

Chapter VI

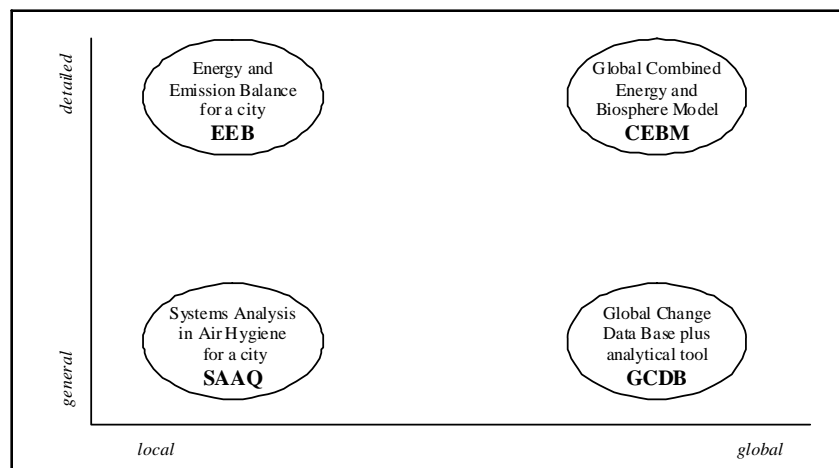
A Structured Basket of Models for Global Change

Gilbert Ahamer
Federal Environment Agency, Austria

Several conceptual and modelling frameworks are presented in such a level of detail that it is possible to discuss their usability as tools for the envisaged target groups in: “public administration” and “representatives of industry.”

The main four models are brought into a structure as a function of their level of detail versus coverage regarding subject matter and geography (Figure 1).

Figure 1: Basic structure of this contribution: four modelling frameworks



The objective of this chapter is to give an overview on contemporary research and development activities and results in the field of modelling frameworks supporting to cope with Climate Change, which are mainly energy or air emission models and assessment tools. Their implementation as an IT tool is described as well as typical results.

The different functions of Environmental Information Systems (EnvIS) are presented by these case studies:

- *EnvIS Model Global Change: The Combined Energy and Biosphere Model (CEBM)*
- *EnvIS Practically Support Climate Protection: The Energy & Emission Balance for Cities (EEB)*
- *EnvIS as Systems Analysis for Air Quality in a City: A Semi-Quantitative Modelling Framework (SAAQ)*
- *EnvIS Identify Impacts Driving Global Change: The Global Change Data Base (GCDB)*
- *EnvIS Harmonise Economic with Environmental data: (NAMEA)*
- *EnvIS Show the Status Quo: National Emission Reporting Systems (NERS)*
- *EnvIS Provide Planning Details: Energy Technology Databases (ETDB)*

It is stated that these models can fruitfully be combined with each other along the procedure of planning and implementing climate protection measures.

INTRODUCTION

General perspective of this contribution

This contribution presents four modelling frameworks that can be structured along their level of detail, their geographic coverage and their degree of quantification that are typical for each of these environmental information systems. All four describe a subset of the various aspects affecting global change:

- Emissions
- Energy
- Land Use and Biomass
- Economic and Social Parameters.

The specific objective of this chapter is to present, discuss and evaluate the usability of the model concepts and their present stage of IT implementation for the target of inter-subjective assessment of the driving forces, mechanisms and effects of global change for the needs of practical planning on a local, national and/or global level. For each presented model, portfolios are displayed that briefly describe their positions and abilities.

Target groups are public administrations and bodies representing economy and industry who are motivated to break down the concept of sustainability to practical action options while maintaining the larger scope, as is proposed by the traditions of technology assessment and systems thinking.

34 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/structured-basket-models-global-change/18530

Related Content

Organizational IT Sustainability Measures: The Strategic Green Ontology

M. H. Smeitink and M. Spruit (2013). *Green Technologies and Business Practices: An IT Approach* (pp. 36-57).

www.irma-international.org/chapter/organizational-sustainability-measures/68339

Data Mining Techniques in Agricultural and Environmental Sciences

Altannar Chinchuluun, Petros Xanthopoulos, Vera Tomaino and P.M. Pardalos (2010). *International Journal of Agricultural and Environmental Information Systems* (pp. 26-40).

www.irma-international.org/article/data-mining-techniques-agricultural-environmental/39026

Forecasting Rice Production in West Bengal State in India: Statistical vs. Computational Intelligence Techniques

Arindam Chaudhuri (2013). *International Journal of Agricultural and Environmental Information Systems* (pp. 68-91).

www.irma-international.org/article/forecasting-rice-production-in-west-bengal-state-in-india/102945

State of the Art and Gap Analysis of Precision Agriculture: A Case Study of Indian Farmers

Vaibhav Bhatnagar, Ramesh C. Poonia and Surendra Sunda (2019). *International Journal of Agricultural and Environmental Information Systems* (pp. 72-92).

www.irma-international.org/article/state-of-the-art-and-gap-analysis-of-precision-agriculture/228929

Solid Waste Management Practices in Pakistan

Maria Manzoor, Iram Gul, Irum Iqar and Muhammad Arshad (2020). *Sustainable Waste Management Challenges in Developing Countries* (pp. 248-269).

www.irma-international.org/chapter/solid-waste-management-practices-in-pakistan/240079