

CIGS-ifri Joint Workshop**Governance and Competitiveness in an Age of Innovation****-Exploring challenges and opportunities for Franco-Japanese cooperation-**

The world is undergoing a deep and rapid transformation driven by the technological innovation such as digitalization, automation, and artificial intelligence. Among other societal consequences, energy and the environment concerning global warming and energy supply and demand are particularly important policy issues in the age of innovation. In order to examine the new challenges and opportunities of innovation governance and low-carbon energy transition, Canon Institute for Global Studies (CIGS), collaborating with French Institute of International Relations (ifri), hosted a joint workshop in Paris on September 12, 2017.

Session: Governing technological innovation in an era of rapid change and rising uncertainty

Chair: Françoise Nicolas, Director, Center for Asian Studies, ifri

Speaker: Hideaki Shiroyama, Professor, the University of Tokyo

Subject: The challenges of governance in an era of rapid technological innovation – the examples of energy (nuclear), space and AI

Summary: Prof. Shiroyama explained the key factors in technology governance at first. Those are to distinguish the nature of technology, to form networks of actors, and to build the institutions for risk and innovation governance. He indicated that the risk governance is to balance the risks and benefits, while the innovation governance should balance the stimulation and freedom, the technology push and demand pull, the R&D organization and users. After reviewing the general trends of R&D in major countries, Prof. Shiroyama introduced the advantages and limits of Dual System in the process of Japanese nuclear and space technology development. Through the comparison between the two different systems, he pointed out the challenges such as the evaluation of the cost and benefit of public R&D, human resource development and international collaboration to be examined. In the final part of his presentation, Prof. Shiroyama introduced a new type of innovation, AI, which is led by private R&D and various users networks, and indicated the nature of assessment to identify the role of public sector.

Speaker: Dominique Guellec, Head of Division, Directorate for Science, Technology and Innovation, OECD

Subject: Science and innovation in the EU: Challenges and Policies

Summary: Mr. Guellec raised a general question of what strategic narrative should take under the situation that all the world, science and technology, policies are changing. To answer the question, he examined five strategic issues and their implications to EU. First is that science and technology innovation are part of the answer to the global grand challenges. Therefore research and innovation policies of EU should be stronger and more challenge oriented. Second is that globalization resulted the presence of new players and more international linkages, thereby the competition became more global. Hence the EU should enhance the internal integration while developing links with all other large players. Third is that digitalization of science generated new opportunity of open innovation. This makes it necessary for EU to develop the European Science Cloud, to harmonize data regimes and to train scientists to master digital tools. Fourth is that the digital innovation such as IOT, robots and autonomous vehicles increase rapidly and generated big markets. So EU should facilitate access to data within and across countries and improve market circulation for startups to grow. Last one is that government resources for science and technology are plateauing or even declining in many countries. Effort to mobilize funding from other sources is necessary while promoting higher R&D budget.

Session: Managing the energy transition in an age of innovation

Chair: Marc-Antoine Ely-Mazzega, Director, Center for Energy, ifri

Speaker: Hisashi Yoshikawa, Research Director, CIGS

Subject: Quick glance at energy, climate change and innovation in Japan

Summary: Prof. Yoshikawa began with a brief introduction about the current status of energy supply structure, energy security, energy economics and greenhouse gas emissions in Japan, especially the changing situation of nuclear and renewables after the Big Earthquake. He also introduced the national strategic energy plan and the long-term energy supply and demand outlook. Based on the safety, energy security, economic efficiency and environment (3E+S) principle, Japanese government generated a policy package including promotion of efficiency improvement and renewable energy deployment. At meanwhile, the Cabinet decided the plan of global warming countermeasure including a long-term goal to pursue 80% reduction of greenhouse gas by 2050. However, assuming domestic measures with existing technologies, this goal implies a total replacement of social infrastructure and massive structure change to industry. To meet these challenges, Prof. Yoshikawa indicated that a policy package of solving energy and global warming issues through innovation is necessary. An ideal approach to the policy package should integrate the policy of energy, environment, and innovation to determine the measures to be pursued. But the current reality in Japan is that different ministries are responsible and individually compiled policies are combined.

As a result, no integrated policy was enacted, even centrifugal force is dominant. Prof. Yoshikawa concluded his presentation by pointing out issues to be examined such as discrepancy between the ideal and reality, innovation, and international cooperation, and some thoughts and observations that benefit the ideal policy formation related to political leadership and national strategy, basis for innovation, and decision making process.

Speaker: Fengjun Duan, Senior Research Fellow, CIGS

Subject: Some topics on Asia and China

Summary: Dr. Duan first reviewed the energy demands and CO₂ emissions of the major player such as North America, EU, Russia, Japan, China, India, and ASEAN from 1990 to illustrate the importance of Asian developing countries to the issues of energy and global warming. After analyzing the factors causing large increase of energy demand and CO₂ emissions such as rapid economic growth, high energy dependency, and energy mix depending on coal in these countries, he introduced that several positive trends occurred in China recently. The largest renewable energy deployment, the rapid nuclear power plant construction, and the largest market of electric vehicles result a three years' plateau of energy related CO₂ emissions, thereby China is on the way to over achieve their announced national climate targets in 2020 and 2030. Dr. Duan indicated that the recent trends were essentially generated by the national low carbon economy strategy. Within the frame of the top strategy, environment policies such as regulation, low carbon technology promotion, and circular economy demonstration; energy policies such as efficiency improvement, energy transition, and market reform; industry policies such as structural adjustment, capacity phase out, and emerging industry promotion were linked to each other. Benefited by the policy environment, some innovation including new nuclear technology, ultra-high-voltage electricity transmission, GW ultra-super-critical coal fired power generation were succeeded. Dr. Duan also introduced the new energy revolution strategy of China, and pointed out new challenges, necessary innovation, and new policy issues.

Speaker: Michel Cruciani, Associate Research Fellow, ifri

Subject: Managing the energy transition in an age of innovation

Summary: Mr. Cruciani defined that managing the energy transition should reconcile a series of objectives including promotion of low carbon energy and efficiency improvement, preservation of energy security, industrial competitiveness, and social cohesion. Therefore, the management means intervening with accelerator that unleash market force and stimulate innovation, and brake that uphold legal barriers and avoid shocks. Mr. Cruciani indicted that the main resources of low carbon energy in EU are

wind, solar and bioenergy depending on the natural and social conditions, and introduced that the current deployment of these renewable energy is through a market mechanism combined with financial support scheme. Following a prediction of future deployment scale of these resources, Mr. Cruciani pointed out main challenges including access to market by local manufacturing industry, compensation for regional inequality, and consequences on power price & affordability. According to brief analysis of these challenges, he suggested that managing energy transition translates into permanent trade-offs between the various objectives. Therefore some legislation measures such as avoiding rigid targets, organizing frequent reviews, providing windows to modify the settings, leaving room for specific solution will be essential to maintain stability, visibility and flexibility. Mr. Cruciani also indicated that exchange of experience through both international organization and bilateral or multilateral institutions will be paramount.

(Edited by Fengjun Duan, CIGS)