



# *Education and Outreach focus of AGS annual meeting*

The January 2000 annual meeting of the Alliance for Global Sustainability (AGS), held January 19-22, 2000, on the MIT campus in Cambridge, Massachusetts, marked a turning point for the AGS as the first tranche of research projects are ready for implementation. With four years' experience in building a comprehensive multi-disciplinary research portfolio to address complex sustainability issues, the AGS now will move vigorously to add education and outreach components to its program. The more than 380 participants included representatives from industry, government, academia, non-governmental organizations and the field of communications in addition to the three partner universities, MIT, the Swiss Federal Institutes of Technology (ETH), and the University of Tokyo (UT).

MIT President Charles M. Vest opened the meeting. He was followed by AGS Board Chairman Stephan Schmidheiny, who summed up the accomplishments of the past few years: (1) inclusion of sustainable development in the curricula at the three AGS partner universities; (2) fostering multidisciplinary conversation and collaboration; and (3) making substantial progress on identifying the barriers and potential solutions to sustainable development. Said Schmidheiny, "We are said to live in a tri-polar world: government, civil society and business. I enjoy thinking of the Alliance as a strong, hard, sharp tool, forged in three great universities, being inserted like a lever into the fault-lines of these sectors and changing their thinking and acting for the better."

Professor David H. Marks, AGS Coordinator and Director of MIT's Center for Environmental Initiatives, noted, "While academics are often uncomfortable with the notion of outreach and communication, we also recognize our responsibility to move our knowledge into action." At this meeting, he said, "There was tremendous spirit of good will between our faculty, affiliates, students and the many representatives of change agents in governments, foundations, media, and NGOs," he said. The AGS was established in 1994 as a new strategic approach to the problems of global sustainability by three of the world's leading research institutions, MIT, ETH and UT. These institutions, which combine world class strengths in the sciences, technology, and the social sciences, created this unique collaboration and new platform for addressing environmental problems.

*continued on page 2*

INITIATIVES IN ENVIRONMENT and SUSTAINABILITY

*a quarterly publication of MIT's Center for Environmental Initiatives*

**Special Issue:**

Report on Alliance for Global Sustainability Annual Meeting, p. 1 ff

*Die Weltwoche* interviews AGS Board Chairman Stephan Schmidheiny, p. 4

TERI silver jubilee and conference, New Delhi, p. 10



## CALENDAR

april **19**

Mangalam Srinivasam, Harvard Kennedy School of Government, Advisor to the Harvard University Committee on Environment, will speak at the CEI Brown Bag Seminar Series. Title to be determined. Wednesday, April 19, 12:00 noon - 1:30 pm, MIT Energy Laboratory, Building E40-496. Contact: Karen Gibson, 617-258-6368 (kgibson@mit.edu)

april **21**

"Carbon Dioxide technology platform: From self-assembly in compressible media to spin-coating from liquid CO<sub>2</sub>" by Prof. Joseph DeSimone (Univ. of No. Carolina), Friday, April 21, MIT, Norris Room, Building 18-490 at 1 pm. Contact: Debra Fair, 617-252-1486 (debbief@mit.edu).

may **5**

"Pollution prevention using molecular self-assembly" by Prof. John Warner (Univ. of Massachusetts), Friday, May 5, MIT, Norris Room, Building 18-490 at 1 pm. Contact: Debra Fair, 617-252-1486 (debbief@mit.edu).

may **10**

Sergio Trindade, President of SE2T International Ltd., CEI Brown Bag Seminar Series. Title to be determined. Wednesday, May 10, 12:00 noon - 1:30pm, MIT Energy Laboratory, Building E40-496. Contact: Karen Gibson 617-258-6368 (kgibson@mit.edu)

All events are held at MIT unless otherwise noted. For the most current listings, see the CEI website: <http://curricula.mit.edu/CEI>

Please send MIT sponsored event listings to Dr. Richard St. Clair, [stclair@mit.edu](mailto:stclair@mit.edu), phone 617-253-9871.

*continued from cover*

The first panel, "Leveraging Change", set the theme of the meeting and reflected the AGS partners' belief that the institutions with the power to effect change—educators, government, media, NGOs and foundations—must be integrated into the effort to address global sustainability. Panelists included Jack Gibbons (former Presidential Science Advisor and former Director of the US Office of Science and Technology Policy), John Fialka (*The Wall Street Journal*), Anthony Cortese (Second Nature), Philip Shabecoff (former *New York Times* Correspondent and author of *Earth Rising: American Environmentalism in the 21st Century*), Martin Kaplan (Trustee of the Kann Rasmussen Foundation), and Kasuke Takahashi (Japan Society for the Promotion of Science).

"We need to have a long-term vision," emphasized MIT Institute Professor and Nobel Laureate Mario Molina, whose research tackling Mexico City's daunting air pollution problem includes close collaboration between the scientific community and government organizations. "We need excellence in science, while at the same time we must be aware of the limits of science."

