Overview of GLEAM
The Forum for Globally-Integrated Assessment Modeling (the Gleam Forum) is an initiative jointly undertaken by the United Nations University (UNU), Japan, and the National Institute of Public Health and the Environment (RIVM), the Netherlands. As the name suggests, its main purpose is to develop a periodic exchange platform for discussions and brainstorming on the issue of globally-integrated environmental assessment, notably model-supported assessment. Such a forum for modelers, policymakers and end-users does not exist at the moment.

The first meeting of the forum was held in Macau (13-14 December 2001) where a broad range of experts met and discussed the rationale for creating such a forum, its objectives and terms of reference. The group also identified critical issues to be addressed by this forum and ways to involve the broader community of various stakeholders in assessment modeling. The description of the forum provided in this booklet is based on the discussions and dialogue undertaken in Macau.

Objectives
The Gleam Forum is intended to catalyze collaborative work on assessment modeling to address some fundamental questions about sustainable development. This can be achieved by combining the knowledge and experiences from the North and South in a systematic way. Such a forum has to be research-driven and policy-oriented in its outlook. Specifically, the objectives of the forum are:

1. Establishing a worldwide network of experts focused on advancing the knowledge and on conducting policy-relevant assessments and applications.
2. Serving as a catalyst in development of globally integrated models by:
   - providing a forum for discussion; and
   - identifying existing gaps and missing linkages in existing modeling initiatives.
3. Promoting capacity development in the developing countries to effectively utilize available models for their own sustainable development.

The Sustainability Domains of the Forum

The Economic Domain
The basis of economic modeling lies in the hard data on inputs and outputs and how to connect them. Static or dynamic input-output models are the closest to these sets of basic data. These models seem to be well fitted to connect the economic to the environmental domain by means of expressing both financial and material flows through the economy.

The Ecological Domain
The past ten years have witnessed the rapid development of a new approach called ‘integrated environmental assessment modeling for describing the anthropogenic and natural impacts on the environment and the earth system. Most of the global environmental integrated assessment models (EIAMs) focus on climate change. Gradually other features are added to these models to cover the broader perspective of global change. The current state of development on EIAMs is still far from the target of complete integration of natural systems and processes.

The Social Domain
The geographical distribution of the population, and changes of this distribution, is interwoven with many dimensions of development. At the social level, a limited number of demography and human health modeling approaches are available, which include an integrated approach of both fertility and mortality processes in relation to socio-economic and environmental conditions. These types of models are able to reproduce the human development and poverty indices as proposed by UNDP and may support the UN population prognosis.

The Institutional Domain
Modeling social institutions is in its early stages of development. It is speculated that social sciences may not yield simple and powerful generalizations dealing with the roles of institutions in causing and confronting large-scale environmental changes. Several conceptual models have been developed linking global environmental change to violent conflict and failure of institutions. These models link the quantity and quality of natural resources, the access to these resources and population growth through environmental scarcity, migration and decreased economic activity to weakened states and related conflicts.
Integrating the Four Dimensions of Sustainability

The use of formal assessment methodologies is limited, due to the fact that our knowledge about the domains involved is often limited. The complexity of these domains may increase if human behavior gains importance. Another scientific problem is the choice of levels of aggregation in time and space in the assessment process. Two main aspects are important in the integration of the domains of sustainability: optimality and durability. The assessment system to be developed may therefore consist of three layers connected to each other in the following way:

- a basic layer of data from monitoring systems, exogenous inputs like scenario’s and pre-run results of detailed models,
- a second layer consisting of independent expert models for priority issues, to be run separately, fed by the layer of basic data,
- a third layer of linked meta-models in which the expert models are represented by simplified images (the meta-models).

In the short run, the emphasis will be put on:

- globalization, poverty and the environment
- vulnerability and conflict
- technology transfer and the efficient use of resources

Functionality of GLEAM

Stakeholder Meetings: These would provide a forum for discussing the key issues and identifying areas requiring further research and investigation. Such meetings could also provide an avenue for interaction between the modeling community and the various UN and international agencies which can be considered end-users of assessment modeling. These events can drastically catalyze new concepts for integrated modeling.

Multidisciplinary Workshops: Such meetings would help bridge the existing gaps between social scientists and assessment modelers. The objective will be to enrich the integrated assessment modeling in such a way that the “human element” of the society is well-represented in the process.

Client-Based Projects: The Forum would undertake localized projects, focused on a specific problem on national or regional scale, through the involvement of local/regional experts. Capacity development in the regions will be built in, as an integral part of these projects.

Peer Reviews: These reviews will assist towards comparison of various modeling approaches. They will also provide an avenue to the forum’s participants to receive critical feedback on key issues of sustainability.

Virtual Workshops & Training: These activities will focus on capacity development in the South, aimed at development of EIAM building expertise.

Website Development: This will enhance information dissemination and interaction between Forum members. It is also envisioned that meta-databases on existing activities can be included at the Forum site.

Newsletter: A newsletter will be circulated to a wider audience, including the Forum members, policy makers, research groups, and UN and international organizations. The newsletter will be circulated both electronically and through regular mail.

The Forum’s members (provisional list)

Technical Secretariat:
Ir. Fred Langeweg (RIVM) - Coordinator
Dr. Zafar Adeel (UNU)
Ir. Tom Kram (RIVM)

Members:
1. Prof. J. Alcamo, Univ. of Kassel, Germany
2. Dr. Roy Darwin, USDA/ERS, USA
3. Prof. H. Dowlatabadi, U. of British Columbia, Canada
4. Dr. Guenther Fischer, IIASA, Austria
5. Prof. Roland Fuchs, START, USA
6. Dr. E. Gutierrez-Espeleta, U. of Costa Rica
7. Dr. Carlo Jaeger, PIK, Germany
8. Dr. H. Kawashima, University of Tokyo, Japan
9. Dr. Rick Leemans, RIVM, The Netherlands
10. Mr. Clever Mafuta, SARDC, Zimbabwe
11. Ms. Meeta Mehra, TERI, India
12. Prof. Shunsuke Mori, Tokyo University of Science, Japan
13. Dr. Tsuneyuki Morita, NIES, Japan
14. Dr. Mohan Munasinghe, World Bank
15. Prof. N. Nakicenovic, IIASA, Austria
16. Dr. Thangavel Palanivel, UNDP, Nepal
17. Prof. Jan Rotmans, University of Maastricht, The Netherlands
18. Prof. Motoyuki Suzuki, UNU, Japan
19. Dr. Colene Vogel
20. Dr. Kirit Parikh
21. Dr. Kavi Kumar
22. Dr. Gilberto Parikh
23. Dr. Saleemul Haq
24. Dr. Tom Downing
25. Dr. Calestous Juma
26. Dr. Zhou Dadi
27. Dr. Ian Burton
28. Dr. Marc Levy / Nils Petter Gleditsch

Observers
1. Dr. Salvatore Arico, UNESCO
2. UNEP
3. FAO
4. CSD
5. UNDP
6. WHO
7. IGBP
8. IHP