

## Concluding Session

### *Moderator:*

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### *Presenter:*

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(All titles and honorifics omitted below)

### **Kanda**

In this Concluding Session, I would like us to first answer the questions from the floor as best possible and then get into free discussion, where our presenters can share ideas amongst them-selves. Then, before ending, I would like to get a final comment from each of our presenters.

### **[Resource cost accounting]**

#### **Kanda**

This is our first question from the floor. The Resource Cost Accounting done by the Efficiency Agency is a new technique, but is it different from Material Flow Cost Accounting?

#### **Bleischwitz**

The concepts of Resource Cost Accounting and Material Flow Cost Accounting are basically the sa-

me, but the practice is different. Right now, a demonstration project is underway to test the various techniques. The differences lie in whether all materials are covered, or just some or just basic materials. System boundaries are also different. Another difference is whether all hidden flows are included or not, or whether the system includes only hidden flows or not.

Then, there is the software; different applications are used. The Efficiency Agency is using a software tool. Also, software created by our institute is being offered to businesses. It is important for small and medium-size businesses to select an appropriate method by testing the available applications.

### **[Scope of applicability of WEEE Directive]**

#### **Kanda**

Next, we have a question about the EU's WEEE

(Waste Electrical and Electric Equipment) Directive. I would like the person who actually posed the question to present it directly to our presenters.

**Floor**

I have understood it that this law applies to the all of the EU, but it is being applied differently by each individual country. I would like to hear about the prospects of the toner cartridges used in copiers and laser printers being subjected to the WEEE Directive.

**Becker**

Most of the parts of electric devices are subjected to the WEEE Directive, but toner cartridges are not covered by it. Toner comes under reusable substances; the toner manufacturer, not the hardware manufacturer, recycles it or takes it back. It does not fall under the WEEE Directive; toner is toner and there is another system for it. Disposal and recycling policies are specified there.

**[Use of biomass in Germany]****Kanda**

Our next question is: "I have two questions. I have heard that Germany is advanced in the use of biomass. What kind of businesses are there for the use of biomass and what kind of incentives are the federal and state governments offering to establish these kinds of businesses?"

**Bleischwitz**

There are various types of biomass and many busi-

nesses engaged in it. There are even companies who have received assistance from the federal government and are making goods from biomass. For example, home insulation is being made from biomass. This, too, is recognized as a renewable energy program under the Renewable Energy Sources Act.

As for recyclable materials, as Prof. Gunjima mentioned, new recyclable materials are being made from biomass. Though this is under development, it is a field that requires further government funding.

**Becker**

A major objective of biomass is to make up for the shortage of energy. To deal with this energy shortage, one way is to make gas from biomass by gasification. It is burned to generate heat energy. One approach that is being promoted today is to make wood pallets and then burn them in an incinerator to generate electricity.

The use of heat energy from biomass will be further encouraged in the future, but the state provides assistance for power generation and there are incentives as well. Also, there is a provision that requires power companies to purchase electricity generated from biomass at an appropriate price. And, there are tax breaks for investing in biomass systems.

**Bleischwitz**

Also, biofuel can be made from biomass. With biofuels, there is assistance such as tax deductions.

**[Environmental policy in Germany and international competitiveness]****Kanda**

We have a question regarding the relationship between environmental policy and unemployment problems in Germany. Again, I would like the person who wrote this question to ask the presenters directly.

**Floor**

Various innovative activities are being done in Ger-

many, but also unemployment is increasing steadily. Of course, we need a win-win situation that is good for industry and good for the environment, but is not Germany losing their competitive strength in the marketplace? Unless the other EU member countries undertake similar action to fill in the gap, you cannot compete under the same conditions. I would like to ask how the relationship between environmental policy in Germany and international competitiveness plays out in all of this.

**Becker**

As I mentioned in my report, one of the objectives of promoting environmental protection and environmental technology is to resolve unemployment problems. The high unemployment rate is not because businesses are focused on environmental protection; it is high for other reasons. Also, by taking measures with environmental protection, jobs are inversely being created. If not for the new businesses, industrial promotion and assistance with regard to environmental protection, the unemployment rate in NRW might be even higher.