The panel on the challenges and opportunities for Developing Countries with respect to sustainability was one of the conference high points. The distinguished panelists made a strong case that the AGS must broaden its focus even further to include more Third World colleagues and decision-makers in its next phase. Participating were Qingshi Zhu, President of China's University of Science and Technology, José Goldemberg, Professor at the Universidade de São Paulo and AGS International Advisory Board member, Dr. Leena Srivastava, Dean of Policy and Regulatory Studies



*"The TERI researcher is expected to be a research entrepreneur, do teamwork, have multidisciplinary, and be a marketer." —Dr. Leena Srivastava, Director of the Tata Energy Research Institute (TERI), New Delhi*

at India's TERI Institute, and Dr. Atiq Rahman, Director of the Center for Advanced Studies in Bangladesh. Dr. Rhaman noted that his country is working on a comprehensive national plan for development and sustainability. MIT Professor Lawrence Susskind suggested an extensive program of collaborative documentation, theory building, teaching and training, and action partnerships which respected what he perceived as the developing countries' anxiety over loss of intellectual capital. The panel was moderated by MIT Institute Professor John Deutch.



*A highlight of the meeting was the poster session in which AGS researchers and students illustrated their projects and discussed their research and findings with interested participants.*

Workshops on communications were facilitated by leading professionals from media, education, and government. Among these were John Fialka, Phil Shabecoff, Brian Day (the Academy for Educational Development), Jack Hoagland (Ecology Communications), Donald Rheem (ICF Consulting), Chris Chopyak Minor and Sarah Stokes (the Keystone Foundation), Ellen Kabat Lensch (the Advanced Technology Environmental Education Center), Ray Garant (the American Chemical Society), and Jake Reynolds (the Prince of Wales Business and the Environment Programme, Cambridge University).

Throughout the conference, principal investigators from the three partner universities stressed the need for implementation. Professor Kenneth Oye, Director of MIT's Center for International Studies, shared the progress his team has made in describing low-cost strategies for achieving cleaner and more efficient use of coal in China. Oye described the need now to devise ways to finance the transition. In related work, Professor Karen Polenske of MIT's Department of Urban Studies and Planning noted that training Chinese to implement the results of her team's research on coke-making in Shanxi will be critical to the project's success.

The Tokyo Half Project, involving researchers at the three AGS universities, is using the Distributed Object-based Modeling Environment (DOME) infrastructure in order to develop system models to investigate the most effective mix of technical and social innovations to reduce by 50% the greenhouse gas emissions due to activities and consumption in the city of Tokyo by the

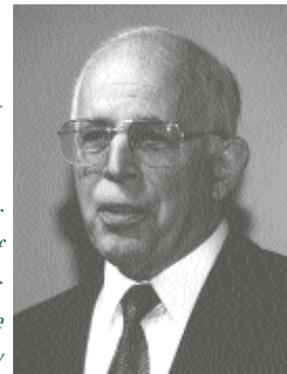
year 2020. (For a detailed description of THP and DOME, please refer to the two articles in *Initiatives in Environment and Sustainability*, June 1999, Vol. 1, no. 4.) The THP outline was presented by Professor Keisuke Hanaki (UT). A computer demonstration by Professor David Wallace (MIT) and Dr. Steven Kraines (UT) and poster presentations by the THP research group followed.

The strategies by which the AGS can meet the new agenda of translating knowledge into action may include compilations of AGS case studies, an AGS video series, a web-based clearing house for AGS publications and briefs for media/policy people, software packages for educational uses, AGS fellowships for graduate students, teacher training programs, a summer sustainability institute for undergraduates, curriculum development workshops for incorporating sustainability into higher education curricula, and implementing a new concept coined at the meeting, "in-reach" — educating and informing about AGS principles, goals and activities within the organization.

Following the AGS meeting, the Board added 1.24 million USD in new money for the years 2000 and 2001 to help projects move more aggressively toward implementation of research findings. Projects on water availability, training for the coke making industry workers, train-

*"It is not enough simply to do good research—we have an inherent responsibility to translate research results in consideration of society as a whole."*

*—Jack Gibbons, Senior Fellow, National Academy of Engineering and former Director, US Office of Science and Technology Policy*



ing in decision making, sustainable housing, alternative energy strategies, and environmental education will benefit. Additionally, projects on the verge of practical implementation—including breakthroughs in environmental technology, future cities, energy consumption indicators, small cereal fields and sustainable water—will receive funds. Projects on education and outreach received seed funding.

The next annual meeting of the AGS will be held at the Swiss Federal Institutes of Technology at Lausanne (EPFL) January 14-17, 2001. 🌐

# It no longer works without ecoefficiency

*The entrepreneur Stephan Schmidheiny, on Sustainability and the Needed Globalization of Universities, interviewed by Katherin Meier Rust of the Swiss newspaper, Die Weltwoche*

*Die Weltwoche:* Sustainability remains a bulky term. How do you define it personally?

