UK-JAPAN WORKSHOP ON
RESOURCE PRODUCTIVITY, EFFICIENCY AND MANAGEMENT

Joint Statement

British Embassy, Tokyo,
13th (Wednesday) - 14th (Thursday) December 2006

Summary
Over 40 experts from the UK and Japan attended a 2-day workshop at the British Embassy, Tokyo 13-14 December 2006 to discuss "Resource Productivity, Efficiency and Management".

The objectives of the workshop were:

- To identify collaborative links between UK and Japanese researchers and industries in the field of resource productivity e.g. to explore complementary strengths, to create dialogue and to lay the foundations for future collaboration
- To focus on the contribution of resource productivity to sustainable development
- To discuss outcomes for further action

The delegates were drawn from leading UK and Japanese universities, research institutes, companies and government ministries. The UK side included University College for the Creative Arts, University of Southampton, Policy Studies Institute, LRL Consultancy Services Ltd, South-East England Development Agency (SEEDA), Oakdene Hollins Ltd, Shinshu University and Resources Knowledge Transfer Network. The Japan side included Ministry of Economy, Trade and Industry (METI), Tokyo, Nagoya, Tohoku, Yokohama National Universities, Shohoku College, National Institute for Materials Science (NIMS), National Institute for Environmental Studies (NIES), RIKEN Institute and Re-Tem Corp. In addition, 24 observers from UK and Japan.

The workshop was sponsored by the Foreign & Commonwealth Office under its Global Opportunities Fund Climate Change and Energy Programme and UK Trade and Investment. It was co-organised by the British Embassy and the Ecomaterials Forum with support from METI, Ministry of the Environment, and Japan Science and Technology Agency (JST).

In addition to deepening the understanding of the scientific research and development being undertaken in each country in the areas of resource productivity, efficiency and management, the workshop identified a number of gaps in current knowledge, areas of common activity and opportunities for future collaboration.

A range of core issues emerged:

- The need for greater clarity over definitions to support international understanding and practice e.g. resources (and materials) productivity, remanufacturing, etc
- The need to identify (more clearly) the potential contribution of resource

productivity to sustainable development

- The strategic importance of materials risk (and security) as a new concept
- To highlight that material risk and hazardous substance are diifferent issues
- Resource productivity and climate change are separate issues but are linked: there is a need for greater understanding of the inter-linkages due to the growing importance of climate change in international and national public policy debates
- Developing more sustainable (patterns of) consumption and production is becoming of growing importance: technology development is important but behavioural change is a key part of the solution
- Scale of the problem e.g. need for 'Factor 4' to 'Factor 20' reduction in resource and energy use
- Scale of opportunities e.g. $700+ billion market
- End-users need to be included in any research projects
- There was recognition of the similarities between Japan and UK e.g. island nations, etc but also recognition of different approaches to the challenges of resource productivity that relate to culture, lack of landfill (in Japan), strategic planning, policy approaches, etc. In addition, it was recognised that there is a need for a better cultural understanding between UK and Japanese researchers, industry and government

Areas of cooperation: Resource productivity, efficiency and management

1. Research: Key headings for potential topics of collaboration that relate to resource productivity, efficiency and management

a. Risk/security of instable supply of materials
b. Relationship between materials risk/security and climate change/ energy risk/security (Appendix III)
c. Economics, markets and material resource scarcity
d. Policy frameworks and decision-making
e. Sustainable consumption and production (SCP)
f. Consumer behaviour (business-to-consumer (B2C), business-to-business (B2B), business-to-government (B2G), business-to-distributors (B2D))
g. Change management
h. Integration of waste management and resource management
i. Eco-city and eco-town development and resource productivity
j. Stimulating and accelerating eco-innovation
k. Relationship between eco-design and resource productivity
l. Eco-materials innovation e.g. low carbon materials
m. New technology development and social systems
n. Recycling and re-use/re-manufacturing systems, infrastructure, networks and factories (plants)
o. Data collection and modelling
p. Dematerialisation and eco-services
q. Education

**A range of specific ideas for projects or sub-projects also arose (Appendix III)

2. Mechanisms for future cooperation

a. Events (conferences/workshops): sharing/exchanging information
b. Anglo-Japanese conference on resource productivity
c. To launch a worldwide scientific panel on “material risk”
d. To develop an action plan focused on material risk and the roles of each stakeholder e.g. business, government, academia, and consumers
e. Joint workshop with International Panel on the Sustainable Use of Natural Resources (recently established by United Nations Environmental Programme (UNEP) and European Commission (EC))
f. UK sponsored translation of Eco-materials Review (Professor Yamamoto) and follow-up workshop
g. Inter-disciplinary workshop to be organised ‘back to back’ with the 8th Eco-materials conference at Brunel University in the UK on 9-11th July 2007. Event to be held at Southampton University with support from SEEDA and to be focused on material risk
h. UK input into the Japanese Re4-vision of materials project (Appendix I and II)
i. Exchange of staff/researchers: linking UK material engineers with Japanese eco-materials experts

3. Funding

The workshop delegates identified the need for a framework for cooperation and dedicated funding to effectively take forward UK-Japan collaboration in the above areas. In addition, opportunities should be identified to complete projects within existing funded projects e.g. a project on the links between resource productivity, materials risks and climate change funded through the Anglo-Japan Low Carbon Initiative. Collaboration would also need to take into account the differences in the structure and organisation of the university and other research systems and their relationship with industry and government in both countries, as well as cultural dimensions.

