

Report on 5th STS FORUM – Science and Technology in Society

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What is the STS Forum?

- STS - Science and Technology in Society.
- Established in 2004 by Koji Omi, member of the Japan House of Representatives, following the signing of the Kyoto Protocol, in order to provide:
 - an ongoing international input,
 - based on robust scientific evidence,
 - into issues that require global solutions
 - that recognises the needs of society and the various impacts of technological change.
- The Forum's recommendations are input into policy development at a high government level in forums all over the world.

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Plenary and parallel sessions

- STS Forum lasts for a very intense 3 days.
- This year there were 8 plenary sessions and 3 series of parallel sessions, with 7 choices at each. I attended:
 - Climate Change: Socioeconomic and Security Impacts
 - Role of Universities: What is needed in the 21st Century?
 - Role of Media in Science and Technology.
- In each session a panel of experts present their view on the topic for about 6 minutes each, followed by questions from the audience. The parallel sessions 'break out' into smaller groups and the discussion is summarised and reported back to the main forum in a separate plenary session.
- All the discussion is summarised at the end, to provide input to the recommendations, which go to G8, OECD, Ministers of Government, etc.

Plenary session



Issues

- Climate change
- Energy
- Food
- Water
- Health
- Demographics

Climate change

- No longer any debate that it is happening [and that it is due to man's activities]
- Mitigation and adaptation are essential for survival of civilisation as we know it

Energy

- Essential to find alternatives to fossil fuel (or use carbon capture technology)
- Wind, PV, solar thermal, geothermal, hydro, are alternatives today
- Tidal range, tidal currents, wave, 2nd generation biofuels, etc., maybe in 10-20 years
- May require storage capacity and long-distance transmission
- Nuclear – no alternative for a base load supply

Nuclear energy alternatives

- We should expect nuclear (fission only at present) to be 5 to 10 percent of total global energy –about 40 percent of the world’s peak electricity generation needs.
- It is essential to extend the life of existing nuclear reactors. Safety will be a major issue and that applies to waste disposal and nuclear proliferation. New reactor technologies need to be developed as this field has been stagnant for thirty years.
- Public acceptance is very shaky after 3-Mile Island, Chernobyl, etc, and we will need waterproof agreements and widespread public discussion to gain acceptance.
- Skills are run down, nuclear engineering schools halved in number since 1980. Very little expertise is left in the design, construction and operation of nuclear power stations.

Food

- Dependent on water availability
- Conversion to agriculture (or biofuel production) of marginal land and tropical forests
- Soil depletion
- Number of people in poverty
 - 800 million in 2005
 - 950 million in 2007
- We face an ethical dilemma: should the food of the poor become the fuel of the rich?
- World food stores :
 - 250 days in 1950
 - 35 days in 2007

Water

- The new oil?
 - Humans need 2 to 4 litres per day
 - Food production needs 100s to 1000s litres per day
 - Meat production needs 1000s litres per day
- Impact of climate change
 - Distribution of precipitation
 - Reduction of water stores
 - Ice and snow
 - Aquifers
 - Evaporation

Managing water resources

- The world water shortage will get worse as the population increases to 9 billion over the next forty years. Climate change will only exacerbate this situation.
- Water shortages will be disastrous. We have glaciers melting in the Himalayas and the monsoon patterns shifting.
- We need:
 - new agreements and governance of water sources.
 - to stop migration, internal or external, into dry land areas.
 - to get rid of perverse incentives that encourage the inefficient use of water.
 - to develop new technologies for water treatment, improved reservoir design,
 - to improve agricultural efficiency.

Health

- Travel and migration
 - Global epidemics (avian flu)
 - Infectious diseases (TB)
- Changing climate
 - Drugs for tropical versus temperate diseases
 - Parasitic diseases (malaria)
- Economic
 - Costs of diagnosis, treatment and drugs

Demographics

- Population growth
 - 6.5 billion people in the world 2010
 - 9 billion in 2050
- Developed world's aging population
- Economic migrations and refugees

Key ideas at STS 2008

We all benefit from the contribution of people from the past, which is something that is impossible to repay except in accepting our responsibility to future generations.

However, this (we) could be the first generation that leaves the world in a worse state than when we entered it.

Resources are increasingly scarce and have to be used with care but the public simply don't get it.

Key ideas at STS 2008

Sustainability and pandemics are major problems of the 21st century.

Q. 'When science and technology can do anything, what should it do?'

Key ideas at STS 2008

Before the 20th century the earth was infinite.

By the end of the 20th century the earth had become finite.