Stephan Schmidheiny: My favorite definition reads as follows: Sustainability is the science of the obvious. For it should really be self-evident that we do not sacrifice that from which we live, we do not slaughter the hen that lays our eggs. What is essential is that the sustainability debate has been able to remove itself from the one-sided green touch that was still a part of [that debate] in Rio. And that the social dimension is worked out more clearly these days. As far as that goes, there is another definition I really like: Sustainability is the chance to improve the living conditions of all humans. This includes all dimensions of the term simultaneously: improvement of living conditions, equal opportunities for all, and of course the preservation of nature as an obvious precondition.

*Weltwoche:* Five years ago, you were one of the founding fathers of the Alliance for Global Sustainability, AGS for short. What did you hope to come out of this initiative?

SS: At that point there were three goals: The first was that three leading technological universities should identify themselves clearly with the project of sustainability. At that time this was definitely not the case. At the 1992 environmental conference in Rio, the governments were present, the industries, the environmental organisations—conspicuous in its absence was the university, research. This was also my complaint during my first conversation with the universities: You, the ones that actually get paid to think ahead, are the least present in this area. The second goal was that the various disciplines should work together in the area of sustainability instead of each digging deeper into always smaller special fields. And the third goal was to start an international collaboration. The challenges are fundamentally different in Japan, the United States, and Switzerland every time. A cooperation over these cultural boundaries was very important to me. Consequently I added a condition to the money I invested in this sustainability research—namely, that at least two and even better

three disciplines and (at least two and even better three) universities be involved in each project.

*Weltwoche:* And did it work?

SS: I believe so. It is much too early to speak of concrete research results in many areas. However, my three goals have already been achieved: The three universities identify with the topic; the interdisciplinary and intercultural collaboration exists. The last area actually shows quantum leaps: The people have learned to communicate with each other, work together, and trust each other.

*Weltwoche:* Do you want the globalisation of the university?

SS: Absolutely. We definitely need it. The large environmental problems are also global after all: the atmosphere, climate, the oceans. This is why we clearly also need universities from the southern hemisphere for the planned expansion of the Alliance.

*“The basic idea of the AGS is to employ a broad approach to environmental problems and work on them interculturality.”*  
—Stephan Schmidheiny,  
Chairman of AGS  
International Advisory  
Board and Chairman of  
ANOVA



*Weltwoche:* Research in the AGS is not only financed by industry, but also sometimes entails close cooperation with industry. In the areas of medicine and gene technology, such close teamwork destroyed a lot of the trust in science.

SS: I feel that the environment is less suspect because we are always dealing with systematic solutions. The basic idea of the AGS is to employ a broad approach to environmental problems and work on them interculturality. How a company can misuse this for its own advantage is not evident.

*Weltwoche:* But an enormous financial commitment like the ABB made in the “China Energy Technology Project” is surely not totally unselfish?

SS: No, but it shouldn't have to be. If the ABB

makes a good profit out of helping the Chinese use their energy more efficiently, burn their coal more cleanly—then this is a win-win situation for China as well as the ABB and the world. The ABB can by no means monopolize the market; they at best can start with better conditions.

*Weltwoche:* For more than ten years you have been involved worldwide in sustainable development. Has the initial enthusiasm not decreased?

SS: The topic has definitely lost its urgency in the political debate of the wealthy nations. This is nothing more than a sign that things have improved immensely. The air quality in most industrial countries is considerably better than ten or twenty years ago, the waters are clean, waste management has improved. A lot has been done and a lot of money has been spent. Of course this only refers to one fifth of mankind. The remaining four-fifths in the poorer part of the world are increasingly confronted with the conflicting aspects of development. Air and water pollution, waste—these are topics that concern billions of people daily. As far as that goes, naturally a rift originates here, and this rift will get larger. For me, personally, the environment is also a more urgent topic in the Third World than here, which is why I have moved the emphasis of my work into developing countries.

*Weltwoche:* Where do you see the successes in sustainability globally?

SS: Since I started following this subject, much has happened in the area of industry. When I compare the level of consciousness and concrete action in industry from then, ten years ago, with what I see in thousands of companies today—then this is a very meaningful improvement. There are only a few large companies that try to get away with doing nothing in the area of environmental impact today.

*Weltwoche:* Will there be a Rio II and, if yes, will Stephan Schmidheiny be there?

SS: The decision on if there will be a large summit meeting “Rio plus 10” will be made in two months. If yes, I will be present. Perhaps not in the exactly same role as last time.

Translation of Interview with Stephan Schmidheiny, “Ohne Ökoeffizienz geht es nicht mehr” (Kathrin Meier-Rust, *Die Weltwoche* Nr. 6, 10. Februar 2000). Translation by Ms. Karin Suter, ETH office of AGS. 

