

CHAPTER 4

4.2 Global Goals for the Year 2050

Study conducted in 2001–02 by the Millennium Project in collaboration with the Foresight and Governance Project of the Woodrow Wilson International Center for Scholars

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1. INTRODUCTION

Long-range-goals like landing a man on the moon or eradicating smallpox were considered impossible, yet they excited many people who went beyond their selfish, short-term interests to great achievements. These kinds of audacious goals inspired cooperation to make a better world and yet were so simple to understand that they required little explanation.

The Millennium Project, in cooperation with the Foresight and Governance Project of the Woodrow Wilson International Center for Scholars, conducted an international participatory process to identify global long-range goals. The suggested goals were rated via a two-round questionnaire for their importance, political acceptability, and likelihood to be achieved by the year 2050. For some of the goals there were also comments on the following: Who should provide the leadership to create the political will to get the goal accepted? How might that be done? What has to happen to make these goals achievable by 2050?

This chapter summarizes the results of the assessment of 44 potentially inspiring long-range goals.

2. STUDY PROCESS

An initial list of 26 audacious goals for the year 2050 was created from the cumulative research of the Millennium Project, and suggestions from the Foresight and Governance Project of the Woodrow Wilson International Center for Scholars. They were rated by:

- importance, defined as the ability to improve the future for all, inspire global cooperation, and help other goals to occur;
- acceptability, defined as the likelihood that at least one leader of government will eventually adopt the goal and commit the resources to achieve it; and
- possibility, defined as the likelihood that the goal will be achieved by the year 2050.

The full questionnaire is included in Appendix.

Round 1 also collected an additional 111 suggestions for goals that will inspire cooperation to improve the human condition. These were distilled to 18 and submitted to the international panel in Round 2 (see Appendix) to be rated by the same criteria. Appendix presents the full rating for all the 44 goals.

Round 2 also asked for comments on how the likelihood of achieving some of the goals by 2050 could be improved. The study results were presented at a two-day workshop with futurists and U.S. government representatives organized by the Foresight and Governance Project of the Woodrow Wilson International Center for Scholars, in cooperation with NASA, under the theme *What could the world look like in 40–50 years?*

3. ANALYSIS

The top 10 goals rated **high in importance, acceptability, and possibility** of being achieved by the year 2050 were:

- End water shortages and water pollution
- Provide clean and abundant energy
- End slavery
- Normalize international pursuit of key technologies to benefit humanity in a manner similar to the Human Genome Project
- Create permanent civic mechanisms for deliberation, monitoring, and evaluation of the performance of the state and its officials
- Catalog and preserve the world's species diversity
- Eliminate all major infectious and inherited diseases
- Make cities more livable
- Provide universal on-line education for all

- Establish a global system to review S&T directions and impacts

The following goals were rated **not likely to be achieved**, but were rated both **very important and politically acceptable**; hence, these should top the research agenda to make them more feasible.

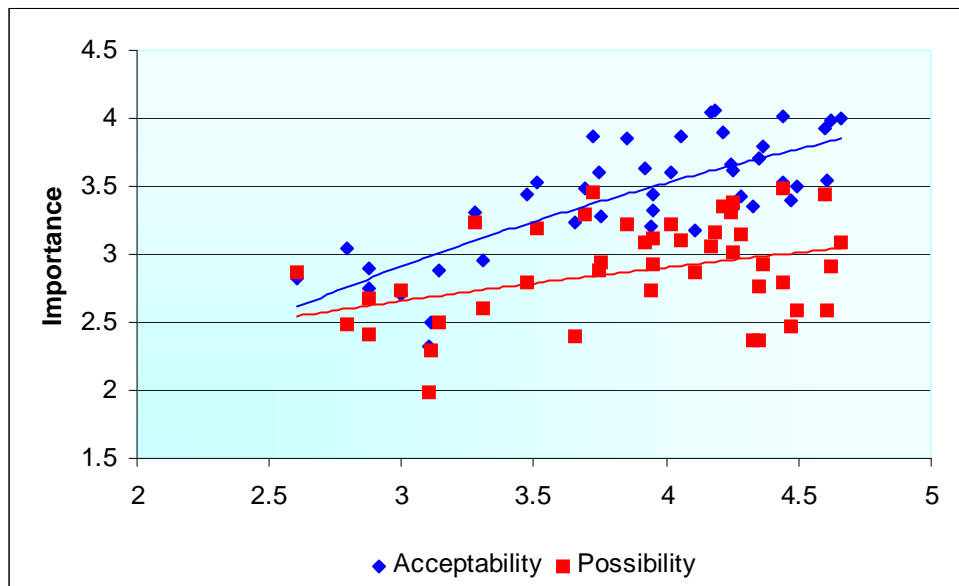
- End hunger
- Establish economic systems that work for all
- Eliminate weapons of mass destruction
- World peace ensured by an improved U.N.
- Nearly zero emissions/full recycling in production
- Provide universal health care for all
- End organized crime

The only goal that was rated **very high in both importance and possibility** of being achieved but **not likely** to be politically acceptable was:

- Reduce the environmental impact of producing each unit of gross domestic product by a factor of four

There was a high correlation between importance and acceptability, but less so between importance and the likelihood of achieving the goal (see Figure 1).

Figure 1



The complete list of goals, ordered by importance, is presented in Box 1. For comparison, Box 2 presents the U.N. Millennium Development Goals to the year 2015.

Box 1

Goals 2050 - ordered by importance

- End water shortages and water pollution
- End hunger
- Establish economic systems that work for all (e.g., end hunger and poverty)
- Provide clean and abundant energy
- Eliminate weapons of mass destruction
- Eradicate ethnic and religious barriers to peaceful coexistence
- End slavery
- World peace ensured by an improved U.N.
- Nearly zero emissions and nearly full recycling in production
- Provide universal health care for all
- End organized crime
- Eliminate virtually all corruption in government
- Reduce the environmental impact of producing each unit of gross domestic product by a factor of four
- Educate nearly all political leaders in values, ethics, and improved decisionmaking
- Normalize international pursuit of key technologies to benefit humanity in a manner similar to the Human Genome Project
- Create permanent civic mechanisms for deliberation, monitoring, and evaluation of the performance of the state and its officials
- Catalog and preserve the world's species diversity
- Eliminate all major infectious and inherited diseases
- Make cities more livable (e.g., eliminate traffic gridlock, crime, insecurity, lack of help)
- Establish universally acknowledged global ethics
- Provide universal on-line education for all
- Establish a global system to review science and technology directions and impacts
- Establish a system of world justice
- Ratification and implementation of all major U.N. treaties and Summit action plans
- Reinforce values that lead to consciousness and mental development eventually passing material growth as primary human activity
- Find effective ways of coping with addictive drugs
- Eliminate all land mines
- Achieve gender parity in all major decisionmaking systems
- Invent a near-perfect prediction system of natural disasters
- Map all brain functions
- Develop an interdisciplinary science of decisionmaking
- Educate the majority of the world to the equivalent of a university degree
- Catalog all asteroids and comets for possible collision with Earth, and design protective systems
- Understand the origins and likely futures of the universe
- Improve human intelligence 50 points in 50 years
- Create permanent ocean habitats
- Create a system for the coexistence among of cyborgs, artificial life, and natural life
- Effective union of science and religion acknowledged by majority
- Establish world government
- Create a fully integrated human/brain/computer merger
- Move much of the industrial economy into space
- Establish several permanent habitats throughout the solar system
- Develop means for allowing individuals to triple their life span
- Invent a perfect and universally available lie detector

