

Agriculture in the Information Society: Challenges of sustainable development

Jyrki Aakkula¹⁾, Pekka Jokinen²⁾, Leena Lankoski³⁾ and Marko Nokkala⁴⁾

¹⁾ MTT Agrifood Research Finland, Economic Research, Finland.

²⁾ University of Tampere, Department of Regional Studies and Environmental Policy, Finland.

³⁾ Soikio Environment & Economy Ltd., Finland.

⁴⁾ VTT Building and Transport, Finland.

Correspondence to: jyrki.aakkula@mtt.fi

The overall goal of the study was to identify possible impacts of the information society on ecologically, economically and socially sustainable development in Finnish agriculture. Furthermore, the central aim of the study was, with the help of expert interviews and a literature survey covering a broad range of agricultural information and telecommunication technology issues, to illustrate key factors and driving forces in the field of knowledge-intensive technology that will determine the degree of sustainability of the future development taking place in agricultural and rural contexts in Finland.

The empirical material of the study consists of 21 expert interviews. The interviewed experts were given 55 statements coping with issues related to information society, agriculture and sustainable development and their interactions. The experts were asked to give their responses in a five-point scale in terms of both probability and desirability. In addition, the experts were encouraged to "think aloud", i.e. to comment and explain their choices. The interviews were in the first phase analysed and interpreted through a conceptual model reflecting core agriculture-related embodiments of information society. In the second phase, the major factors, forces and phenomena relevant to the relationship between agriculture and information society were translated into an integrative approach emphasising ecological, economic and social dimensions of sustainable agricultural development.

The main result of the study was that the experts have a very positive attitude towards the information society and its development potential. In addition, the experts consider it very likely that most of the development potential due to knowledge-intensive technology will be realised in Finnish agriculture. In other words, according to the experts' views, the information society provides considerably more ecological, economical and social development opportunities than it creates potential risks or threats to sustainable development. Nevertheless, the study also clearly demonstrated that the relationship between agriculture and the information society is not yet well-covered and thus further research is required.

What comes to ecologically sustainable development, the knowledge-intensive technology offers the greatest potential in terms of eco-efficiency. It enables the replacement of physical production inputs by information and knowledge. This is the case especially when artificial fertilisers are in question. Economically sustainable development, in turn, depends on the ability of farmers to adopt new technical and managerial skills required in the application of knowledge-intensive technology in an economic environment, which coerces farmers to continually invest and expand in order to retain their competitiveness. As regards the social dimension of sustainable development, on one hand there is a remarkable potential to broaden the space for agricultural and rural development. On the other hand, the impacts seem to be uncertain and contingent, some do even contradict each other. Basically, the social issue is what kind of value structures and interests will dominate the information society thinking.