## *AGS Taskforce on Environmental Education project activities*

Report by Professor Jeffrey Steinfeld, MIT

As stated in the brochure prepared for last year’s General Meeting of the AGS in Tokyo (January, 1999), “In the future the graduates of [the AGS partner] universities will also be in leadership positions in governments and companies all over the world, and they will be engaged in the development of economic and environmental policies. It is of the utmost importance that we provide these students with the kind of education that will engender an international perspective and a heightened awareness of environmental problems.”

To address these issues, the Taskforce on Environmental Education (TEE) was established at the Tokyo AGS Meeting. TEE includes faculty and staff engaged in these efforts at the three partner institutions: MIT, the University of Tokyo, and the Swiss Federal Institutes of Technology (ETH and EPFL). TEE met several times during the AGS 2000 meeting in Cambridge, Mass. (January 18-23). Participants presented programs and approaches from their own universities along with ideas for future initiatives. TEE developed several action proposals which were placed before the AGS Advisory Board. These proposals have now been approved, and planning is now well under way.

Several activities had already been undertaken in 1999 to set the stage for TEE’s larger initiatives. In Fall 1999, Professor Jeffrey Steinfeld led a Freshman Advising Seminar on “Reducing MIT’s Energy and Environmental Impact.” By participating in this seminar, students gained awareness of the personal choices they can make, which is a key to developing behavioral changes in the steps toward sustainability. This seminar was designed to interface with the MIT campus environmental initiative announced by President Charles Vest at the AGS 2000 meeting. Seminar participants learned about MIT’s energy generation and distribution systems, toured the facilities with members of the Facilities Staff, and examined opportunities for energy use reduction in a specific building. Based on their experiences, the seminar students prepared a poster presentation which was displayed during the AGS 2000 meeting.

During MIT’s January 2000 Independent Activities Period (IAP), MIT’s Program on Environmental Education and Research (PEER) and the student environmental group SAVE sponsored a series on “Current Topics in the Environment: Perspectives from Academics and

*continued on page 6*

continued from page 5

Practitioners." MIT faculty and representatives of local environmental agencies, advocacy groups, and industry presented coordinated seminars on the topics of Environmental Conflict Resolution, Corporate Environmental Practice, Clean Vehicle Technology, and Campus Environmental Compliance. The seminars were well-attended and addressed many of the issues brought up during the AGS meeting itself.

*"We are, as a society, carrying out a complex experiment—whether human society is capable of having a sustainable relationship with our environment."*

*—Prof. Jeffrey Steinfeld, MIT Department of Chemistry and Co-Director of CEI's Program for Environmental Education and Research (PEER)*



Just prior to the AGS 2000 meeting, Dr. Joanne Kauffman led a 2-unit for-credit IAP subject on "Agenda for Sustainability: Translating Knowledge into Action and Learning to Lead." This short course explored the concept of sustainable development and the contribution of academic institutions to finding solutions. Knowledge gaps, barriers, and pathways to solutions were explored in the areas of energy, mobility, water and food, and cleaner technologies.

TEE agreed to pursue several initiatives during the coming year. First, MIT and the University of Tokyo have developed environmental attitude survey tools designed to assess students' attitudes regarding environmental issues. The survey will be used to determine what students think about environmental issues, and the role of their own universities with respect to their education about these issues.

Second, a Summer Institute, to be known as the "Youth Environmental Summit" ("Y.E.S."), will be established. This would start as a pilot-test program in Summer of 2000 in Braunwald, Switzerland, organized by ETH in collaboration with AGS partners at MIT and University of Tokyo and other Swiss institutions. The Institute would focus on undergraduates 18 - 21 years old who have demonstrated an interest in and commitment to sustainability. Invitations will be extended to students from developing countries in Africa, Asia, and Latin America. Eventually, Y.E.S. Summer Institutes could be established in several locations around the world.

Third, Dr. Matthew Gardner, PEER's Education Coordinator at MIT, will be working with a Master's student from the Technology and Policy Program at MIT to develop case studies based upon ongoing AGS research projects. The case studies will be designed such that they could be utilized in a variety of different academic disciplines at a variety of different levels, and they will be developed in parallel with, and to complement, the AGS book project currently under development.

Building on the momentum generated by the AGS 2000 meeting in Cambridge and taking advantage of the faculty development experience at ETH-Zürich, a series of workshops and learning opportunities will be developed for faculty at the participating institutions. These workshops will focus on the development of materials and methods to raise the profile of environmental and sustainability issues in the curriculum across all of the academic disciplines at each of the AGS partner institutions. 

---

## *AGS annual meeting, working groups on* **Communicating Complexity: What we learned**

AGS working groups at the annual meeting explored communications channels between the academic community and decision makers. Issues were addressed in a multi-geographical context. MIT graduate students, including members of MIT's Martin Family Society of Fellows for Sustainability, served as rapporteurs for each of the groups, and the following summary is based on their reports. Contributing to the reports were Kristin Jellison, Bilal Zuberi, Poonum Agrawal, Michael Garvin, and Frederique Chevrot.