Also, as you said, there is competition with other countries in Europe. But, the entire EU has high environmental standards. Accordingly, competition across the EU is fair amongst industries with a new environmental consciousness. As of 2004, all EU member states must uphold new environmental standards. Therefore, industry cannot relocate to countries with low environmental standards. Germany wants to craft standards that are consistent and fair across the EU.

We cannot survive with a polluted environment. We cannot produce from within a polluted environment. So, I think we must invest in environmental protection and fulfill our respective obligations.

**Bleischwitz**

I feel the same as Ms. Becker. Let me also add that Germany launched reforms in the labor market just last year, so it is still too early to see the effects.

Environmental policies in the industrial world are showing concern. One item on everyone's agenda is the high cost of electric power and the high cost of introducing renewable energies. When it comes to policy, though we must observe regulations for reducing green house gases, it is also necessary to enhance competitiveness of the industrial world. Electric power costs, an emissions trading system, green energy taxes ... there are still many matters that need further coordinating in the EU.

Also, one way to think about it is that even good policies have bad effects in some cases. For example, with carpet recycling, waste laws are not well designed therefore bad consequences arise. Another example is that biomass producers are not observing their obligations under the subsidies program. In these cases, policy is incomplete, but, as policy, you can say that about 90% of it is good. The remaining 10% has room to be improved.



**[Japan's Eco-town approach]**

**Kanda**

The questions from the floor have been directly entirely to our German counterparts, so if our German friends have any questions or comments about the Japanese presentations, please speak up.

**Becker**

I would like to comment about Mr. Hidaka's presentation. With regard to the Ecotown model, compared to Europe and Germany, Japan is very centralist, that is to say, the central government has the

reigns of leadership. And, you are building clusters like think-tanks and trying to take a strategic approach. Germany does not take this approach; the role of policy is to take action and learn as you go. In Germany, strategies are developed while action is being taken, and eventually lead us to the future. I would like to ask what Japan does to implement undertakings in concrete terms.

### **Hidaka**

The primary undertaking of the Ecotown Project is to develop business on the cooperation of industry, government and academia. With industry and academia, it's about various kinds of technology; with cooperation amongst industry, government and academia, for example, it's about problems with permits. Cooperation with third parties leads to business development. The project is being promoted in that direction. Accordingly, regarding the "waste tire recycling by gasification system" I spoke of earlier, technology was initially researched within the company, but to turn it into a business, public funding was put to use so as to improve business potential. This has been carefully applied to the Ecotown model to successfully develop business. It is hard to develop business quickly when a single company is doing all of the research.

### **Gunjima**

I, too, would like to say something about the Ecotown Project. It has to do with whether the name of the "Ecotown Project" itself is befitting or not. I had the opportunity to speak about the eco-business with students in Kyushu after lecturing at Eco-techno in Kyushu together with Ms. Becker. When that happened, the students argued over the then-image of Ecotown Project. The name "Ecotown" was chosen because we thought that it was hard for just the industrial park to draw businesses to the site, so it was decided to make the industrial park green by adding the "environment". But, the students claimed that it was

not an "ecotown". Because it contained the word "town", it could not be an "ecotown" without urban development. They felt that a true ecotown had to involve urban development and had to be done in cohort with the local community; it was not good enough to be gentle on the environment only inside the industrial park.

This argument came right at the time that the Industrial Restructuring Committee was to review the Ecotown Project, so it was proposed that "it would be good for local community revitalization to bring in urban development rather than have the Ecotown exist all by itself like a tiny remote island". Of course, prefectures are promoting the Ecotowns properly, but the proposal was put forth to have municipalities link it with their own basic environmental plans.

The Ecotowns I am involved with are in Mie Prefecture, the first of which to receive approval was in Suzuka city. Let me outline their undertakings as an example of urban development in an Ecotown Project. Honda Motors paints cars in Suzuka, but if they would switch to organic paint, organic waste would result. This would be made into compost together with the raw waste that households in Suzuka produce, which is similarly organic in nature. Also, Suzuka is famous for growing azaleas. The idea is to aid agriculture by making compost of the raw waste from the city and organic waste from industry and using it as fertilizer. Through undertakings such as this, the Ecotown is being developed in cohort with the community.