British Embassy Tokyo
Japan
14 December, 2006

Martin Charter
University College for the Creative Arts
UK

Osamu Umezawa
Yokohama National University
Japan

Appendix I

Summary of Japan proposal on material risk

1. We need to pay attention to resource productivity.
2. Trade-offs between greenhouse gas (GHG) reduction and sustainability of resource are beginning.
3. Electricity-waste is becoming scattered in order to extract rare-resources.
4. The sustainability of resources is going to be disrupted rapidly.
5. Specific approaches and analyses are required on the sustainability of resources as serious as research on the damage of global warming, pollution and hazardous control.
6. A worldwide panel on “material risk(s)” should be established as soon as possible to continue discussions.
7. Scientific research on the environmental impacts and global capacity of resource consumption needs to be undertaken.
8. There should be greater understanding of what needs be done to avoid material risk(s).
9. The role of each stakeholder (market, government, academy, and consumers) in accelerating the development of an expert panel on resource productivity needs to be identified. Key items for discussion to include:
    a. Exchange of experiments, attempts, problems and barriers
    b. Clarifying the synergies between economics and environment in 3R (reduce, reuse and recycle) practice amongst Japanese and British industries/companies
    c. Role of technological innovation and lifestyle change in relation to the utilisation and consumption of materials
    d. Data exchange, information distribution, and education. To achieve this, Japan launched a new project “Re4-vision of materials” that covers the strategic utilisation of resources – the key themes are: reduction in materials consumption with higher resource productivity; replacement of materials (particularly rare ones) with more commonly available materials; recycling of materials in a way that retains their high performance; and restriction of materials which have major impact on the environment.

Appendix II

Climate Risk v Material Risk
(proposed by Professor Yamamoto and revised by Professor Umezawa)

Item	Climate Risk	Material Risk
Impact	Dangerous climate change	Resource depletion
Origin of risk	Greenhouse gas emission, deforestation, etc.	Giant material production and consumption
Science	Earth physics	Metallurgy and mineralogy
Engineering	Mechanical, chemical and materials engineering	Mechanical, chemical and materials engineering
Monitoring	CO_2, SO_2, CFC-11, ice, etc.	No
Simulation	Many computer simulation of climate change	Partly material flow
Policy target	2℃ target by EU (550 ppm CO_2-eq.)	No far resource consumption
Solution	Improve resource productivity (energy efficiency and decarbonization of energy)	Improve resource productivity (material efficiency)
International panel	IPCC	No big one
International treaty	Kyoto protocol, etc.	No

APPENDIX III

Specific and general ideas for project development

1. Material risk (see Appendix II) e.g. modelling and data sources
2. Materials risk and security
3. Relationship between climate change, resource productivity and material risk e.g. sea level rise and access to resources
4. Prioritisation e.g. if CO_2 reduction is the priority what is the impact and implications for resource productivity
5. 'Sustainable Use of Natural Resources'
6. Identifying materials data sources
7. The dilemma of good data (medium/long-term) on resource productivity versus need for decision-making (immediate/short-term)
8. Economics of resource productivity and materials risks
9. Financial benefits of resource productivity
10. Forecasting material risks related to climate risk
11. Global review of landfill mining experience, techniques, lessons learnt and economics
12. Policy development e.g. timing and what type of intervention
13. Implementing product policy e.g. who, what, when, how, etc
14. Lessons from change management models
15. Paradigm shifts from waste management to resource management thinking and practice
16. Changing consumption behaviour (B2C, B2B, B2R, B2G)
17. Product impacts and wider consumption systems
18. Implementing 'closed loop' economies e.g. possibly relationships with China and India
19. Cooperation in relation to understanding the implications of implementing a 'Factor 4' region
20. Developing a database of successful cases of resource-efficient consumption and production
21. Cooperation between UK and Japan in relation to the application of the Research, Education, Action and Policy (REAP) model recently launched in the UK
22. Measurement and metrics and target setting: macro and micro-level resource productivity e.g. flows and tools
23. 2020 scenario: identifying and managing the impact of new technologies
24. Education: shifting from a waste management to resource productivity mindset
25. Radical innovation e.g. what does a 'Factor 20' economy or society look like
26. Sectoral studies e.g. packaging
27. Experiences in data collection at national and regional level
28. Relationship of resource productivity and the management of transboundary shipments of waste (developing countries)
29. Successful implementation of product-service systems, eco-services and other "dematerialisation" approaches
30. Understanding the relationship between resource productivity and lifetime greenhouse gas emissions through LCA e.g. in some cases an increase in resource investment and emissions at the production end can be justified if overall

lifetime emissions are reduced e.g. hybrid vehicles

31. Eco-materials selection and energy reduction potential in relation to the likely requirements of the implementing measures of the Energy Using Products (EuP) Directive
32. What are the best methods of communicating eco-materials performance data to design engineers (in a b2b context)
33. What is the life expectancy of materials e.g. years? And what are the implications of continued growth of BRICs (Brazil, Russiia, India and China) economies (based on more up-to-date data e.g. more recent in 1990?)
34. Strategic metals substitution e.g. indium in liquid crystal display (LCD), platinum in catalytic converters, palladium in fuel cell catalysts, etc
35. Cultural dimensions of why things and why they do not?
36. Eco-innovation and eco-material innovation
37. Development of bio-plastic farms (on sea)
38. Materials substitution issues