### **Interacting with the public: working with the media**

This dynamic session began with a question posed by Donald Rheem, Senior Vice-President of IFC Consulting: Why should scientists care about outreach—what is the incentive for scientists to make research findings public? Participants responded from a number of standpoints, saying that outreach is often critical for obtaining taxpayer support, procuring funding, enabling informed decision-making, educating the public, eliciting behavioral modifica-

tions, inspiring action, inviting public participation, and encouraging public consensus. Communication also allows the researcher to reap useful feedback from the public and other scientists that could lead to work in new directions. Rheem suggested that the best way for scientists to get media attention is to combine the research agenda with reporters' demands for a good story.

John Fialka, reporter for *The Wall Street Journal*, continued the session describing a highly complex case study of the Snake and Columbia Rivers in the northwest United States. Twelve hydrodams span the course of these rivers, supplying clean power for much of the northwest and maintaining river levels that enable farmers to barge grain through a lock system. At the same time, the Snake River is spawning ground for endangered species of salmon. Fialka challenged AGS members to think about how they would sort through and convey the Columbia River case study to the public, emphasizing the role television will inevitably play in disseminating the information to the majority of the public.

Fialka pointed out that scientists who are able to see opposing sides of an issue, especially in complicated cases like that of Columbia River, gain credibility with reporters. Moreover, groups of scientists who work together and emerge with an interdisciplinary view often have the most interesting stories to tell. Some AGS members felt that the door to reporters is not always open, citing cases in which scientists have written to journalists without receiving responses. Journalists are underpaid and undereducated: they often do not have the time or the expertise to sift through scientific information to uncover the truth. One audience member, a former science writer, advised organizing all of one's information and facts into an easily comprehensible packet that journalists can use to prepare a captivating story.

#### **Educating future leaders: curriculum development**

Incorporating sustainability into academic curricula is a challenging endeavor. This process requires a fundamental shift in paradigms and the adoption of a long-term outlook. Given the traditional approaches to research and education in engineering and science, bringing the changes necessary to include sustainability in curriculum and research agendas is a daunting task, particularly since the new challenge facing the community expands this task from simply communicating information to one of changing behavior. Addressing this task now, however, is quite timely. In the next 10 years, the United States will turn over 2 million teachers. Such an opportunity to influence a new generation of educators should not be wasted.

In this working group, Ellen Kabat Lensch, Director of the Advanced Technology Environmental Education Center (ATEEC), elaborated on her efforts to create a national network of community colleges and high schools that are supported by public and private partnerships to prepare and maintain an environmental technology workforce.



*Ellen Kabat Lensch, Director of the Advanced Technology Environmental Education Center (ATEEC)*

Funded by the National Science Foundation, ATEEC provides technical curriculum and instructional materials to support environmental technology education, professional development opportunities for faculty of community colleges and high schools, and support services for program improvement for advanced environmental technology education. Recently, ATEEC and MIT have partnered to link ongoing research efforts with ATEEC's initiatives to foster a better relationship between the research community and those practicing in the field.

Brian Day, Director of the GreenCOM Project, followed Lensch's comments by describing the project he is working on at the Academy for Educational Development. He said curriculum is not simply confined to our formal education but rather is a lifelong enterprise that incorporates both formal and informal processes. Curricula cannot simply look to communicate information but rather they must motivate changes in behavior.

#### **Working with decision- and policy-makers**

Three experts on policymaking and environmental issues, Ray Garant of the American Chemical Society (ACS), Jake Reynolds of the University of Cambridge, and Jack Hoagland of Jnet/Ecology Communication offered their views.

Ray Garant presented some results of an ACS study in Washington focusing on decision making in climate change. The study found that, while global warming is on the political agenda, the US Congress is unlikely to act on global warming issues without the galvanization of public opinion in the US and a redefinition of those issues by Congress beyond the Kyoto Protocol. But AGS scientists

*continued on page 10, column 1*

# AGS: The next step

The recent Alliance for Global Sustainability meeting in Cambridge, “Agenda for Sustainability, Translating Knowledge into Action and Learning to Lead” resulted in a lofty set of next-step goals for the AGS. These goals include the development of proactive initiatives to impact not only the academic discussions, but also to more directly impact the actions that are being taken to protect the environment.

AGS research teams have already started to develop programs that accomplish these goals. Professor Karen Polenske and Professor Hans Siegmann and the team investigating solutions to pollution from China’s intense coke-making industry work directly with decision makers to provide knowledge, improve understanding, and build the capacity to make sound decisions about fundamental industrial processes that directly impact environmental and human health quality in China. Nazli Choucri and her team have developed the Global System for Sustainable Development. This technology consists of an internet based system (see GSSD at <http://gssd.mit.edu>) which disseminates knowledge quickly, efficiently and in a coherent and organized fashion directly to various stakeholders, policy makers and corporate interests. The China Coal project is launching an education and training program to improve efficiency and reduce pollution from China’s small- and medium-sized coal-fired boilers. There are more than 250,000 of these in China today.

