

THE IKARUS PROJECT

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Based on the results of the Study Commission of the German Bundestag on "Preventive Measures to Protect the Earth's Atmosphere" and a subsequent cabinet decision by the Federal Government in 1990 formulating the emission reduction goals, the Federal Ministry for Research and Technology (BMFT) commissioned a study from various institutions in Germany in autumn 1990. The subject of this study was as follows:

1. The development of tools for calculating climate gas reduction strategies, consisting of a technology-based computer aided model to perform the calculations and a data base for handling the data and other information required by the model.

2. The collection of the necessary data for the years 1989, 2005 and 2020 for storage in the data base and conversion into model data.

The tools are to be made available to all interested users and are the result of a consensus within the framework of different approaches to energy policy. The planned date of completion is end of 1993.

Within the framework of this project, the Programme Group Systems Analysis and Technology Evaluation (STE) was entrusted with the task of developing the model. From the STE's point of view, particular attention was to be paid to the model structure from a consensus process and to accessibility for external users.

The requirement of general accessibility meant that a PC version should be developed and also a not too complex model structure remaining comprehensible even for external users.

A new model system was therefore conceived as a single-period model comprising a technology-based overall energy economy model with a classical linear programming approach. In order to accommodate inexperienced users, a coding of the columns and rows was undertaken, which we designated the placeholder concept.

But simply, an energy technology structure is modelled here with empty "boxes" characterized by inputs and outputs to which "technologies" can be assigned from data sets. In replacing one technology by another the user is offered a simple consistent change of associated data. As a further aid, the user is given a series of tables with important macroeconomic skeleton parameters indicating the field in which data are changed without any essential feedback to basic macroeconomic assumptions.

Three possibilities for reduction of greenhouse gases exist:

1. fuel switch to fossil energy carriers with less carbon content
2. energy conservation
3. broad use of non-fossil energy carriers.

One option within the 3rd point is using solar techniques. Therefore special efforts were made in structuring the model for introducing solar options. So it is possible to show the effect of using solar (and other regenerative) concepts in competition to each other and to the conventional