Box 2

U.N. Millennium Development Goals

All 189 United Nations Member States have pledged to meet the following goals by the year 2015:

Eradicate extreme poverty and hunger

- Reduce by half the proportion of people living on less than \$1 a day
- Reduce by half the proportion of people who suffer from hunger

Achieve universal primary education

- Ensure that all boys and girls complete a full course of primary schooling

Promote gender equality and empower women

- Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015

Reduce child mortality

- Reduce by two-thirds the mortality rate among children under five

Improve maternal health

- Reduce by three-quarters the maternal mortality ratio

Combat HIV/AIDS, malaria, and other diseases

- Halt and begin to reverse the spread of HIV/AIDS
- Halt and begin to reverse the incidence of malaria and other major diseases

Ensure environmental sustainability

- Integrate the principles of sustainable development into country policies and programs; reverse loss of environmental resources
- Reduce by half the proportion of people without sustainable access to safe drinking water
- Achieve significant improvement in lives of at least 100 million slum dwellers by 2020

Develop a global partnership for development

- Develop further an open trading and financial system that is rule-based, predictable, and non-discriminatory. Includes a commitment to good governance, development, and poverty reduction nationally and internationally
- Address the least developed countries' special needs. This includes tariff- and quota-free access for their exports; enhanced debt relief for heavily indebted poor countries; cancellation of official bilateral debt; and more generous official development assistance for countries committed to poverty reduction
- Address the special needs of landlocked and small island developing states
- Deal comprehensively with developing countries' debt problems through national and international measures to make debt sustainable in the long term
- In cooperation with the developing countries, develop decent and productive work for youth
- In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries
- In cooperation with the private sector, make available the benefits of new technologies—especially information and communications technologies

Source: <www.un.org/millenniumgoals>

Also in Round 2 the panel was asked to comment on how to improve the likelihood of achieving goals that were rated the most important and likely to be acceptable to government leaders, but the likelihood of their achievement was rated relatively low:

- Establish economic systems that work for all;
- End organized crime;
- Eliminate virtually all corruption in government.

The panel addressed: Who should provide the leadership to create the political will to get the goal accepted? How might that be done? What has to happen to make these goals achievable by 2050?

And last, the panel was asked what will make us ready to move on goals that were rated as extremely important, acceptable to government leaders, and likely to be achieved by 2050:

- Provide clean and abundant energy;
- End water shortages and water pollution; and
- Eliminate all major infectious and inherited diseases.

The panel was asked to address what is the strategy to commit to these goals and who has to make what decisions.

A distillation of the responses follows in the next section, and the full text of the comments is in Appendix. Also, Chapter 1 on this CD-ROM contains even more detailed comments and suggested actions under the respective global challenges.

This research was then used by the Foresight and Governance Project of the Woodrow Wilson International Center for Scholars in cooperation with NASA as input to a two-day workshop titled: *What could the world look like in 40–50 years?* About 50 futurists and U.S. government representatives participated. These participants added several goals to the Millennium Project's list and then the larger list was rated based simply on the participants' interest in further exploring the goal. The goals rated the most interesting were:

- Access to clean water and food
- Provide clean and abundant energy
- End slavery globally
- Understand biological processes at the cellular; organ; organism; and ecological levels
- Eliminate all major infectious and inherited diseases
- Provide universal health care for all
- Eliminate weapons of mass destruction
- Establish a system of world justice
- Stabilize global systems
- Make world into global organism

The following bar graphs display each goal and how they were ranked according to importance, acceptability, and possibility. The ranking was done using a 1-10 scale with 10 representing the maximum importance and likelihood of acceptability and possibility.

