

## **Resource issues towards carbon-neutral society**

Environment and economy are closely interrelated. To cope with various environmental constraints, it is important to create sustainable circulations by taking the constraints as an opportunity, rather than a trade-off relationship between them. "Green innovation" such as the carbon-neutral is a major driving force in the realization of such the social system.

Although the movement toward green innovation has been accelerated in recent years, it is clear that almost all of them focus exclusively on global warming, especially "carbon", as an environmental constraint. Needless to say, the carbon constraints are important. However, it is easy to imagine that the green innovations focusing on only one indicator would bring about new problems.

For example, next-generation vehicles are more fuel-efficient than conventional vehicles and are obviously an important green innovation to solve the carbon constraint. However, electric vehicles, a typical next-generation vehicle, require motors and batteries, which in turn require rare earth elements, such as lithium, nickel, cobalt, or a large amount of copper, which were not needed for conventional vehicles.

The inclusion of negative consequences and the consideration of trade-off in the environmental policy decision making process is required to achieve the green innovation in the true sense of the word. In this session, the resource issues towards promising carbon-neutral society will be discussed, and possible solutions to these issues will also be sought.

### **<Program details>**

*1:40pm - 2:00pm*

#### **A resource paradox problem of green innovations**

Eiji Yamasue, Shoki Kosai, Shunsuke Kashiwakura, Takamoto Itoh, Seiji Hashimoto

Ritsumeikan University, Japan

*2:00pm - 2:20pm*

#### **Life-cycle resource productivity of Japanese food resources**

Sebastien M.R. Dente, Seiji Hashimoto

Ritsumeikan University

2:20pm - 2:40pm

**Global target by 2050 to reduce natural resource use in the automotive industry**

Hibiki Takimoto<sup>1</sup>, Shoki Kosai<sup>1</sup>, Takuma Watari<sup>2</sup>, Shunsuke Kashiwakura<sup>1</sup>, Eiji Yamasue<sup>1</sup>

<sup>1</sup>Ritsumeikan University, Japan; <sup>2</sup>National Institute for Environmental Studies

2:40pm - 3:00pm

**Can car-sharing system solve trade-offs between resource consumption and greenhouse gases emission? A simulation based on person-trip survey**

Naoki Yoshikawa<sup>1,2</sup>, Nanami Iwabuchi<sup>2,3</sup>, Towa Kawasaki<sup>2</sup>, Yasuhiro Shiomi<sup>2</sup>

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3:00pm - 3:20pm

**Overall discussion**