

# Comment

**Wolfgang Sassin**

INTERNATIONAL INSTITUTE FOR APPLIED SYSTEMS  
ANALYSIS, LAXENBURG

By addressing the interface between the general economy and the energy activities that form a specific system in their own right, Professor Maillet's paper touches a crucial issue that is relevant throughout this conference, and, in fact, far beyond. Any comparison of alternative energy forms or technologies implies a previous choice of the appropriate criteria for comparison, whether costs, availability, pollution potential, etc. A particular choice reflects a particular viewpoint within the general economy. In most cases these viewpoints are implicit, unreflected and introduced via *ad hoc* preferences for certain criteria.

The open-endedness of the energy debate largely resides in the existence of partly conflicting or even mutually exclusive general viewpoints that can neither be clearly identified within the 'sub-system' energy nor be resolved by an energy decision for that matter. A solution considered acceptable from one economic viewpoint (for example, a generalised cost minimum for a national energy supply) feeds back an unacceptable signal for another economic viewpoint (for example, a limited import dependence from economically or politically unstable or unpredictable world regions). In addition, the interface between energy and the general economy is rather complex. This complexity arises out of many types of sub-structure, constituting the energy system and representing important and simultaneously existing interactions between energy and other sub-structures of the general economy. Energy is not just a commodity. It is also a complex set of technologies, of expert communities and of institutions cutting differently across various strata of the general economy, thereby creating the framework of problems.

A comparison of alternative energies, according to Professor Maillet, presently takes place at the meso-economic level. For that

matter there is also a comparison of rather complex sub-structures of resources, technologies and economic fixes, going along with their specific implementation and operation. It is here that the crucial level of interest and the level of influencing policy meet. Maillet distinguishes four areas of concern:

- (i) The discount rate used to integrate short-term and long-term problems;
- (ii) The issue of the balance of payments as a reflection of international interdependence;
- (iii) Dependence on energy imports from countries where decisions are taken within different frameworks; and
- (iv) Unemployment of a structural nature that might be associated with different energy options.

These areas of concern are at the interface between energy and the economy. They ask for a ranking procedure in the sense that different weights have to be assigned to each of these four areas. They depend on the particular national, or regional, situation. Even where the methodologies for assessing an energy alternative are identical, the quantitative ranking of alternatives can thus change from place to place and from time increment to time increment.

Maillet observes a widespread belief that the essential issue for policy making is energy prices, because changing prices have implications throughout the economy. Prices suggest the possibility of tracing side effects in different interfaces. The role of prices in harmonising different interfaces thus becomes important. However, the fact that different weights are put on different issues points to the necessity for a consensus on a policy response. As a consequence of conflicting viewpoints on general economic problems, even a consensus in the analysis of the energy problem thus may not be forthcoming, let alone a policy response that might cut deep.

Figure 2A.1 lists the main policy instruments (including the manipulation of prices) discussed by Maillet for the implementation of energy policies. According to Maillet, and fully in line with my own perception, these are seen to operate in a direct and an indirect feedback circle, as represented in Figure 2A.1. Because energy prices influence life-styles and thus have a further effect on the industrial structure in addition to that resulting from changes in energy demand and also on the domestic production of energy relative to imports, they feed back on the employment situation, the demand for capital