Figure 2

Access to Clean Water and Food

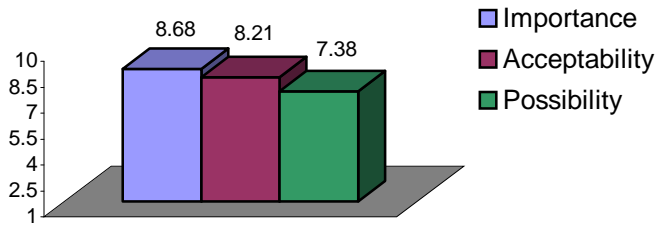


Figure 3

Provide Clean and Abundant Energy

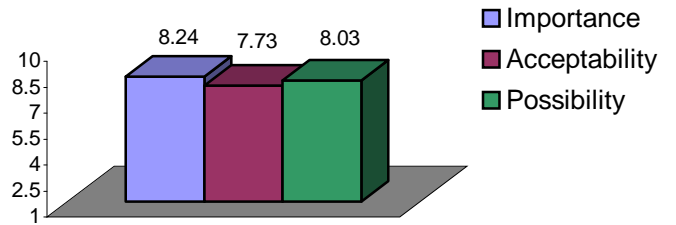


Figure 4

End Slavery Globally

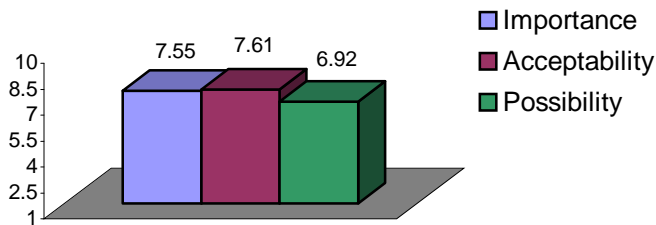


Figure 5

Eliminate Major Infectious and Inherited Diseases

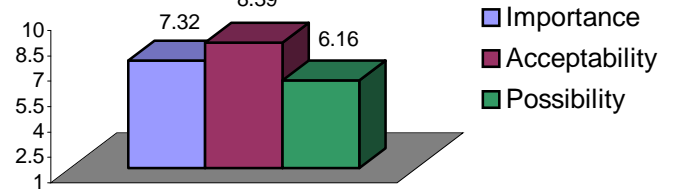


Figure 6

Universal Health Care for All

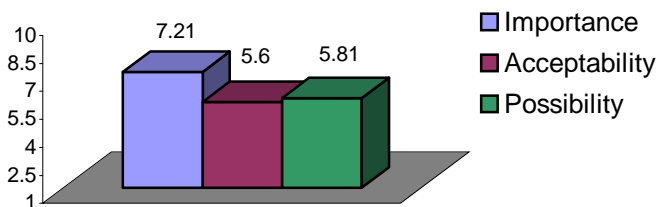


Figure 7

Understand Biologic Processes*

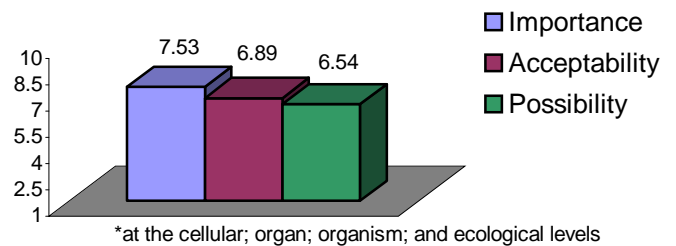


Figure 8

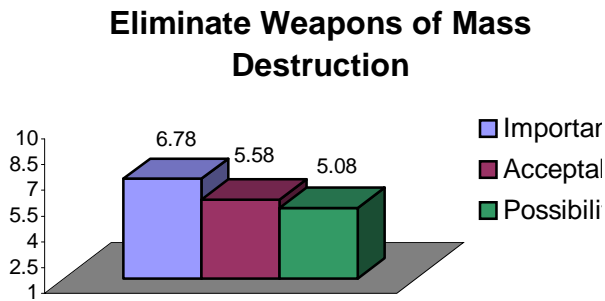


Figure 9

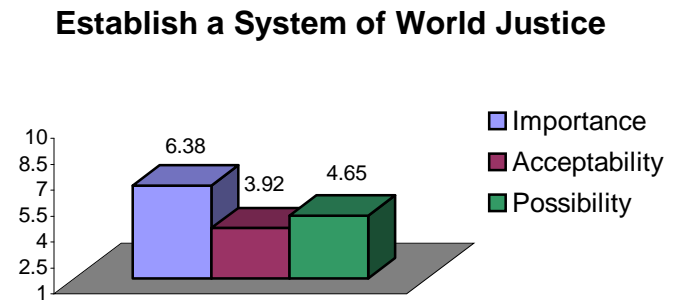


Figure 10

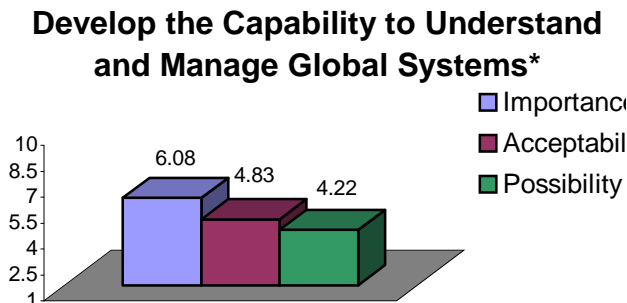
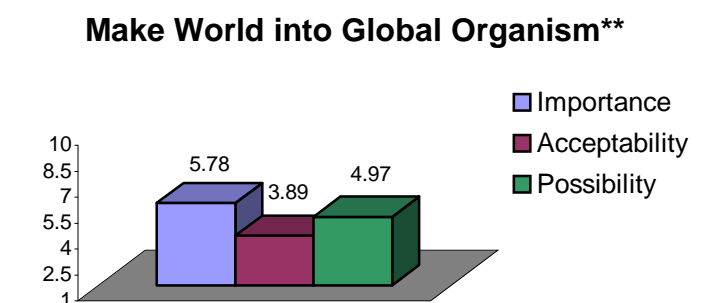


Figure 11



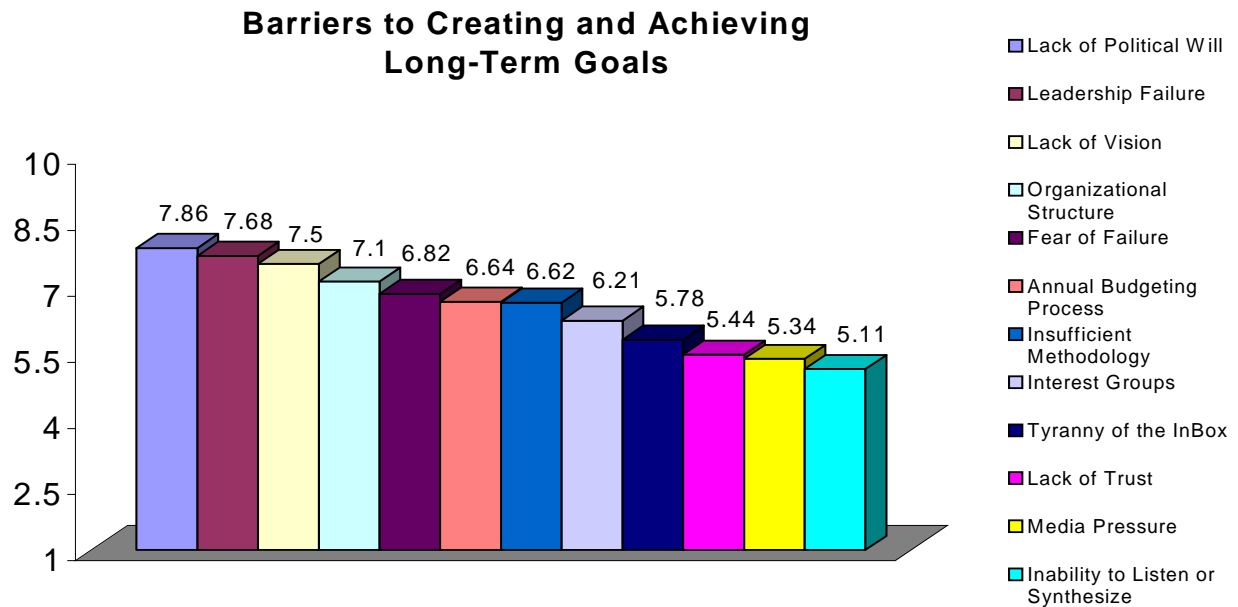
The group was then asked to identify the main barriers that hinder the acceptance and achievement of the goals. After discussing each, the participants rated them as to the strength of their impedance on a 1–10 scale (1 representing the smallest and 10 the largest obstacle preventing the implementation of the goals). The bar graph in Figure 12 (next page) displays the barriers participants felt hindered the acceptance and achievement of challenging goals.

The Millennium Project conducted a study in 1998-1999 on “Early Warning and Timely Action”, published in the *1999 State of the Future*. The study assessed actions and forms of information needed for timely decision. The main categories of impediments discussed are: financial, institutional, political, cultural, psychological, information, educational, lack of policy-making professionalism, non-financial resource, and planning system impediments. For your consideration, the main findings of the study are included in Appendix.

*e.g., the hydrologic cycle, carbon and nitrogen cycles, oceanic circulation patterns, global climate systems, biological communities at all scales - in ranges appropriate to achieving an ethically and rationally designed planet

**meaning that the global infrastructures for energy, computation, communications, transportation, banking, etc. have been (re)engineered to be a). Fully integrated; b). Intelligent and adaptive in the face of shifting demands; c). Self-healing in the face of small- to mid-sized failures (or terrorist attacks!); d). Robust and "fail-soft" in the face of rare, catastrophic failures; and e). Possessed of a digital "immune system" that can detect and ward off hackers, terrorists, or other unauthorized assaults

Figure 12



Then the participants voted on which actors needed to take a leadership role to ensure the achievement of the highest ranked goals. The actors identified were:

- International organizations (U.N., WHO, etc.)
- Other national governments (non-U.S.)
- U.S. government
- NGOs
- Other state and local governments
- Private sector
- Academia
- Religions/charities
- Other

The following bar graphs display the importance of various actors in the achievement of five of the 10 top goals. Participants voted on which actors needed to take a leadership role to ensure the achievement of the goals. Once again, a scale of 1-10 was used with 1 representing the minimum and 10 the maximum amount of leadership that participants expected from each actor.

