

Socio-metabolic transitions in developing Asia

Abstract for a presentation at the ANZSEE conference 'Reinventing Sustainability – a Climate of Change' July 3-6, 2007 at QLD

Submitted on February 6, 2007

Heinz Schandl, CSIRO Sustainable Ecosystems, Canberra, heinz.schandl@csiro.au

This presentation argues that a possible sustainability transition in developing Asia needs to complement the ongoing transition from an agrarian to an industrial socio-ecological regime. As is known from other world regions, an agrarian-industrial transition involves a major increase in material and energy flows corresponding to a 2-4 fold increase in the demand for raw materials and energy.

The presentation analyses population dynamics, economic growth and the extent to which developing Asian economies and communities are still based on agricultural activities. The analysis includes China, India and Indonesia as well as Thailand, the Philippines, Laos and Viet Nam. Structural change in economic activities and employment as well as a shift from rural-agrarian to an urban-industrial pattern are addressed.

The metabolic profile of these economies in transition will be compared to a typical industrial metabolic profile to discuss potential growth in materials and energy use in these countries. Although per capita values in resource use are comparably low, the pressure on locally available land and natural resources is already high in most of the analysed countries resulting in a difficult situation with regard to the availability of resources for future economic development.

Two scenarios will be explored: a low world energy price scenario, leading – in the case of further industrialization along traditional pathways – within one or two decades to an unprecedented environmental burden (in terms of water and air pollution, erosion and the exhaustion of land and water resources) in most of the Asian developing countries. A high world energy price scenario, on the other hand, will imply that the ongoing rapid economic growth grinds to a halt, and leads to extreme social and political tensions. In particular the urban – rural balance will be a very sensitive one, in both scenarios.

The only plausible response to this double threat seems to be systems innovation: These countries must depart from the traditional industrialization pathway of creating infrastructures in transport, housing, food supply, water supply and waste disposal. These systems are based on long-lasting infrastructure and require certain bulk resource flows. Decisions and investments in these areas will be critical for the future development of resource use and resource sustainability in developing Asia. Only if these services are organized in a new way a sustainability transition in these countries might be supported. To do so, countries in developing Asia need international technological and financial support – a creative effort that may well pay back in many places worldwide, re-inventing industrialization in a more sustainable mode.