum. They are mostly caused by the desertification of Inner Mongolia and a part of Northwest China. They travel farthest with the Westerly Wind in spring when the frozen ground of the Gobi Desert and the Loess Plateau breaks down and creates dust. International cooperation on DSS has been focused on preventing the deforestation of the deserts and monitoring the movement of DSS, as shown by the Joint Research Project on Long Range Transboundary Air Pollutants in Northeast Asia (LTP Project).

Atmospheric PM, on the other hand, are mainly generated from combustions and are composed of harmful substances including sulfate and nitrate particles. They become dense, especially during the severe Korean winter when gas, petrol or coal heating is widely used in the country. The cold and dry air from icy Siberia and northern China also brings in more PM from the northeastern industrial provinces of China. These particles are defined in accordance with their size: PM_{10} if they are smaller than $10\mu\text{m}$ in diameter, and $\text{PM}_{2.5}$ if they are smaller than $2.5\mu\text{m}$. Due to their small size, they could reach the alveoli in the lungs, causing respiratory diseases. On October 17th, 2013, the World Health Organization classified air pollution as one of the main environmental causes of cancer induced death and classified PM as carcinogenic to humans. If up to 90% of particles larger than PM_{10} can be filtered in respiratory tract, the percentage declines, as particles get thinner.

Steady increase in pollution visibility

Since the implementation of a first series of so called « special measures for air quality improvement in the Seoul Metropolitan Area » in 2002, the concentration of PM_{10} in the capital lowered from $76\mu\text{g}/\text{m}^3$ in 2002 to $41\mu\text{g}/\text{m}^3$ in 2012. Still, pollution visibility has increased. The number of days with high PM density (i.e. PM_{10} is higher than $80\mu\text{g}/\text{m}^3$) has escalated, notably from 3 days in 2012 to 19 days in 2013. This visibility issue has increased media attention on the question during the second half of 2013. This same visibility issue is the first criterion for the population to determine the level of pollution. The most recent accessible survey carried out to understand the perception

of the public unfortunately goes back to 2011. It underlined that visibility is one of the key criteria for the general public to determine the quality of outside air. To the question « why do you consider the air pollution to have decreased? » 37,3% answered that visibility improved, 19,5% that longer time could be spent on open-air benches and 8,5% that and clothes were cleaner after wearing them outside.

A recent awareness of the environmental problem

The publication of an inter-governmental rapport in December 2013, a result of the cooperation of 8 ministries has marked the publicization of governmental action in order to fight against PM. Such effort was supported by the adoption of a resolution by the National Assembly. Among the 422 press releases and correction reports of the Ministry of Environment published between October 2013 and February 2014, 72 included the term « fine particle », a sign of raising awareness, even though it is not a token of an efficient implementation of a public policy.

Governmental action was concretized before the publication of this rapport, as soon as August 2013, by the establishment by the Ministry of Environment and Korea's National Institute of Environmental Research, of a system of information and alert for the public, on the level of PM_{10} pollution. This system should be generalized by 2014, delayed, as it was initially planned for February. Apart from these purely informative measures, which do not really reduce the particles, other measures focusing on the reduction of emissions at a national level have been carried out, by restraining the growth of the fleet of petrol vehicles (development of recharging station for electric cars and subsidies at purchase), and by implementing stricter rules for polluting industries. A series of regulations are yet to be planned by the Seoul city with regards to restrictions in the use of polluting vehicles and to the control of saunas and barbecue restaurants, all extremely popular but polluting.

Government shortcomings regarding the fight against $\text{PM}_{2.5}$

Despite these first measures, a number of experts, notably those of the roundtable organized by the magazine EcoVision21, were critical towards the government's public policy. One of the main issues raised was that the government's action, if it allowed a reduction of the concentration in PM_{10} , did not act upon the concentration in $\text{PM}_{2.5}$, which are the most dangerous particles because carcinogenic. Cited in Korea JonngAng, this criticism was supported by Dr. Kwon Ho-jang a Dankook University professor and air pollution specialist, who regards that the government welcomed the reduction in PM_{10} concentration without asking the real question of $\text{PM}_{2.5}$.

If the ministry announces the implementation of a second system of information and alerts to the public for $\text{PM}_{2.5}$ in 2015, this news appears too ambitious and devoid of content. According to deputy Kim Sung-tae, a member of the Commission on Environment and on the work of the National Assembly, mandated by parliamentary majority in power, the Saenuri party, the 2015 budget of the Ministry of Environment that has already been voted - that is, a bit less than 2 million dollars- takes into consideration only the system concerning PM_{10} .