Figure 13

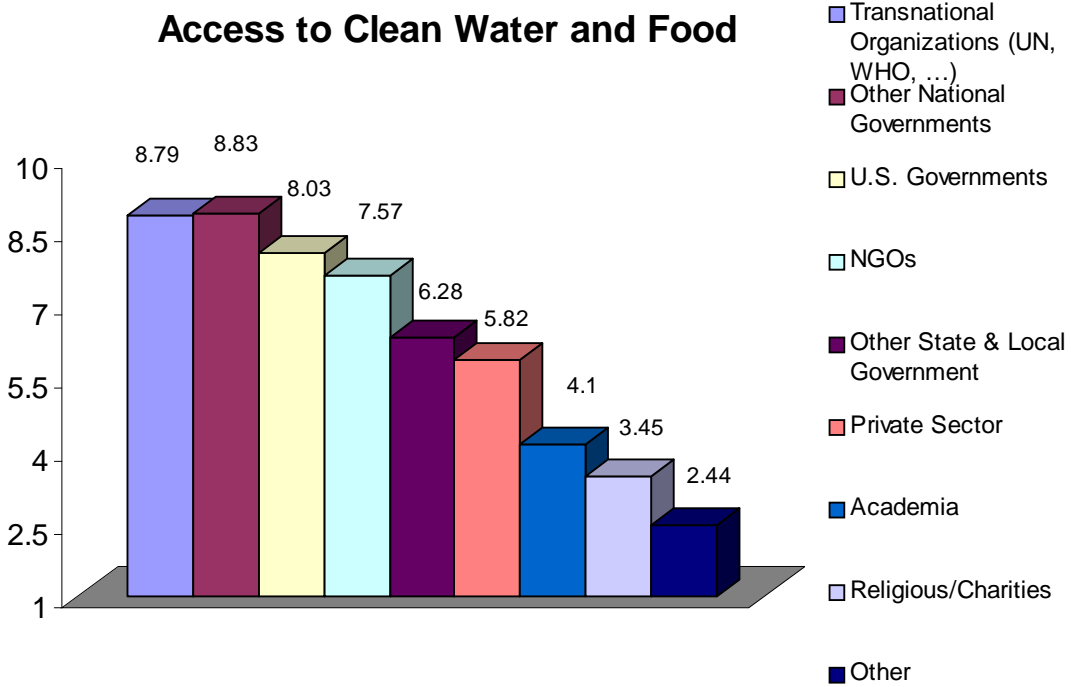


Figure 14

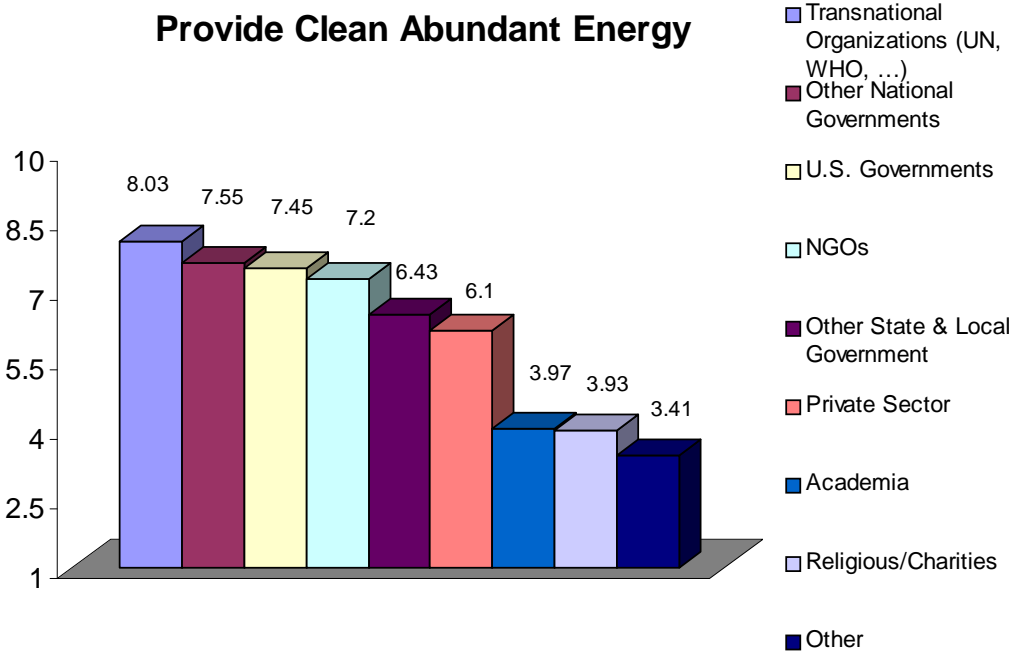


Figure 15

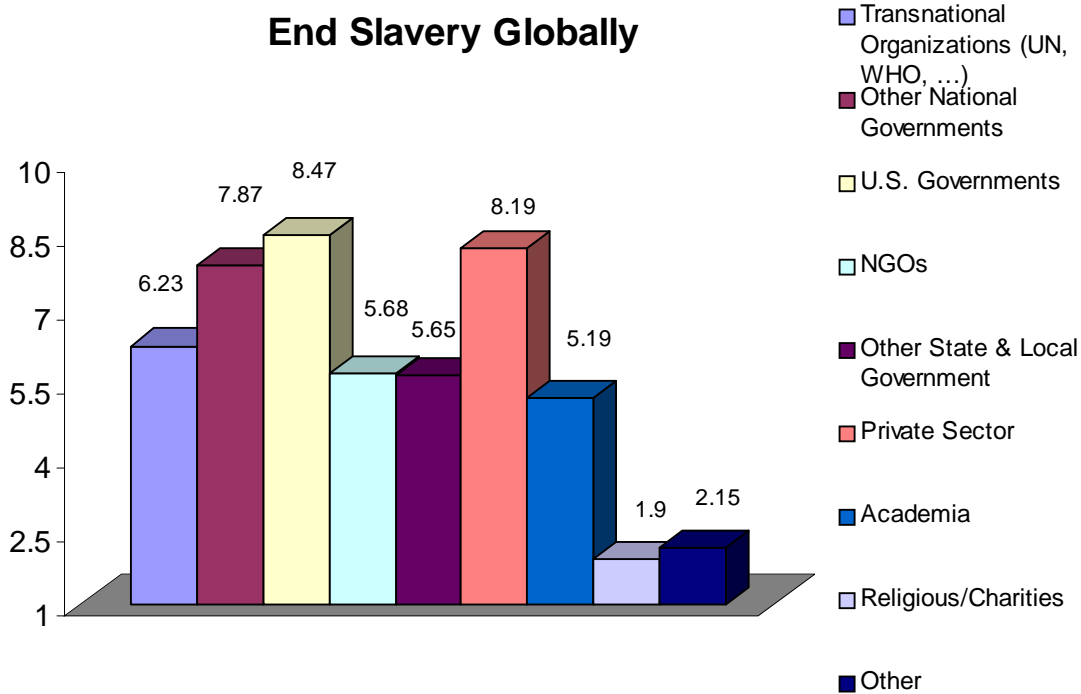


Figure 16

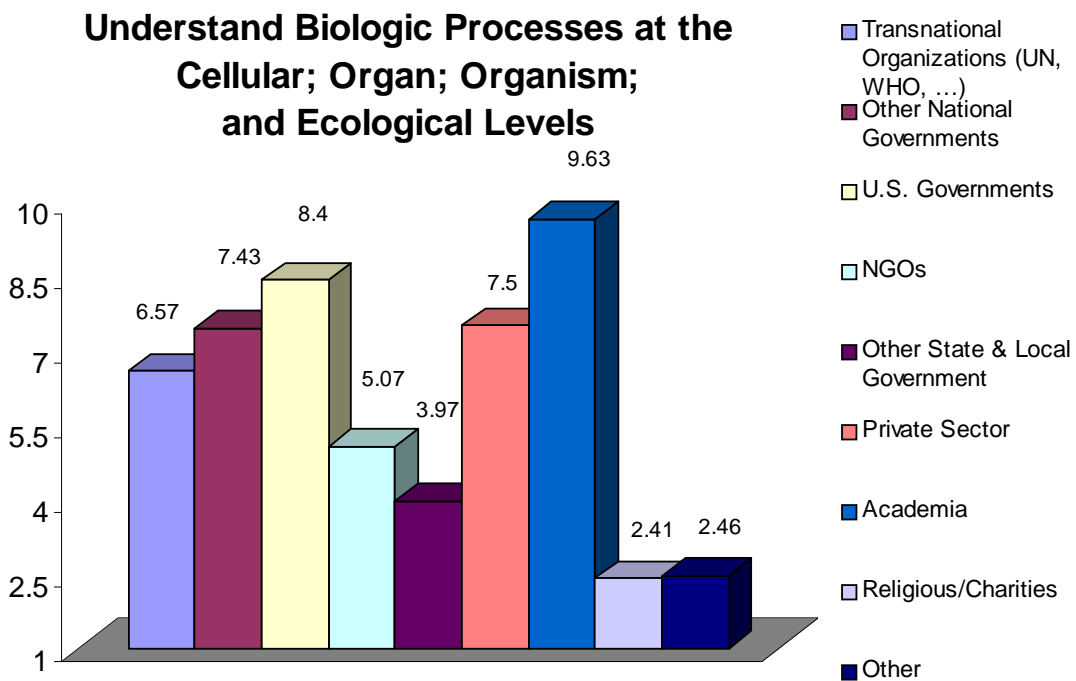
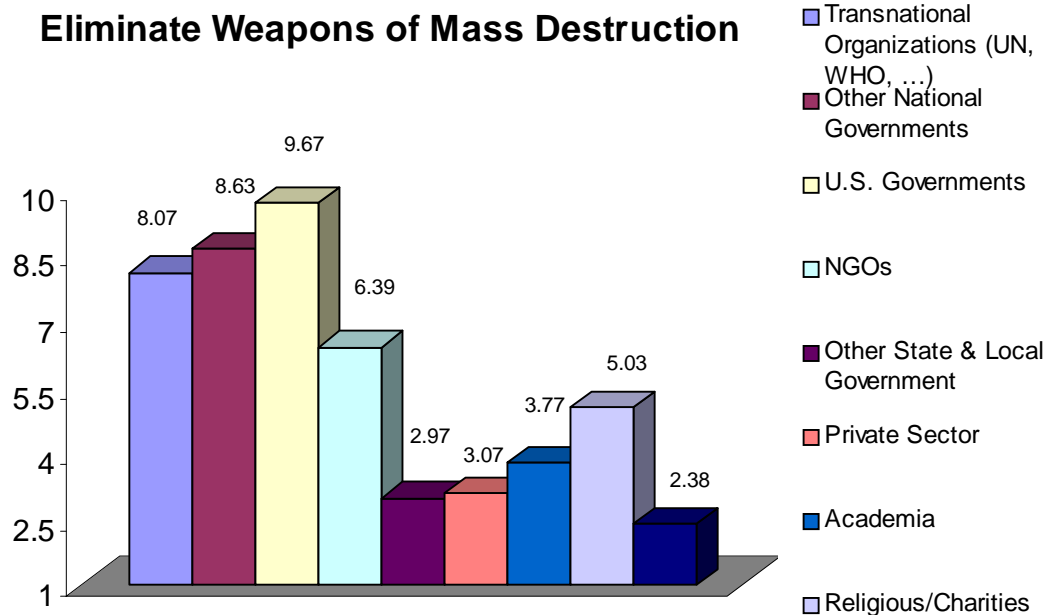


Figure 17



The next steps that participants felt were most important in order to maintain the dialogue and interest in long-term goals, ranked with the most important first, were:

- Publication of goals
- Discussion of their implementation at relevant levels
- Coalition
- Create a listserv for continuous discussion
- Comparative analysis
- Input of social scientists
- Future conference on specific goals
- Educational materials
- White papers
- Crisp phrasing of long-term goals
- Create Sim City style computer games (e.g., for water)

4. SELECTED COMMENTS FROM PARTICIPANTS

In Round 2, the participants were also asked to comment on the achievement of the goals from the following 2 categories:

- goals rated the most important and likely to be acceptable to government leaders, but the likelihood of their achievement was rated relatively low.
- goals rated as highly important, more easily acceptable to government leaders, and have a high likelihood of success.

This section presents a distillation of some selected comments. The Appendix contains the full text of all the comments received.

4.1 Goals rated most important and likely to be acceptable to the government leaders, but low possibility of achievement

The goals in this category were:

- Establish economic systems that work for all (e.g., ends hunger and poverty)
- End organized crime
- Eliminate virtually all corruption in government

The question was: *How can the likelihood of achieving these goals by the year 2050 be improved?*