There are many other efforts already at work within the AGS. The AGS must learn how to improve upon these efforts at implementation while ensuring that resources needed to maintain the intellectual integrity and rigor of AGS research are not diluted. How can the Alliance accomplish these goals more effectively? How can the knowledge of environmental issues be efficiently moved to where it can be used effectively, quickly and more easily by people outside of traditional academic circles? Who are the customers of the knowledge? What information do they need, and in what form is it most useful? And how can the AGS provide this knowledge in a way that is sensitive to social and cultural considerations, and also provides substantive consideration to equity issues and moral considerations? How can the Alliance for Global Sustainability learn to lead more effectively?

These questions were just some of those that were considered in the various working groups that met several times during the AGS meeting in Cambridge. These

groups—focused on Climate Change, Energy, Mobility, and Food and Water—all spent considerable time discussing how specifically their own project teams could start to effectively move their research results towards implementation. These working groups were facilitated by both AGS researchers, as well as outside experts in the areas of communications, curriculum development, media outreach, and executive education.

AGS researchers, graduate students and undergraduates participated vigorously in the lively debates in each of the working group sessions. Ideas were exchanged regarding ways in which the AGS can have a greater impact beyond the ivory towers of academia. Legitimate questions were raised regarding the role that university-based research programs should have in external debates and arenas. Yet there seemed to be broad agreement that the Alliance for Global Sustainability has the information, and thus the potential, to significantly impact the discourse about global environmental and sustainability issues. As evidenced by the broad enthusiasm shown in the working group sessions and the AGS meeting as a whole, there is great support for the AGS taking a larger role in the outreach and dissemination of its research results (*see following article*). With this internal support, the AGS is poised to increase the knowledge base on environmental issues and directly impact the policies, practices, and attitudes of policy makers, industrial leaders, educators, and the general public throughout the world.

Dr. Matthew Gardner  
Education Coordinator  
Program for Environmental  
Education and Research (PEER)

---

## *From Knowledge to Action* *AGS Focus Groups*

Working groups in four AGS focus areas—climate change, energy, mobility, and water and food—were held during the annual meeting to address the question, How do we move from knowledge to action? The workshops examined the role of the academy in communicating knowledge on complex environmental problems in order to improve understanding among decision-makers and opinion leaders, students, and the public. Here are a few of the ideas to surface in these workshops:

### **Focus: Global climate change**

Professor William Moomaw from Tufts University and member of the Intergovernmental Panel on Climate Change facilitated the group on Climate Change. Leading the dialogue were Professors Peter Stone and Jeffrey Steinfeld from MIT and John Fialka, *The Wall Street Journal*.

Educating the public on the topic of global climate change is essential yet challenging without proficiency in general science. Moreover, the uncertainty associated with estimates of climate change can be confusing to the public and perceived as a weakness in the supporting evidence. The problem of conflicting news is worsened by the involvement of various interest groups, each with a specific agenda.

It was agreed that action must be taken to increase public awareness on climate. Education campaigns should target audiences of all ages, at all levels. Using intermediaries—groups whose role is to disseminate information—is probably the most effective way to transmit the message from the scientific community to the general public. One participant compared the climate change challenge to a journey of mythic proportions, one that will require patience, imagination and skill to effectively communicate. The public has to be made aware that in spite of the overall uncertainty of the predictions of climate change, the risks of not altering current behavior are too great to ignore.

#### Focus: Water

Professor Wolfgang Kinzelbach from the Swiss Federal Institutes of Technology at Zürich (ETH-Z), along with Philip Shabecoff, founding publisher of Greenwire and former *New York Times* correspondent, led the working group on Water with Susan Bridge, an experienced communications consultant, serving as facilitator.

Professor Kinzelbach pointed out that much research has already been done on water use in agriculture. From 1950 to 1999, he said, the world population grew 140% and food production grew 141%. Artificial irrigation was responsible for enabling a large amount of this increase in productivity. There will be additional pressure to produce food as the population increases over the next 50 years. To meet this ever-increasing demand, 60% more water will be needed for irrigation by the year 2050. Fresh water will be the first resource to limit human activity, and the first shortages seen will be in agriculture, not human thirst.

It was noted that many unsustainable practices are in use today all over the world. Hence, the need for education and for means to accurately assess water availability conditions.

A number of impediments were identified that thwart progress towards potential solutions to the problem of water and food in the 21st century. Not the least of these were political differences. The panel cited a dozen

current international water conflicts between downstream and upstream countries. Because of political positioning, these problems at present remain largely intractable. Further, there are insufficient implementation plans. And while solutions are sometimes known, often there are no acceptable organizations or forums capable of implementing them.