Another city in Mie Prefecture with an Ecotown Project is Yokkaichi city. Let me briefly describe that project as well. The project is being developed by Mitsubishi Chemical and Fuji Xerox. The plastic waste from Fuji Xerox's products is being recycled to a high degree as polyethylene and polypropylene. Another involvement of Mitsubishi Chemical's is biodegradable plastics called "bioplastics". These plastics are basically biodegradable, therefore if they are recovered and returned to the earth, they turn back into soil.

But, they contain succinic acid. In other words, these biodegradable plastics can be recycled again as biodegradable plastics. So, Mitsubishi Chemical is studying whether it might be better to recycle the plastics instead of returning them to the earth.

Also, Yokkaichi is the birthplace of the retailer AEON, so they are involved in replacing plastic bags that consumer receive in stores with biomass bags, recovering those bags and recycling the biodegradable plastic.

Ecotowns are changing to enable collaboration that links to environmental plans or waste plans of their municipalities.

Secondly, it is conceivable to transform recycle-based Ecotowns into reduce- and reuse-based Ecotowns. Presently, most Ecotowns, to note Kitakyushu and that in Hyogo Prefecture, are recycle-oriented, but what we are talking about today is the 3R business for promoting all of the 3Rs, including reduction and reuse. In that sense, Ecotowns, too, need to convert from a recycle-orientation to a reuse-orientation. There could be new Ecotowns oriented for reduction and reuse, which place a higher priority on upstream areas with maintenance or repair functions, by introducing servicizing and PSSs (Product Service Systems). By repairing a product, it lasts longer and, because residents would seek repairs, waste could be reduced, which would have the effect of urban development. Ecotowns of this nature could be developed.

Ecotowns have gone from the eco-parks that remake conventional industrial complexes to Ecotowns that coordinate with municipal environmental plans. This is just my opinion, but Japan's Ecotowns have changed slightly.

### [Hydrogen use]

#### Bleischwitz

This is a question for Mr. Hidaka. In a hydrogen society, once the hydrogen is produced, how is it distributed? Distributed infrastructure is necessary on the

community level to distribute hydrogen. It is necessary for local communities to accept hydrogen use. What are your thoughts about this?

#### Hidaka

Your question is about how to distribute hydrogen, how residents will use it. With hydrogen, I imagine model projects would be set up in select communities. Then, to spread the use of hydrogen, residents will have to actually use it, so efforts will be needed within that to gain the residents' understanding of its safety and other aspects.

As for hydrogen distribution, there were several thinkable applications mentioned in the presentations. I can see gas engines, fuel cells, mixing with city gas, etc. With gas engines, a discrete quantity could be consumed to generate electric power. Fuel cells are somewhat distributed in nature as is. This intertwines with the actual costs, so it will be necessary to decide how to use it, and how much will be generated and consumed. Whatever the case, the prime issue is to get people to use hydrogen to a minimal degree.



### [Possibilities of material recycling in Japan]

#### Bleischwitz

The second question is for Prof. Gunjima. It would seem that the emphasis in Japan is placed on product recycling; compared to Germany, material recycling is low level. It is also predicted that material recycling will increase 20% in the next 50 years, but shouldn't more energy be directed at the possibilities of material recycling? For example, tell us what is be-

ing done with the recovery of metal from construction infrastructure.

### **Gunjima**

I wanted to ask about the state of recycling in Europe. Currently, I understand it that, in Europe, thematic strategies are having a considerable impact. Recycling is not set up by products via home appliance recycling laws or vehicle recycling laws; material recycling is being looked at in terms of switching from product recycling to material recycling and is being given considerable attention. Plastic is plastic wherever it comes from, so not just plastic from containers should be recycled.

Presently, in Japan, the Containers and Packaging Recycling Law is being reviewed, but material recycling in Japan would be rather expensive.