The participants commented on who should provide the leadership to create the political will to get the goal accepted; how might that be done; and what has to happen to make these goals achievable by 2050?

Establish economic systems that work for all (e.g., ends hunger and poverty)

This is highly unlikely, considering the asymmetry of the quality of life that divide the world at present. Any project of globalization of economic systems will imply a considerable increase of the interference of developed nations on the underdeveloped countries at unbearable costs for the first ones.

The United Nations and the Nobel Prize Committee could provide via the Internet for a voluntary world anti-poverty tax and promote cooperation from UN member-nations to permit citizens to deduct their world anti-poverty tax from their national tax returns.

Capitalism is fundamentally competitive, wasteful, and unaccountable while it strives to increase intra and intergenerational inequity. In my estimation, will take much longer than 50 years for the western world to lose its power

We need to end the cyclical dependence of individuals on governmental welfare systems and implement a system that promotes a protestant work ethic; "the harder you work, the better you will do."

Leaders of poor and undeveloped nations should not have discretion of international aid dispersal instead a UN sponsored organization should oversee the handling of humanitarian as well as financial aids. Far too often leaders will spend money intended on infrastructure, health, education and food to fund wars and personal purposes.

We need to strengthen the UN system across the board (bank-fund, UNDP, FAO, WFP, etc.) They have a mandate but not the resources.