#### Focus: Mobility

The working group on Mobility began with a presentation by Dr. Arnold Howitt of Harvard University's Kennedy School of Government. In conjunction with the International Motor Vehicle Program (IMVP) centered at MIT, Howitt described the MIT Cooperative Mobility Program (CMP), which was initiated in 1995 by the Auto Governors of the World Economic Forum—a CEO-level organization of industry representatives. One of the products of the IMVP and CMP is a compendium of one-page briefs that scan different transportation needs and problems, identifying and analyzing best practice in cities around the world. The compendium can be used as a resource book on available transportation options for government officials and industry executives alike.

Dr. Andreas Schaefer (MIT) highlighted the trends towards more energy intensive passenger transport modes, rising motorization, and more flexible travel patterns as people spend a relatively constant amount of money and time on travel. Emerging technologies that are influencing transportation patterns include intelligent transportation systems (ITS) and tele-activities. One AGS member commented on the need for long-term (to year 2050) modeling exercises to better anticipate future changes. Such information could be made available on the Internet.

One audience member took the position that mobility issues are poorly understood at the executive level. Decision-makers, he felt, are making irrational decisions and might not be considering the right trade-offs in devising policies to meet public demand and needs for mobility. This may be due to the fact that short-term concerns tend to override rationality, and that decision-makers do not have access to sufficient good and unbiased information.

#### Focus: Energy

The working group on Energy was facilitated by John Hoagland (Jnet/Ecology Communications), with discussion leaders Stephen Connors and Dr. Elisabeth Drake (MIT Energy Lab), Kenji Yamaji (University of Tokyo), and Katherin Meier Rust (Swiss newspaper *Die Weltwoche*). The sessions concluded that academics must make their

*concluded on page 11, column 2*

*“In this new century...we all must*

*be held to a higher standard on*

*environmental responsibility and*

*resource preservation. Indeed, I*

*believe that we should willingly*

*embrace such a standard, and use it*

*to further the global sustainability*

*agenda.”*

—Dr. Charles Vest  
President, MIT  
MIT, January 20, 2000

---

*continued from page 7, column 2*

can be very effective at reaching out to the decision making community by concentrating on educating the public and well as policy makers in order to build a broad consensus. AGS researchers, he suggested, should seek to build a long-term relationship with policy makers. This trust-building exercise can only increase the researchers' impact and their credibility.

Jake Reynolds said the case for sustainability is made by reconciling profitability and sustainability. He described the program offered by the University of Cambridge which proposes different learning experiences for graduates, for mid-career executives, and for senior executives. 250 executives are involved in a learning process to determine what society is expecting from them, and are working with Harvard and Stanford Universities on technology and strategy. Other sustainability learning ventures were described, including sustainable learning networks in partnership with the World Business Council for Sustainable Development, and the Prince of Wales

seminars in Cambridge/Salzburg.

Jack Hoagland described the story of Chattanooga, Tennessee, where, in the 1960s, poor air quality in the city and resulting health problems were severe due to heavy industrial emissions. An astute mayor and city government contributed to the orchestration of different stakeholders in cooperation with DuPont's efforts on a zero emission target, leading to the clean-up of the city's atmosphere. The city also brought in the EPA's Superfund program to clean up hazardous waste sites. Local team building like the Chattanooga case can also help raise awareness and prompt individual responses to global environmental challenges. Hoagland noted examples where local initiatives have reached consensus on real problems such as climate change. The efforts of a relatively small group of cities in the United States, part of a larger network with the United Nations, are reducing local greenhouse gas emissions. Coverage of these events could help build awareness elsewhere.

During the discussion period, some AGS participants suggested that sustainability success stories are scarce. However, Jack Hoagland observed that the number of success stories is growing: one example is Xerox's initiative to recycle office paper. A participant suggested that the quickest way to reach policy makers is to educate the public and journalists. Hoagland said the real question is how to deal with issues fraught with uncertainty over the long term. To conclude, although building a consensus for change is difficult, the status quo does not lead anywhere. 

---

## TERI *hosts silver* jubilee, conference, *New Delhi*

AGS Coordinators Dr. Roger Baud (ETH) and Dr. Joanne Kauffman (MIT) represented the AGS at the 25th Silver Jubilee Celebration and conference at the Tata Energy Research Institute (TERI), New Delhi, India, February 18-21. The four-day event opened with the Honorable K.R. Narayanan, President of India, taking Sustainable Development for its theme. The conference theme was especially appropriate for TERI's anniversary in India, which is home to one-sixth of the world's population and is one of the world's ten largest economies. Seven conferences were organized by TERI to explore the themes and critical issues of sustainable development. "It is the inten-

tion of the conference”, said TERI Director, Rajendra K. Pachauri, “to provide a common platform and intellectual stimulus for agreement on a sustainable path to development for the 21st century.”

