

## **Initiative on Fluorocarbons Life Cycle Management Concept Paper**

### **1. Summary**

Given the urgent need to address climate change comprehensively and the increasing demand of fluorocarbons as refrigerants in the cooling sector, it is essential to address fluorocarbons emissions throughout the life-cycle including leakage in use and discharge to the air at disposal.

Promoting the life cycle management of fluorocarbons will significantly reduce emissions and contribute to mitigating climate change as well as ozone depletion (by HCFCs and CFCs) through introducing sound policies and technologies as well as by building relevant infrastructure. It will also contribute to improving resource efficiency, spurring innovation, and promoting sustainable economic growth and quality jobs.

The initiative will facilitate concrete actions and innovation and the collaboration among governments, the private sectors, and international institutions for our mutual benefits and support to strengthen the life-cycle management of fluorocarbons, while collaborating with existing activities and frameworks.

### **2. The need to accelerate fluorocarbons emissions reductions and the importance of a life-cycle management approach**

(1) The increasing demand of fluorocarbons in the cooling sector will significantly increase GHG emissions even with the Kigali Amendment under the Montreal Protocol

It is estimated that fluorocarbons emissions in total will increase to 72 billion t-CO<sub>2</sub>eq in the next four decades (\*WMO/UNEP) even with the Kigali Amendment if we do not take additional concrete actions on fluorocarbon emissions in particular middle to downstream of life-cycle. The demand for air conditioners, refrigerators as well as the cold chain is rapidly increasing along with the improvement of the quality of life, including health and safe food. On top of remaining HCFCs and CFCs, the amount of global HFCs emissions are expected to increase from about 900 million t-CO<sub>2</sub>eq to about 2 billion t-CO<sub>2</sub>eq in 2030, around 6% of the amount of energy-related CO<sub>2</sub> emissions of the world even if all Parties comply with the requirements of the Kigali Amendment.

HCFCs and CFCs still remains in use in many parts of the world. As HCFCs are still at the phasing-down stage in developing countries under the Montreal Protocol, a significant amount of HCFCs along with CFCs may be released into the air. Cumulative emissions of HCFCs and CFCs from existing equipment are estimated approximately 9 billion and 3 billion t-CO<sub>2</sub>eq respectively, which are not covered by the international frameworks. Also, phase-out / phase-down based on the Protocol can be more reliably implemented by promoting efforts to destroy and recycle fluorocarbons.

(2) Life-cycle management is crucial to reduce fluorocarbons emissions thoroughly. Similar to the marine plastic litter issue, it is critical to enforce not only upstream measures such as the development of new lower GWP (global warming potential) refrigerants and replacing old cooling equipment, but also downstream measures including minimizing discarded fluorocarbons that are significant sources of GHG emissions. More than 100 countries do not have targets of HFCs emissions reduction yet, and only a few countries have the collection (recovery) and treatment (including recycling and destruction) enforcement system for fluorocarbons.

(3) Opportunities for innovation, economic growth and quality jobs, and circular economy. In 2030, the global market of refrigerators and air conditioners is expected to expand to approximately USD 320 billion. Under such an immense demand, there are opportunities for research and development for innovative solutions and pursuing sustainable economic growth. Addressing fluorocarbons emissions with a life-cycle management approach will also enhance the creation of circular economy, new businesses, and quality jobs. There is also an untouched opportunity for the financial sector to join the efforts to transform the landscape of the cooling sector. Thus we can realize “the virtuous cycle of environment and growth.”

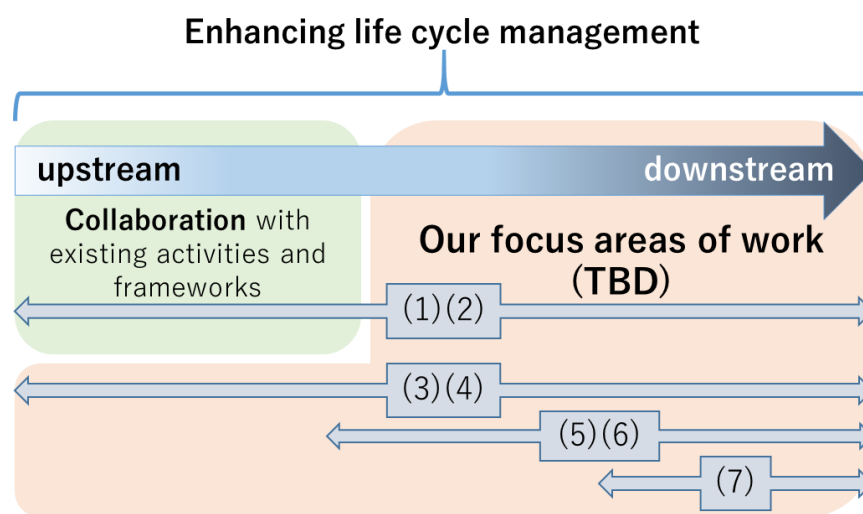
### **3. Scope of this initiative**

This initiative, based on voluntary actions and partnerships in nature, will facilitate actions on the entire life-cycle of fluorocarbons, from upstream to downstream measures, and from building inventory monitoring infrastructure to increasing finance flow, while focusing on untapped areas of work, in particular the middle to downstream side. With regard to upstream measures in particular, it is important to collaborate with existing activities and frameworks, including the Efficient Cooling Initiative under the CCAC (Climate and Clean Air Coalition) and the Cool Coalition, to enhance synergies and minimize duplication of work.

### **4. Potential collaborative actions under this initiative (TBD)**

- (1) Cooperate in formulating and implementing fluorocarbons emissions reduction plans;
- (2) Promote compiling inventory for fluorocarbons including HFCs and reflecting reduction of emissions on the inventory through recycling or destruction of HFCs;
- (3) Cooperate with multilateral funding agencies on capacity building to improve access to such funds (other than those fund for the implementation of the Montreal Protocol and its Kigali Amendment) ;
- (4) Increase financial flow to the life cycle management of fluorocarbons including through fostering ESG investment by the private sector, public funds, and multilateral

- development banks and facilitate information disclosure;
- (5) Share good practices and the latest scientific information and technology, while increasing understandings of the life cycle management of fluorocarbons including through international conferences and project case studies;
  - (6) Enhance the partnership with the private sector and accelerate innovation regarding the life cycle management of fluorocarbons, including building collection (recovery) and treatment (recycling and destruction) of fluorocarbons ; and
  - (7) Promote feasibility studies and demonstration projects for technologies, policy and economic evaluation to introduce recovery and treatment system, which may lead to pilot projects under global funds.



(Chart) An image of our potential focus areas in the life-cycle of fluorocarbons

## 5. A way forward in 2020 (TBD)

It is currently planned to organize two meetings<sup>1</sup> in the margins of relevant international conferences (e.g. meeting related to the Montreal Protocol, the UNFCCC, or other activities) to share existing efforts and activities, good practices, and proposals, to facilitate possible collaboration and partnerships, and to identify possible concrete projects. We would further design and implement such projects while continuing sharing information and good practices.

<sup>1</sup> Japan will take a lead inviting partners, relevant stakeholders, and experts.