NGO's and grass root movements must work locally to convince the country leaders of the global importance of this goal for the survival and betterment of human kind. Maybe more wars, conflicts and cross-border terrorism (like September 11, 2001) will occur before we realize that hunger and poverty are two of the main reasons of specific economic, and general world, problems.

We need to increase the production per capita.

This is a goal that can be suggested by the UN but it must be implemented by each country. I do not believe that there is a unique pattern of conduct, but its success depends on the political decision and implementation of the plans of action that guarantee valuable work for all, with the right remuneration.

We need to establish a system, which values all goods and services, including black market and underground economies of the poor. Provide incentives for capital generation and leverage so that the economic benefits of democracy can reach developing countries. We need to adopt goals that are politically neutral.

The UN is potentially the best institution to push hard in this direction, but with national sovereignty being as strong as it is, this will be difficult - especially by 2050. 2150 maybe. Perhaps an International Body for the Long-Range Future could help facilitate this. If economic recommendations came from such an entity, it might not be unduly antagonistic because it would come from what could be an "advisory" body that would be looking long-range, so some countries/leaders may not feel too threatened. Uncertain, of course, but the level of negative reaction might not be intolerably high.

The world government (if there is one) should decide and take actions. The emphasis should be educating children to start a more mature generation to grow. Global education systems network should be activated to start creating better understanding on what political priorities should change everywhere. I would expect this to take 1-2 generations, provided children can and do go to school globally.

By respect to the Latino-American situation, I believe that after these countries understand what they really want as a future, they should integrate as a block, like the European community.

Only a global catastrophe can lead to a new mindset thereafter that can achieve such goal.

In developed countries, the following should happen: a) avoid subsidy, b) promote investment abroad, c) reduce corruption and d) reduce racial differences. Right now!

Ethical, mega-wealthy individuals and consortiums must drive changes with the aid of like-minded political leaders. Mechanisms have to be invented to channel and reward the psychic needs of the portion of humanity that crave power and influence.

Leadership should come from the more enlightened or sensitive celebrities, intellectuals (including the media and civil society leaders) and political leaders. Methods should include: writing off Third World debts, Tobin Tax, investments in social development (education and health) and increase cooperation and reduce wars/conflict among nations. Critical Steps include a massive value / attitudinal shift away from consumerism / materialism.

In my opinion, it will be the greatest political challenge in the next 50 years, or even earlier. Humanity will have to be able to face an unprecedented super-revolution. A new character of this revolution will be resulting from the fact that contrary to other challenges, in the forthcoming revolution, the very character of human being will be transformed and challenged via the use of biotechnology, nanorobots and super-miniaturized information technology.

A new kind of global organization to which the World Social Forum may eventually and naturally evolve, located at a place like Canada. In order for this to happen we will need some time for increasing and strengthening and improving networks and things be ripe enough.

[Present] economic systems are not suitable for these aims. Future-oriented thinking leaders and people are needed.

End organized crime

I don't see this being possible, though continued attempts are going to be necessary to keep organized crime activities under control.

We need to work on eliminating all the possibilities of money laundering and prohibiting financial operations on "fiscal paradises", excluding these from the International Bank Clearinghouse.

We must promote decriminalization of illicit drugs and the end of paper money.

We need to reduce organized crime, make cooperation more rewarding than exploitation. This will not occur before 2050 unless there is a radical shift in the economic system.

The United Nations should punish those who are responsible for the crimes. These goals shall be achieved through the International Criminal Court.

As seen recently with the Israeli-Palestinian situation, the use of military force is more effective than dialogs and hollow promises. The suicide bombings stopped after Sharon invaded the West Bank and isolated Arafat and resumed after Israel pulled out due to int'l pressure. The assault on Afghanistan has all but destroyed the vast Al Queada network.

International organizations and governments have to lead this fight. Concerned citizens have to continue asking for the end of corruption, be it in private or public sectors, but the governments have to take action in representation, and on behalf, of the people. Drug smuggling, trafficking, gambling, money laundering and other forms of organized crime have to be stopped by international organizations and governments aware of the risks for the global community.

We need police forces that are well-trained, well-paid and ones that have high levels of education.

We need more publicity for white-collar crime, more prosecution, and more punishment. We need tax evasion in the US. Prosecution has declined, and the poor are prosecuted more than the rich.

The economic and cultural value system favors alternate illegal markets, which thrive in closed markets. Computer tracking of goods and services, fair valuation of all commodities and fair pay systems which yield living wages will level the table. Enforcement is also critical to stimulate compliance with the law. For this we need a world court system, international trade laws, worldwide commodities exchanges and telecommunications.

We need to target police forces for additional salary increases and to make bribery less viable.

Actually, the only way to end criminal opportunism is human beings and to start acting like Jesus. Love thy neighbor as you love yourself. Not loving oneself in the first place and not been loved by someone are the source for need of criminal behavior.

What will be organized crime in 50 years from now? Computerized mafia illegally controlling the transfer of information via satellite networks?

Organized Crime is the result of disorganized social systems. So locally we would have some maturity to lead with social illness seeking and organizing support from all kinds of private, public and community groups.

Civil control is necessary beside criminal organizations. The aim cannot be reached without love, honor and inner values.

Eliminate virtually all corruption in government

I don't think this is possible.

International lawyers' associations, guilds and organizations and international free-trade organizations could endorse a standard statutory declaration that signatories to a world anti-corruption treaty could require businesses to sign.

Changing the fashion of financing electoral campaigns and implementing a debureaucratization process of local and national governments and also implementing on-line purchasing by bidding at a reverse auction is needed.

We must reduce the incentives to become corrupt by making the alternatives sweeter.

The leaders of countries should punish those responsible for the crimes and achieve more transparency in their administrations.

We must initiate term-limits in just about every aspect of governments including the U.N. and foreign governments.

We need to completely root out corruption in government is unfortunately a utopian and unrealizable goal. As long as humans hold some sort of position of power, they will take advantage of that position no matter how trivial it is.

Leadership must be taken by Educators (professors and parents), who are the instructors of the new human talents. It has to be initiated from home and logically from school (from elementary to university), so that it is understood that we all are going to finish badly if the corruption continues.

The best way is to reduce the size of governments, and making their functions more transparent \ and accountable. Also, all government information should be publicly available in order to control corruption.

There are good examples of corruption free governments in the world, e.g. Finland etc. To learn good and bad experiences from practices with similar cultural frames is important - to establish global ethical competence learning centers for studying and transferring good practices. UNESCO would be a suitable organization to make an initiative.

Maximize control audits with intervention of the different political parties.

"Little Brother". This may sound too radical, but installing microphones/cameras just about everywhere public officials discuss and decide on public policy and making available on the

internet real-time would go a long way to reducing corruption. Initially, decision makers will not be able to cope with this, but eventually they might get used to it - just like C-SPAN.

An authoritarian world government or a biologically modified human mind can achieve this. With present humans, this is biologically unrealistic.

Often corruption is least in economically strong countries (though they have it); they should start first by ending it totally from their own .. and setting economic sanctions to the more corrupted countries until they start to behave in a more civilized way; Finland could be The Leader in this.