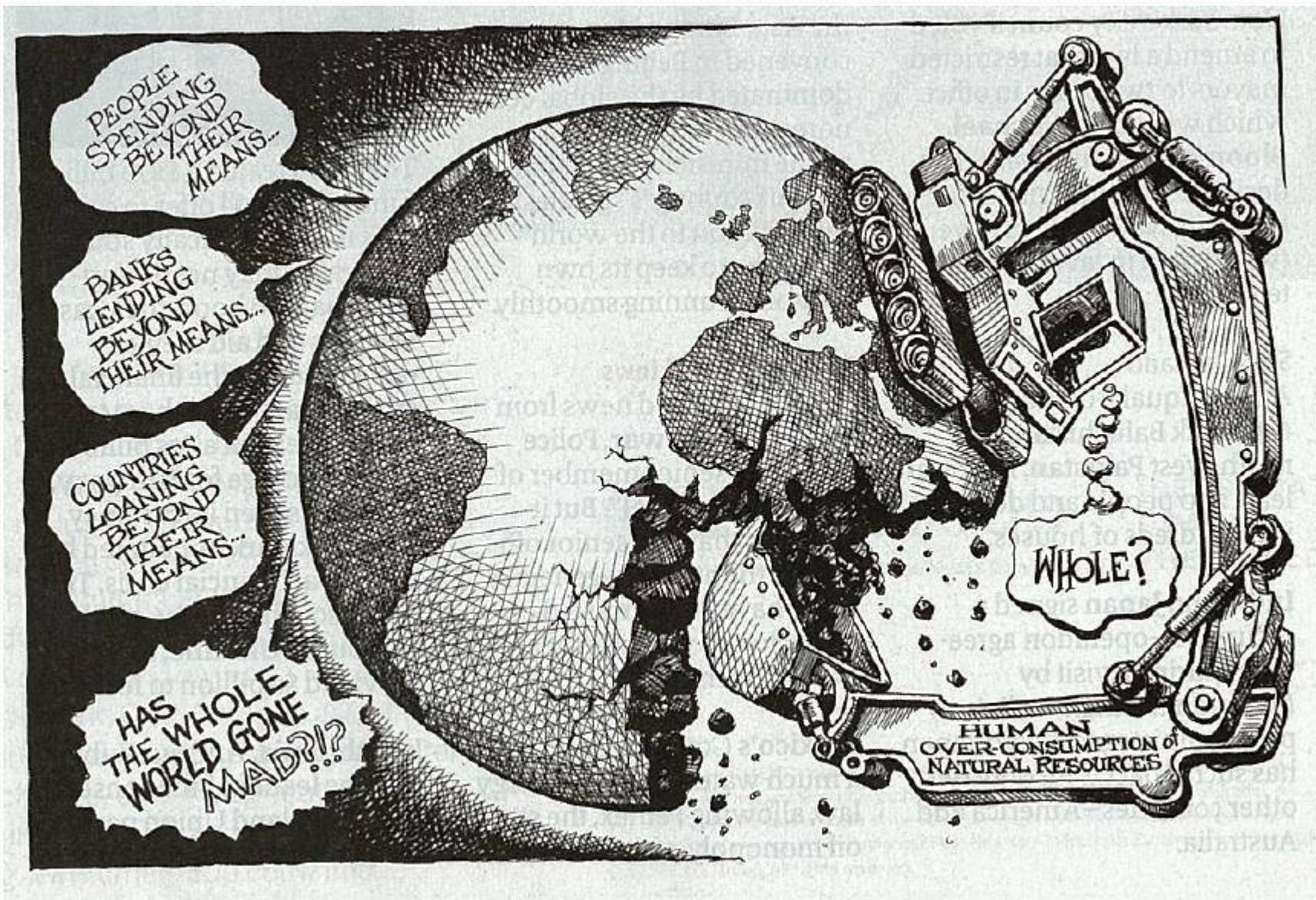
In the 21st century we are exploiting the earth at an unsustainable rate.

Climate change impacts

- Climate change will generate conflict, there will be hundreds of millions of migrants to escape the worst impacts of climate change. The dreadful thing is that they have not caused the problem.
- We need very deep cuts in carbon emissions. We will need a total systems change, a focus on electromobility, redistribution of energy on a global scale.
- The Copenhagen Conference in 2009 (the follow-on from the Kyoto Conference) is vital. We will need strong political leadership and we will have to ensure a level playing field for business.
- Even under ideal circumstances we can expect 2°C change but only if everything goes right.
- A major topic in STS 2009 should be a detailed focus on regional assessments of climate change and how these can be integrated to provide the global impact.

