



## **Workshop under G7 Alliance on Resource Efficiency**

### **Resource Efficiency and A Low-Carbon Society: Identifying Opportunities and Implications**

**12-13 December 2016, Tokyo**

#### **Co-Chairs' summary**

#### ***De-carbonization and resource efficiency required for the future of society***

1. Global resource consumption is expected to grow significantly due to population growth and economic expansion of emerging economies and developing countries as well as an emerging middle class in urban areas. At the same time, the G7 and other developed countries have realized a relative decoupling of resource consumption and economic growth. However, the absolute consumption of resources in these countries has continued to increase. This trend poses a number of challenges for sustainable development such as environmental impacts resulting from resource extraction, use, and disposal; volatility of resource prices; and resource security. Furthermore, declines in the quality of resources will exacerbate this vicious cycle.
2. The 2030 Agenda for Sustainable Development was adopted in the UN Assembly in September 2015. Under this Agenda, goals relevant to resource efficiency such as to “promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all” (Goal 8), “build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation” (Goal 9), “ensure sustainable consumption and production patterns” (Goal 12) were agreed. In May 2016, the “Toyama Framework on Material Cycles” was endorsed in the G7 Ise-Shima Summit. Subsequently, as the Paris Agreement entered into force in November 2016, we must make efforts towards the realization of a de-carbonized society, reducing greenhouse gas emissions to net zero by the second half of this century. The foundation to step up international efforts toward a low-carbon and resource-efficient society for sustainable development has been laid.
3. In addition to low-carbon policies, developed countries, especially in G7 and EU, have shared high momentum to establish resource efficiency policies. On the other hand, in developing countries, ensuring appropriate waste management is generally given priority. However, given

surging needs to develop massive infrastructure and industrial bases in developing countries, international community should seek the way to integrate resource-efficient and low-carbon approaches into development pathways.

4. Realizing transition of the social-economic system to materialize a de-carbonized and sustainable society within a 2030 or 2050 time frame now has become one of our highest priorities. The urgent challenge is to assess whether the current measures on resource efficiency satisfy the needs for our society, namely consistency with SDGs and a de-carbonized society, appropriateness of the scale and speed of the measures, maximized synergies, and avoidance of inconsistent promotion of measures.

### ***Important linkages between resource efficiency and a low-carbon society***

5. Resources nexus, especially that between resource efficiency and a low-carbon society, has been gaining more and more attention. As International Resource Panel (IRP) concluded and for which Toyama Framework on Material Cycles calls, a low-carbon society and resource efficient societies are inseparable and require global actions.
6. However, IPCC points out that this issue has not attracted much interest and integrated policies are lacking even though providing less materialized services and recycling or establishing material-cycle society / circular economy can contribute to significant emission reductions in industry.
7. Within the limited number of comprehensive studies, IRP outlined its view that establishment of the low-carbon electricity system imagined under the 2-degree scenario (IEA Blue Map Scenario) would require additional demands for steel, cement and copper while the environmental impact caused by renewable energy would be three to ten times lower than the conventional electricity generation system using fossil fuels. IRP also estimated a 28 percent reduction in domestic material consumption and a 60 percent reduction in greenhouse gas emission globally through a combination of resource efficiency and low-carbon policies. There is another study that estimates the potential of emission reduction in Asia by 2050 through increased resource efficiency.
8. Keeping the above background in mind, this workshop discussed the specific aims of stepping up the discussion on the integration of resource efficiency and a low-carbon society by summarizing what we know now, sharing best practices, and identifying what we need to tackle, focusing on the following points:
  - Better communication of resource efficiency and low-carbonization/de-carbonization
  - Pursuing synergy and overcoming challenges in the nexus of resource efficiency and low-carbonization/de-carbonization

- Defining a resource-efficient society, taking into account the achievement of the goals of the Paris Agreement

***Identified areas that we need to further discuss and address***

9. Participants from governments of G7 members, India and Indonesia, business, research institutes, and other organizations, with the co-chairs, Kazunobu Onogawa, Senior Fellow of IGES and Yuichi Moriguchi, Professor of The University of Tokyo, in the workshop reaffirmed the importance of advancing these efforts from the above points of view as well as the need for fostering and extending the work for the inter-linkages between resource efficiency and a low-carbon society, especially in the areas specified as follows:

1) Setting interlinked targets and indicators

- Setting and following-up targets (e.g. absolute decoupling for developed countries and relative decoupling for developing countries) and indicators of resource efficiency that are more clearly and better linked to climate change and comparable across countries
- Specifying the critical paths of transition toward a resource efficient and low-carbon society and system

2) Evaluating impacts of measures and interlinked accounting

- Evaluating GHG reduction and its potential by enhancing resource efficiency (including demand reduction, weight saving, substitution, lifetime extension, and recycling) over the lifecycle of materials, including extraction, production, transport, use, and disposal
- Specifying impacts of deployment of major low-carbon technologies (e.g. PV, wind turbines, and EV) in resource use (e.g. steel and copper) and waste management, and countermeasures to mitigate negative impacts
- Assessing environmental, social, and economic co-benefits and challenges (e.g. job creation, revitalization of local economies, health issue, resource security, demand growth for construction materials resulting from economic development in emerging economies and developing countries) caused by resource efficient and low-carbon measures

3) Taking measures for reinforcing synergy

- Identifying and promoting best practices in each phase of extraction, production, use, recycling of materials, based on low-carbonization as well as comparing practices and data across sectors and countries
- Implementation of a waste management hierarchy and promotion of renewable

materials (e.g. bioplastic and timber) that integrate resource efficiency and low-carbonization

- Identifying business areas (e.g. infrastructure, mobility, steel, cement and plastic) and new business models (e.g. sharing economy, ICT, remanufacturing and servicing) that create synergy and promote innovation
- Ensuring resource efficiency across the global supply chain and international resource circulation, taking into account the importance of looking at both upstream and downstream sides of whole supply chain and product life-cycle
- Applying back-casting approach to taking stock of necessary measures based on carbon budgets
- Raising international recognition on the need of linking resource efficiency and climate change, taking into account its potential that fulfills the Paris Agreement

#### 4) Seeking concerted action

- Collaboration among governments, businesses, citizens, research institutes, and international organizations (e.g. UNEP, IRP, OECD and IPCC)
- Global and regional partnership (e.g. G20, CCAC, World Resources Forum, European Resources Forum, Regional 3R Forum in Asia and the Pacific)

#### 5) Finally, based on the above, this workshop further emphasized the importance of the following initiatives:

- That governments and the private sector will promote resource efficiency and low-carbonization in an integrated way and systematically review its progress under the G7 and G20 and, beyond these
- That IRP and other relevant organizations will consider (i) targets and indicators interlinking resource efficiency with climate change, (ii) evaluation of co-benefits that incentivize policy makers, and (iii) impact assessment of deployment of low-carbon technology and countermeasures to mitigate negative impacts, taking into account the Paris Agreement and SDGs
- That OECD and other relevant organizations will consider (i) evaluation tools for GHG reduction by enhancing resource efficiency over the life cycle of materials and (ii) measures and policies to reinforce synergy between resource efficiency and low-carbonization including those that are helpful for developing countries