Let public jobs pay decently--equivalent to private sector jobs of similar significance. Also, invent governance mechanisms that satisfy officials psychic needs without regard to corruption for power's sake.

Make public the cases of corruption, and punish diverse types of the corruption. It is necessary to reform the civic education in the basic schools; this will be perhaps the unique way that will allow in long-term to eliminate governmental corruption.

The elections and the activity of the governmental organizations have to be absolutely open and transparent.

4.2 Goals rated as highly important, more easily acceptable to government leaders, and have a high likelihood of success.

The goals in this category were:

- Provide clean and abundant energy
- End water shortages and water pollution
- Eliminate all major infectious and inherited diseases

The question was: *What will make us ready to move on these now?*

The participants commented on what is the strategy to commit to this goal, and who has to make what decisions?

Provide clean and abundant energy

The Kyoto Accord nations could reconvene and agree to increase gas and energy taxes, not across the board, but according to the fuel efficiency of the energy-using machine, vehicle, or equipment. Gas for gas-guzzlers should be taxed higher than fuel for economy cars.

We need to increase levels of independent research that is not linked to existing energy interests.

Remove petroleum as the fuel to maintain the infrastructure, which is necessary, get ready to suffer downsizing as significant as our unbridled growth has been.

We need to convert to solar, wind and geothermic energy. The population has to make the decision, and the industry needs to be taxed according to the degree it contributes to this goal.

Tax reductions and adherence to the international regulations. The United Nations and industrialized countries should lead us down this path.

Governments should create incentives for industries that either use alternatives to fossil fuels or are in the transition of phasing them out.

Any breakthroughs or innovations in alternative technologies should be free to the public to use and improve on.

Well-funded R&D is important. Decision makers (in governments) must give high priority to these issues in budget allocation. Also - technology foresight studies to show the potential of new technologies to solve the energy and environment problems, and by that to convince decision makers.

We need close international collaboration in the field of R & D (international programs and laboratories with the participation of scientists from developed and developing countries alike).

We must convince the world automobile industry; this is in their self-interest. We can start with Germany and Japan and the US would eventually follow.

Corporations will lead the way, supported by government regulations. New technologies will be developed thanks to tax incentives, that will help have more output energy with less input materials.

International companies, cartels, and research must commit to this goal. Individuals must also learn what options are available for energy and conservation. Energy users and designers of infrastructure and housing must commit to energy saving designs and materials manufacture. Targets could be set through treaties and G-8 agreements.

The technical challenges seem possible to overcome if enough smart folks get enough \$ to solve them. The reward for those who devote themselves to this kind of work also has to be high so we ensure getting the best and brightest to work on the problems.

Drastic reduction of corporate power exerted in governments is needed.

The UN could establish an Energy Council with at least as high status as the Security Council. Its first task should be to create a global, fair and realistic strategy for clean and abundant energy everywhere in the world; after that a global meeting of world leaders would commit themselves to it.

In the case of Latin America great projects of development of power generation exist; it's necessary to extend and improve the ways of distribution between countries and to extend the operation for alternating energies.

We must provide subsidies and incentives to mixed partnerships private-state, like the one created for the research of the Human Genome.

End water shortages and water pollution

International environment groups such as the World Wildlife Fund could promote small, local experiments in which municipalities allow residents to own and trade an annual allotment of water. Eventually annual water consumption needs to be capped, starting with local governments.

We have to invest into re-use and cleaning of water, more efficient use, and awareness by the consumers that water is a rare, precious commodity. The people and the parliaments setting appropriate frameworks and reward schemes.

The national government that is polluting the water tables should face stiff penalties, both criminal and financial. An international treaty should be drafted outlining the standards of emissions, as many corporations are multinational.

The UN should hold a second World Conference on Water (first one was in 1977) in 2005 and launch 2nd decade on water and sanitation. The first one was in 1981-1990 and was very successful. One billion got access to safe water and 700 million got sanitation.

NGO's have a role to play to bring this issue about. The problem is not really water scarcity but water distribution. The world has enough water, but it is necessary to have more equitable and efficient distribution channels. With more water and more consciousness of its importance, there will be a better handling of it and less pollution.

We can increase research by universities, dissemination of information and public consultation.

This goal will require substantial investment in conservation, water reuse, and innovative exploitation. It will also require limits to population and agricultural use of water to equitably distribute the available supply in the short term. Extracting water from polar ice caps, the oceans, and even deep space will all be developed over the next 50 years by governments and private corporations.

We can charge individual users for water use rather than just for water distribution, billing systems as it is now in North America- and use the funds collected as incentives for finding better methods of keeping the water non-polluted.

A global "hype" for clean water is needed. Join all forces - government, science, communities, armies -stop the local wars, and move the money from arms to natural science and technology R&D for this campaign.

Vast expenditures on water desalination and pollution controls is necessary. Drastic reduction of corporate power exerted in government.

We can spend 1/3 of world's military funding on training and infrastructure development. Most technology exists, though it can get better. Solving energy will go a long way. Everybody has to decide to fight this "war."

There is no problem with water shortages. We simply need fresh water. And in this case I do believe in econo-techno fix. Some day, when the real problems with fresh water will emerge, new technical solutions of desalination will be invented.

A network of Governments should promote public and private research initiatives to develop fast more efficient filters and processes, with companies to foster best practices all over. Conscious Consumer and usage should be permanent goals.

Socio-economic control, economic power and new values are needed.

Eliminate all major infectious and inherited diseases

The elimination of all major infectious and inherited diseases is necessary.

We must proceed to world scale vaccinations and genomics.

Funding to encourage entrepreneurs, or venture philanthropists ala Bill Gates, to compete to solve the need as defined by the organizations describing "success."

It seems inhumane, but Medicine is the art of dodging Nature's check on our lifespan and thus population/consumption. Only at a time of population and consumption "sustainability" would this be potentially beneficial to the "big-picture" (no matter its social perks). Sadly, long life is a personal ambition that may have been put too far ahead of the best interest of the species given its current predicament.

This area should be overseen by a single international agency, perhaps a beefed-up WHO, with satellite offices in political regions throughout the world. Diseases are fought merely on a local or national level rather than overall global level.

All financial resources should be pooled together. Competition between pharmaceutical companies is beneficial in the creation of new drugs and vaccines. Biogenetic research, including cloning, will save us.

Triple research budget in US and triple US contribution to WHO (who did get rid of smallpox) and is working now on polio, TB, malaria and AIDS.

Increase resources for research in developing countries.

This should be a major goal for mankind, lead by international organizations (like WHO) and NGOs (like the Rotary Foundation). Worldwide cooperation make this goal very achievable, also thanks to collaboration of private enterprise (like some pharmaceutical companies) and governments.

Once again it falls to countries that lead - the first world - and in its scientific organizations- the work to research and develop the means and tools adapted to achieve this goal.

Genomics, gene therapy, nanotechnology, and research on coatings are likely to nearly eliminate both infectious and inherited diseases. Most of this work will arise in private research institutions and universities. Organizations like WHO and FDA will evaluate and license them for international use and efficacy. Slippery coatings will prevent foreign organisms from attacking our bodies, reproducing, and spreading disease. Other barriers will protect food and consumer products.