Value of the STS Forum

- Broad spectrum of views
- Climate change is now the issue, therefore alternatives to using fossil carbon are urgent
- Health is an ongoing issue, particularly relating to epidemics, the developing world and the aged
- ICT is changing the world for better and worse
- Social inequality is getting worse
- Science, Technology and Engineering (S,T&E) can provide the answers if society chooses to use them.



Additional information

- The recommendations of the STS Forum 2008
 - represent the considered views of the participants at this meeting and
 - form a basis for influencing policy development at high government level regarding the most pressing concerns of our time.

Statement of the 5th Forum

- The deliberations of the Forum were summarised in a Statement of 13 resolutions that will go to international forums, with the aim of ultimately affecting policy decisions at the highest level worldwide.
- These are presented on the next pages

1

- The 5th Annual Meeting of the Science and Technology in Society *forum* was held from October 5 to 7. Over 750 leading scientists, policymakers, business executives and media leaders gathered from 91 countries, regions and international organizations. This year's STS *forum* discussed science and technology under the main theme "Harmony with Nature."
- We agreed upon the following.

2

- Harmony with nature is the most important challenge for humankind. We have been discussing global environmental problems every year at the STS *forum* and stressed the need to establish a new international post-Kyoto framework in which all countries, including the United States, China and India, will participate. We welcomed the G8 leaders' shared view of seeking to adopt a global target for reducing emissions of greenhouse gases. The time has come to enact an action plan to solve this problem.

3

- Given the growing global demand for energy, rapid progress in energy efficiency, conservation and clean alternative energy development are indispensable. Among these, we agreed that nuclear power is crucially important. We recognized that we should increase the implementation of fission power, under strict conditions of nuclear safeguards, safety and security. The development of nuclear fusion power is also essential for the future.

4

- Biofuels have been developed as alternatives to fossil fuels, but we should recognize their potentially adverse effects on global food and environmental problems. Therefore, research and development in technologies for non-subsidized second-generation biofuels from non-food sources should be promoted.

5

- Given the growing number of the hungry and the unstable food supply, we believe expansion of food production is an urgent priority, particularly in the developing world. Therefore, both GMO and non-GMO research should be promoted by paying attention to safety while continuing to make efforts to gain public acceptance.

6

- In line with the significant progress made in genome research, we agreed that personalized medicine should be emphasized and international standards for privacy protection are needed. We also expect that the rate of advancement in preventive medicine will be accelerated.

7

- We reached consensus that ICT should be used extensively to enable solutions to problems of the global environment, education and health, and to contribute to business innovation. The digital divide must be addressed. We should also pursue enhanced efficiency in ICT applications while ensuring that public concerns over the security, privacy and use of personal data are met.

8

- Keeping in mind that the intellectual property (IP) system is essential for innovation, we should pursue a comprehensive strategic approach for the establishment of a worldwide pro-innovation IP infrastructure to drive the advancement of science and technology for global socio-economic development.

9

- It is important to encourage joint research in developing countries with the participation of researchers and scientists from developed countries. We recommend collaboration with developed nations, in addition to using Official Development Assistance (ODA), for joint research to mobilize and empower the human potential of developing countries. In this regard, we welcome the adoption of a new initiative of science and technology diplomacy by the Japanese government.

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- In addition to meetings of science and technology ministers and university presidents, the program included for the first time this year a meeting of academy presidents and a session of young scientists and engineers. We believe that the STS *forum* has been evolving and is becoming more influential in decision-making for the future of humankind.

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- Realizing that the development of science and technology now has an important impact on society, we concluded that there should be more direct dialogue between political leaders and scientists, and that scientists should be involved in policy formulation. As part of this process, policymakers should bring the needs of society to the attention of scientists and properly reflect accumulated scientific knowledge in their policies. Scientists should actively propose policy recommendations based on their scientific knowledge. The general public needs to understand and support science and technology, and the media will have an increasingly important role to play in this exchange.

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- We consider the *forum* to be an important venue for learning about and discussing the latest developments in science and technology, and how they affect human society. Recognizing that both the lights and the shadows of science and technology have a great impact on humankind, and that we share a common destiny on Earth, it is important for people of all backgrounds, regardless of race, nationality or gender, to consider these issues as their own. We agreed that we should try our utmost to accumulate knowledge and understanding, and use them wisely, in order to survive and prosper.

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- We agreed to hold the 6th Annual Meeting of the STS *forum* in Kyoto from October 4 to 6, 2009. We look forward to meeting here again to contribute to building a better future for humankind in harmony with nature.