

Sustainability and Innovation with particular reference to Japanese Experience

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Sustainable Development

- World Commission on Environment and Development (1987) “development that meets the needs of current generations without compromising the ability of future generations to meet their own needs”
- Environmental/Ecological sustainability
- Economic sustainability
- Social sustainability



Sustainability

- Current development patterns are not sustainable from both ecological and ultimately economic viewpoints ▪ ▪ e.g. climate change
- Sustainability is not just the maintaining of steady state of capital assets but also equally about continued advancement or creation



Sustainability and Innovation(1)

- Both the maintaining of steady state of capital assets and creation of new and better services for more people require innovation in technology and socio-economic system.



Sustainability and Innovation(2)

- There might be trade-off between sustainability-based technology and current socio-economic system.
- Japanese experience suggests that innovation can help to ease the adverse effects of some trade-offs posed by existing technology.



Japanese Experience

“What happened is that science and technology provided answers to most of the problems raised. The possibilities of science and technology are such that they extend the frontiers of rationality. A rational decision is a decision that takes into consideration costs and benefits; the trouble is that it is not only very difficult to determine benefits (i.e., damages avoided), it is often impossible to estimate costs. Costs of processes that have not yet been invented cannot be estimated. They are said to be very high or even (“it can’t be done”) infinite, but may well turn out to be reasonable. And it is a decision based upon such overestimated costs that is irrational. The Japanese experience in the field of pollution abatement lend support to the idea that to a large extent it is not technology that should constrain policy choices, but policy choices that should constrain technology” OECD(1977)

The Evolutionary Approach to Innovation

- Large uncertainties surrounding the outcomes of R&D investments make it very difficult for firms to make optimizing R&D decisions.
- Porter's win-win hypothesis



Porter's "win-win" hypothesis

In the non-optimizing world, regulation may lead to "innovation offsets" that "can not only lower the net cost of meeting environmental regulations, but can even lead to absolute advantages over firms in foreign countries not subject to similar regulations" (Porter and van der Linde, 1995)



Discussion and Conclusion

- Japanese Experience
- Environmental constraints can sometimes stimulate innovation that will leave the firm better off
- Integration of science/technology policy and environmental policy for sustainable society