One reason is that plastic recycling costs have not come down. Under the Containers and Packaging Recycling Law, recycling costs for glass and metal have decreased. And, for what regards PET bottles, excluding exports to China and elsewhere, progress is being made at present. Nevertheless, where the big trouble lies is in recycling plastics that are separated as "other plastics". Here, the cost has barely changed. One reason for this is that the demand-side businesses that recycle the material are clearly an oligopoly compared to the supply side, so even if the Japan Containers and Packaging Recycling Association bids for jobs, bidding stops at a high level.

Secondly, most of the recycling of "other plastics" is done by small and medium-size businesses, and they are not really capable of developing revolutionary technology.

Another problem is on the collection side. Because residents do not carefully separate "other plastics", a considerable amount of residue is mixed in. As a result, unless the plastic is sorted again, material recycling is not possible. To improve quality, it is necessary for municipalities to seek the cooperation of residents in better sorting their waste.

Moreover, unless the current industrial structure is addressed, material recycling costs will remain high. The same goes for construction waste. "Sorting" waste on the job site could seriously effect work efficiency. At present, they have just started separating concrete, reinforcing bars and cement, just three categories. There is wood, but it can only be used for particleboard. The problem is that there is no demand for waste construction material.

Material recycling will be difficult until efforts are made to develop technology, recycle in an efficient way and reduce costs. For this reason, within the review of the Containers and Packaging Recycling Law I mentioned earlier, studies into lowering the costs are looking into using energy recovery technologies - or thermal recycling - to create competition. In any case, it seems that high costs are impeding material recycling.

### **[Wind-up]**

#### **Kanda**

Before closing, I would like each of our presenters to make a final comment.

#### **Hidaka**

It was a very worthwhile day today to hear various aspects about the situation in Germany. Though different from the Japan's Ecotown approach, I learned that Germany has created an Efficiency Agency to help developing a 3R society. Also, biomass is very advanced in Germany, while it was concluded that, in Japan, its use is cost-prohibitive. In any case, I would like us to look at Germany as reference in furthering our research.

#### **Gunjima**

A big recycling issue in Japan is the Food Recycling Law. And, though a strategy to encourage usage has been crafted under the title "Biomass Japan", the legal framework presents many difficulties. Not all biomass should be left to making compost of raw

waste. Accordingly, we need to develop other new applications. For example, by mixing raw waste with live excrements, energy efficiency could be improved. However, these wastes are handled by different departments in the Ministry of Agriculture, Forestry and Fisheries, so it is hard to mix them together. Moreover, deregulation needs to be taken further. Japan should learn from the strategies in Germany.

In other regards, exchange on policies and technologies is being promoted between Japan and Germany in order to enhance material productivity and 3R efficiency. I hope we can continue the exchange of information in the name of sustainable societies.

#### **Becker**

It was a very interesting exchange of views today. I also learned about Japan's 3R policies and your approach to new business opportunities. It was a fruitful discussion, but it does not end here. New problems to overcome will keep arising. And, because the world is round, what I do and what everyone does will have an effect somewhere on the planet. Moreover, countries like China and the new Eastern European member states of the EU want to achieve the economic development that we have enjoyed. We need to work so that these nations, too, can quickly adopt similar environmental standards. There are still many prob-

lems to be dealt with seriously by all of society and by the industrial world.

#### **Bleischwitz**

When I return home, I want to rethink two topics: Ecotowns and biomass. Biomass is found most anywhere, therefore it is important to use it efficiently so that is good for the environment and a plus for business. The same goes for Ecotowns. As cities grow, incentives for new technologies and policies will be necessary.

Lastly, I hope Japan and Germany can form a partnership in developing 3R societies of the future.

#### **Kanda**

As Ms. Becker just pointed out, all of our economic activities affect the other side of the world as well. In the state of NRW, there is a "One World Policy Unit". With the Ecotown Project as well, I would like Hyogo Prefecture to inject the lifecycle concept and develop it as an Ecotown of the world rather than focusing entirely on Hyogo Prefecture. Also, concerning information on Germany and Japan, there is still much left that we have to share. It is necessary for the two countries that lead the world in 3R to further promote research exchange between us. With that, I would like to close this Concluding Session.