Dr. Roger Baud, speaking at the conference on “Science and Technology for Sustainable Development,” echoed the President’s themes in his remarks when he noted that “The future of mankind on this planet will not be possible through technological innovation alone. We need behavioral change and cuts in material and resource consumption, and this is where I think social sciences can play a major part. We need the conversion of accumulated knowledge to practice.” Baud added, “I do not believe that the speed of scientific, technological and economic progress will get us to the goal of a sustainable society faster; on the contrary, I feel that slowing down all our lives will be an integral component of a future sustainable humanity.”

Professor Umberto Colombo, former Minister of Universities, Science and Technology, Italy, chaired the conference. Other panelists included Dr. Joseph Miller, Sr. Vice President and Chief Technical Officer, DuPont; Dr. Hongsung Lee, President of the Council on Energy and Environment, Korea; and Dr. Praveen Chaudari, former Vice-President for Science, IBM. Dr. Chaudari noted that in his view, “Sustainable development is about the future, and we can only think of the future when our present is not in crisis.” “Science and technology,” he said, “can serve as catalysts for accelerating growth, but it is good governance that will serve as a driving force for sustainable development.”

At the conference on “Reforming Institutions and Governance Structure in the 21st Century,” Dr. Joanne Kauffman talked about the need for the creation of new partnerships in all countries to build capacity for good governance that will lead to sustainable development. Arguing for more robust, targeted R&D in the developing world and better channels to incorporate new knowledge into development decisions, she noted the need for the R&D community to build alliances across disciplines and across geographical and sectoral boundaries. As a part of reforming institutions and governance structures for promoting sustainable development, the panel suggested the need for greater accountability of various institutions including the political parties and NGOs, more transparency in governmental process, downsizing the government in response to the need for market reforms, shifting governmental activities to basic needs of the population, the “right to information” campaign, and open scrutiny of governmental activities. 🌐

*“Great innovations will be required*

*to create sustainable technologies,*

*and environment and sustainability*

*will have to become a natural part*

*of our intellectual culture and*

*drivers of our behavior.”*

—Olaf Kübler  
President, ETH-Z  
MIT, January 20, 2000

---

*concluded from page 9, column 2*

information interesting for the media to transmit, and for the public to understand and to keep them interested. This strategy targets the general public and policy makers. For policy makers, it is important to transmit the knowledge in terms of a set of policy options. As for the public, it is imperative that the information is not only interesting, but is understood that it comes from a credible source.

The first step toward an effective outreach program is for the researchers to become comfortable and efficient in synthesizing their own research results. Part of the task of improving the communication of complex information is to train the researchers how to become a different kind of writer. There must be a concerted effort on the part of research organizations to train the researchers in the fine art of synthesizing and conveying the message that would be interesting to the different audiences.

One of the speakers observed that the simplified version of a concept or problem does not always tell the whole story, and complexity in such instances should remain in the picture if good decision-making is to be achieved. Many comments addressed how to involve the public. The vital and essential role of the public and the media, it was felt, should be to submit their environmental concerns to their representatives and periodically choose them or reject them on the basis of their results. The public should not only bring issues to the attention of the decision-makers but also set general goals and indicate a hierarchy among those goals. 🌐

*March 2000, Volume 2, No. 2*

*Initiatives in Environment and Sustainability* is published by MIT's Center for Environmental Initiatives. For more information about the Center, please see the Center's website: <http://curricula.mit.edu/CEI/> or contact the center staff at:

Center for Environmental Initiatives  
Massachusetts Institute of Technology  
77 Massachusetts Avenue  
Building 1-123  
Cambridge, MA 02139-4307  
Tel.: 617-253-7103

To submit story ideas for this newsletter, contact:

Dr. Richard St. Clair, Editor  
MIT, Building E40-392A  
Cambridge, MA 02139  
Tel.: 617-253-9871  
email: [stclair@mit.edu](mailto:stclair@mit.edu)

or to be placed on the mailing list, contact:

Ms. Karen Gibson  
MIT, Building 1-138  
Cambridge, MA 02139  
Tel.: 617-258-6368  
email: [kgibson@mit.edu](mailto:kgibson@mit.edu)

*"The grand mission of forming*

*an Alliance for Global*

*Sustainability challenges us to*

*transform our individual good*

*fortune to be present at the*

*dawning of this new millennium*

*into the change that is required*

*by the entire human race."*

—Shigehiko Hasumi,  
President, University of Tokyo  
MIT, January 20, 2000

**Center for Environmental Initiatives**  
Massachusetts Institute of Technology  
77 Massachusetts Avenue, Room 1-123  
Cambridge, MA 02139-4307

NONPROFITORG.  
U.S. POSTAGE  
PAID  
Cambridge, MA  
Permit No. 54016

