Partnerships for Sustainability

The Alliance for Global Sustainability
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The Alliance for Global Sustainability

An International Partnership

Swiss Federal Institute of Technology (ETH Zurich)
Massachusetts Institute of Technology
University of Tokyo
Chalmers University of Technology

The Alliance for Global Sustainability

The Alliance for Global Sustainability (AGS) is an international partnership of four leading universities - Massachusetts Institute of Technology (Cambridge, Massachusetts, USA), Swiss Federal Institute of Technology (Zurich, Switzerland), The University of Tokyo (Tokyo, Japan) and Chalmers University of Technology (Göteborg, Sweden). Together they formed a cooperative venture that seeks solutions to some of today's most urgent and complex environmental problems.

The AGS was created in 1997 with support from the AVINA Foundation. Since then the AGS has worked with far-sighted leaders from global businesses and industries, governments and NGOs worldwide. The goal is to identify and develop effective pathways to sustainable development and to provide innovative and practical solutions to real and urgent environmental problems on the global level.

Today the AGS brings together hundreds of university scientists, engineers and social scientists as well as students through student communities to address the complex issues that lie at the intersection of environmental, economic and social goals, through:

- Improvement of scientific understanding of global environmental challenges
- Development of technology and policy tools to help societies reconcile ecological and economic concerns
- Education of a new generation of leaders committed to meet the challenges of sustainable development

Three-fold Mission of the AGS

- **Research**
  To create new knowledge through research that both transcends traditional disciplinary, institutional and geographical boundaries, and crosses the academic/industrial division.

- **Education**
  To educate a new generation of leaders for all sectors of society with the knowledge and skills required to address sustainability issues

- **Outreach**
  To take a step beyond normal academic dissemination of results to facilitate implementation

Allocation of Funds – AGS Projects

There are four types of research projects:

- **Seed Funding**
  Enables faculty members to initiate a search for collaborators at the partner schools to address issues "outside the envelope" of traditional funding sources.
- **Traditional AGS Projects**
  Addresses issues in the AGS research paradigm of a multi-disciplinary, multi-geographical approach.
- **"Research Partnerships for Sustainable Development"**
  Foster synergy across existing AGS projects and gain stakeholder input at the earliest stage of research design.
  In 2003, AGS researchers teamed up with representatives from industry, government and civil society in identifying ways to:
  - Introduce new materials for sustainable development
  - Assess the social and political barriers to CO_2 sequestration
  - Increase corporate competitiveness through advancing regulation and policies that reward aggressive pursuit of products and processes contributing to sustainable development.
  - Work on the infrastructure of megacities.
- **Flagship Programs** through large-scale projects initiated by the leadership of the AGS. The first flagship on Energy is planned for launch in 2005.

Since 1997, the AGS has supported over 75 research projects to address 35 sustainability related issues. Through the active involvement of industry and government partners, academic research is attuned to creating sustainability through action as well as through knowledge development.

Outreach and Impact

The AGS focuses on research that improves decision making in science and technology intensive issues. The AGS is committed to providing research results of relevance for decision makers and works in partnership with universities and governments on the international level.

The following are examples of research results taking place in 30 countries worldwide including developing countries such as Bangladesh, Botswana, and Tunisia, and countries undergoing rapid economic development such as India, Mexico and China.

Urban Systems

- Methodologies for planning, developing and maintaining sustainable buildings in areas of rapid growth and development such as China
- A computer platform to facilitate connection of technology models that can be distributed over the internet (DOME)
- Systematic measurement of atmospheric soot particles in a megacity, Mexico City

Cleaner Technologies

- Education and training programs to protect coke-making workers and their families in intensive industrial sectors in China
- Comprehensive assessment of new fuel and vehicle technologies for passenger cars
- Alternative technologies for greater boiler efficiency and cleaner coal combustion
- Platinum Group Elements from Automobilie Emissions to Global Distribution

