

## **Nominated Discussion**

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## **Policy Integration in Developing Countries**

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As is well known, “sustainable development” explores the path where economic development and environmental protection are compatible. This concept is derived from the agreement that the latter contributes to keeping the former in the long term, while these two have often been regarded as exclusive matters in the traditional development context. There, however, still remain many contradicted but important subjects on policy integration issues, especially in the developing stages. The UN forecasts that an increased world population will live in the urban area since the suburbs have less labor absorption capability. Therefore economic and population growth intrinsically result in rapid urbanization. The proliferation of the automobile and the increase of meat consumption will follow. Besides changes in the industrial structure to absorb the increased labor, the policy maker also has to be aware of the supply capability on electricity, transportation, liquid fuel supply, water resources, land use, refuse management, etc. It should be pointed out that these issues belong to the design of public infrastructure networks.

I would here emphasize three points: one is the role of the long term planning on the network infrastructure like communication, transportation, energy and material distribution. The market mechanism has been valued to seek for economic efficiency, but networks may lose it unless their framework is well designed to harmonize facilities based on the long range projection, even though competitiveness still works on them.

The second point is the interrelationships among the above issues. Needless to say, complicated relationships among various fields make the matter controversial. For instance, clean coal technologies will play a main role in electric power generation if the nuclear power is phased out. But existing desulfurization requires water resources. Biomass utilization, which contributes to carbon emission mitigation and sustainable energy supply, may conflict with the food supply. Natural gas will be a good solution to meet the electric power and the transportation fuel supply, if we can utilize the abundant methane resource in deep oceans, but it is still exhaustive. Systematic integrated policies are needed here.

The last point relates to inequalities which could be the largest barrier against “sustainable development” as well as “social security”. The penetration of economic growth proceeds with some time delay among regions, not only north-south but also south-south and north-north, and amongst social classes and industries. We should notice here that there are so many subject categories and that one subject can belong to plural categories. To make matters more complicated, their interests are sometimes compatible and often competitive. So long as every category group enjoys the outcome of “economic growth”, society can keep stability. But infinite growth for every social group is too optimistic. The policy maker has to keep in mind the societal redistribution system as well as the energy and the material recycling system described above.

“Global environmental issues” are definitely one of the largest targets for international collaboration. None can deny them, but we are far from agreement on the costs to be paid and possible benefits. Here the questions arise. How can we minimize the negative effects of the mitigation of global warming involving the total cost and its allocation on subjects? What international collaboration framework is required to solve the above?

Here, I believe it is important to consider findings, related to the above, through integrated

model simulations stressing policy integration on technological options among land use, food production, biomass technology and nuclear technology to meet the future energy and the food demand under population growth and global warming mitigation policies.