The roundtable of January 2014 also insisted on the fact that the government is focused on information and on alerting the population, but doesn't tackle the origin of PM. Mr. Jung, the director of atmospheric environment at the Ministry of Environment explains to EcoVision21 that the complexity of the formation of PM and the fact that PM travels far are two reasons explaining the difficulties of formulating an adequate public policy and the ineffectiveness of short-term oriented policies; a partial acknowledgment of failure by the government.

China singled out by the Media

PM have a double origin, national and international. It has been proven that the worsening of air pollution in China affects Korea as well, with the fine particles moving with the winds. The Ministry of Environment has reported that the domestic PM₁₀ tends to increase by about 44.5% on average when the wind blows from a direction of west or northwest, according to an analysis based on observations on Baekryeong island, on the western coast of the Peninsula. However, the Korean government tends to approach China-related issues with caution, refusing to criticize a neighbor with whom it has grown quite interdependent economically.

On the other hand, South Korean press singles out China, simplifying to the extreme and presenting the country as the main cause of pollution in South Korea. Be it articles of Ahn Yonghyun, Kim Sungmo and Nah Haeran in Chosun Ilbo, of Kim Jungsoo in Hankyoreh, or Jeon Seungmin in Dong-A Science, all reach the same conclusion that PM come above all from China. Koreans have in mind images of high air pollution in China and of the urban smog, and the causal link is thus established in an arbitrary manner.

Fast paced development of a Sino-Korean cooperation

If the South Korean government can act on the national origins of the concentration in PM, the country should also cooperate with its neighbors in order to deal with its second origin. The local authorities intend to play an important role as well. The local governments of Seoul and Beijing are in the process of concluding a memorandum on improving air quality in the aim to enhance city-to-city exchanges, notably to improve air quality information. Such arrangements should also be developed with Tianjin, Shanghai and Ulan Bator.

China, main victim of both sandstorms and PM, is putting its own efforts, and implemented a system of real-time measurement of PM_{2.5} concentration in the country's main cities since October 2012. China cooperates with South Korea and Japan, spearheaded by the Tripartite Environment Ministers' Meeting. On a proposal from South Korea, a specific political dialogue to the question of atmospheric pollution took place within this framework in March 2014 among the General Directors in charge.

Regarding a bilateral cooperation, while a first meeting took place in mid-December 2013, the minister of the environment Yoon Seong-kyu announced to Yonhap in February 2014 his intention to develop a system of prevision of PM concentration in cooperation with China. It should be stressed that this cooperation in the environmental

sector is a possible axis of the « Northeast Asia Peace and Cooperation Initiative » presented by President Park. This initiative proceeding of the Asian paradox, which consists in the existence of inter-state tensions due especially to territorial or historical disagreements, despite a growing economic interdependence, aims to establish collaboration on transnational questions of collective interest. However, so much in the trilateral, bilateral, national or local cooperation, it seems that a particular emphasis was put on the prevision of pollution peaks more than on their prevention, the origins of pollutions being only rarely addressed.

PM pollution, revealing of South Korean society's delays

The question of PM displays an accurate picture of Korean economy and society. First of all, it is worth noting that the public discussion generally doesn't deal with larger environmental questions such as climate change. Korea often prioritizes, in terms of national goals, economic performances over settling environmental issues. The Better Life Index of the OECD illustrates how Korea is a performance-oriented society, having very average rankings in environment and health.

The successive governments seem to be looking to minimize the impact of the new environmental rules on the industrial fabric of the country, informing five years ahead large industrial groups about the implementation of such rules. Moreover, experts who expressed themselves as a part of the round table EcoVision21 have underlined that the country is late in the production of statistics and research in environmental questions. Proof that PM, in particular, is not a priority. Despite political declarations, Park Geun-hye's government failed to include this subject as one among the ten principal objectives published by the ministry of Science, New Technologies and Future Planning in November 2013.

On a political level, there is no real politisation. There is, first of all, little divergence between the conservative and the liberal party, the two largest political formations of the country. Their respective election pledge on environment reveals striking similarities on these questions, one difference being the actors emphasized in the handling of these issues: NGOs under Roh Moo-hyun and companies under Lee Myung-bak, who brought forward the concept of green growth in a perspective that was above all economic.¹ In specific instances, such as in the construction of a naval base in Jeju island, division can arise, but it is mostly for local issues or issues relative to the alliance with the United States rather than for strictly environmental issues. Since the Green Party was established in 2011 and won only 0.48% of votes in the general election of 2012, it does not represent a solid political alternative.

Issues on environment are still auxiliary to the economic development in Korea. The interdependence of society, environment and economy needs to be deliberated further. It is the central question that the 'Beyond GDP' initiative of the European Union builds upon, which could suggest a domain of cooperation between Korea and the EU.

¹ See also Lee Jae-sung « La Corée du Sud cherche à promouvoir une "économie créative" », *Korea Analysis*, n°1, Asia Centre, janvier 2014.