Climate Change

- Models for integrated assessment of sources of air pollution in mega cities such as Mexico City and Tokyo
- Robust models to predict sea-level changes over the next century
- Means to accurately monitor and measure atmospheric trace compounds

Energy

- Models for robust decision-making for sustainable energy in the electric sector
- Analysis of polluting emissions from small and medium sized industries in China
- Methodology for true cost accounting for electricity in emerging markets, taking energy technologies and their environmental impacts into account
- Methodology for decision-making in the electric sector multi-stakeholder model

Water and Agriculture

- Analysis and development of tools for improved watershed management
- A general hydrologic-economic model of agriculture production and environment quality to examine soil and water management policies, especially in arid and semi-arid regions.
- Analysis of arsenic polluted waters in Bangladesh and development of guidelines for sustainable water use and treatment; testing and recommendations for low-cost filtration technologies; a simple, zero cost arsenic removal method (SORAS)

Mobility

- Models for forecasting worldwide demand and implications of transportation trends for controlling greenhouse gases
- A comparative analysis of technology options for sustainable transportation
- Analysis of human travel behavior that reveals comparable travel behavior across very different settings, such as income, degree of urbanization, etc.

Policy/Institutions/Communications

- Implications of cross national variation in environmental regulation
- Analysis of techniques for promoting technological innovation for sustainable development; evolution of the Public Entrepreneurship Networks (PEN) model of green technology innovation

AGS research has been presented in several hundred articles published in peer-reviewed journals and public magazines. The research also appears in more than a dozen of books aimed at both students and decision makers. The AGS Book Series, “Science and Technology: Tools for Sustainable Development” (Kluwer Academic Publishers) has published four volumes. Nearly 100 Masters and PhD theses have also been completed with AGS support, and several hundred AGS-related presentations have been made at international conferences.

Education

Research results generated through the AGS projects have created an international community of scholars committed to supporting world-wide goals for sustainable development through the following activities:

- Commitment from the university presidents
- Fellowship programs in sustainability
- Curriculum development based on AGS output

In addition to supporting sustainability education at the four partner universities, AGS has sponsored the Youth Encounter on Sustainability (YES), a two week summer institute for upper graduate students from all over the world, combining lectures and workshops on different aspects of sustainable development with field experience. Plan for a global expansion of YES, under the auspices of ETH-Zurich are now well underway.

Modelled on the YES, the University of Tokyo runs a course on global sustainability in the Asian region, while Chalmers will start a web-based program with MIT and the Monterrey Tech, Mexico, in 2005.

AGS Funding

Funds and expertise have come from individuals, foundations, governments, major corporations and the universities themselves. Members of the International Advisory Board provide significant funds annually for AGS research, education and outreach activities. The direct investment of the AGS funds into scientific research has leveraged other significant resources from industry, public organizations, and local and international funding agencies.

In addition, investigators of AGS research projects leverage AGS funds to raise additional support for their work. AGS support brings together a community of academics, industry leaders, government, decision makers and environmentalists focused on sustainable development into global research partnerships.

Governance

A Governing Board of the four university presidents and the International Advisory Board Chairman (IAB) sets the
strategy for AGS.

They are:

- Olaf Kübler, President of Swiss Federal Institute of Technology
- Charles Vest, President of Massachusetts Institute of Technology
- Takeshi Sasaki, President of The University of Tokyo
- Jan-Eric Sundgren, President of Chalmers University of Technology
- Francis Waldvogel, Former President of ETH Board, Switzerland and IAB Chairman

Each member university has one or more faculty members coordinating AGS collaborative research, education and outreach activities. An international Advisory Board (IAB) comprised of business, foundation and public service leaders from around the world, reviews AGS activities and provides advice.

International Advisory Board (IAB)

Dr Francis Waldvogel, President, Swiss Federal Institutes of Technology (ETH) Board (Chairman)
Dr Thomas Connelly, Chief Science and Technology Officer, DuPont de Nemours & Co, Ltd
The Hon. President José-Maria Figueres Olsen, Managing Director, World Economic Forum
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