The strategy must be global and oriented towards research on such diseases and allow producing and distributing the medical solutions to all the humans equally. (Nestor Dominguez, Argentina)

The UN and governments can have a key role, but we need to go beyond declarations to actual sanctions to those who do not comply (governments) but with a clear sense of each national reality; we need investment in clean environmental technologies, as well as investment in health research for those diseases that are endemic and ravage the health and well being of the most disadvantaged (malaria, dengue, HIV/AIDS, etc.) plus more research and development in genetics with practical and affordable applications. However, in most cases, being healthier also requires an educated society, therefore health and education must go hand in hand.

Genetics, of course, holds remarkable promise to eliminate disease in the next 50-100 years. But again, even though we do devote lots of \$ to R&D, it appears it isn't enough given the potential benefits. If rewards were greater for folks who worked in science and tech R&D (not just if you have success - that's not enough of a motivator) than we'd likely be able to more quickly address challenges in proteomics - which is where much of the challenge will lie in using genetics to prevent and cure disease. We now need a robust "Human Protein/Proteomics Project".

Bioinformatics, and processes by which there could be better, less expensive sharing of certain knowledge about genes and proteins, would also help in using genetics to eliminate disease.

Public health officials and organizations around the world should take the lead, but it will be necessary to get the world's military and terrorist organizations on board too for all the diseases that can be used as weapons, such as smallpox and anthrax.

Since theory of chaos and self-organized criticality rule over natural evolution, such aim is not achievable but is unpredictable and ultimately beyond total human control.

This proves to be impossible. New mutations will always create new diseases. It is a continuing battle.

This is a true challenge for the new Century. It will be likely achieved in a large proportion due to the development of biology. Of course, the problems of access to that "good" - healthy life, will be also depending on the social stratification.

Who knows now the consequences of the elimination of all major infectious and inherited diseases? The balance of the human orderliness is important!

Other Comments

I see that the whole world is realizing for the very first time that it is one. Even movies like "Star Wars" help create this global concept, we are all linked and interlinked in multiple ways. This will contribute to make these 2050 goals really achievable, since our own survival is at stake. The concept of "Gaia" also helps to understand this new approach to the future, which I still believe is bright for human kind as a whole.

The best goals (are) praiseworthy (but these) reside in very few hands and that power and will does not exist to improve the quality of life of the large part of humanity.

The challenges are enormous, the goals also, but the true aspirations of the hegemonic power will not allow a maintained growth of vast areas of the world if their own interests are in threatened. The only exit for the periphery is to negotiate the best possible way with the powerful without losing its dignity, but it requires uncorrupted intellectuals with knowledge of policy and international experience, other people whose only interest is the aspirations of the improvement of the conditions of their countries. If something in this sense does not happen and if the blocks and regions of Latin America as the Mercosur are inoperative the future, only restlessness will result. Latin America needs to trade and to place its products, to generate manufacture and to develop science and technology; the external debt must be restructured and the responsibilities shared by the irresponsibility that placed countries as Argentina as models to the world in the decade of '90.

The cultural, religious and ideological barriers and idiosyncrasies of each people, its history, traditions and customs, will be impenetrable obstacles for standardization and homogenization of the world and therefore impede the application of patterns of behaviors and decision making that are universally acceptable.

I still feel we are avoiding the basic questions of limits to growth and consumption, which foster war, crime, greed, aggression, disease and hunger. The rise of terrorism and fanaticism is difficult to control. Without trust among cultures, many of those who now feel exploited by the G-8, these goals will not be achieved.

At once, I find this exercise to be inspiring and daunting, pessimistic and optimistic, and both a hopeful vision and humbling impossible dream. Nevertheless, I feel it is an important beginning and I am pleased to have been a small part of that important beginning.

All the presented goals are extremely interesting for an exhaustive, deep and interdisciplinary analysis by scientists of the highest level. I think that they should also be put under consideration by great philosophers of all the present cultures, who think about the future of the world and the humanity, from different cultures and with universal criteria. This would allow us to extend the views and to give more sustenance that can offer more wisdom. The results of scientific and philosophical level had to be distributed at global levels so that they contribute to the formation of a global conscience on these subjects. Their importance deserves it.

This is terrific and important work. Thanks for the invitation to participate.

After completing the Round 2 questionnaire this morning, I continued thinking about truly INSPIRING goals for 2050. I eventually realized that most of the bold 50-year goals that inspire me the most are not in the list.

1. Abolish all nuclear and biological weapons, and achieve a world without war or terrorism.
2. Engage in an educative dialogue with at least one other advanced civilization in our galaxy.
3. Widespread caring for the well-being of future generations--a caring so deep that it affects most personal and political choices.
4. Major advances in our fundamental understanding of the universe, including the life and intelligence that it contains.
5. Humanity's knowledge of global issues increases much faster than the problems themselves increase.
6. Universal freedom of speech, assembly, inquiry, dissent, and political opinion.
7. No second-class citizens; everyone can be a full-fledged member of society.

1. Invest heavily in interdisciplinary R&D on
 - alternative energy "life cycles"
 - human brain
 - education for all children by human teachers in the first place
2. Criminalize prostitution, slavery and women body, mind, financial abuse
3. Initiate new global innovations creation movements for issues important to all, make work on them sexy, enthralling, lucrative, brave, rewarding, desirable entertaining, spiritual - whatever, to make people WANT it.

It is really an admirable work and highly necessary the one that you try carrying out with these analysis. As only critic observation, it is surprising that not even tangentially the subject of the familiar planning for the third world countries is considered, considering the gravity of the subject in its long-term perspective.

The union of science and religion will never happen due to the nature of each field, but the religion may be an inspiration source for science and vice versa.

APPENDICES

1. Round 1 questionnaire
2. Round 2 questionnaire
3. Full rating for all the 44 goals
4. Full text comments received in Round 2
5. Excerpt from “Early Warning and Timely Action” study

1. ROUND 1 QUESTIONNAIRE

AC/UNU Millennium Project International Assessment of Inspiring Goals for 2050 - Round 1

On behalf of the Millennium Project of the American Council for the United Nations University, we have the pleasure to invite you to participate in an international assessment of inspiring goals for 2050.

In the past, goals like landing a man on the moon or eradicating small pox were considered impossible, yet they excited many people who went beyond their selfish, short-term interests to great achievements. These kinds of audacious goals inspired cooperation to make a better world and yet were so simple to understand that they required little explanation.

What new audacious goals for the year 2050 would you suggest?

The results of this international assessment will appear in the *2002 State of the Future*. Previous editions have been used by policymakers and educators around the world. The project previously developed a normative scenario for 2050. While reference to this scenario is not necessary to answer this questionnaire, it might provide a useful reference; the scenario is available at: <http://www.acunu.org/millennium/normscen.html>.

Enclosed is the first round of a two-round questionnaire. Round 1 asks you to rate a list of goals and suggest additional ones that will inspire cooperation to improve the human condition. Round 2 will ask for judgments about the results of Round 1. No attributions will be made, but respondents will be listed as participants in *2002 State of the Future*. A complimentary copy will be sent to all those who respond to the enclosed questionnaire.

The Project is funded by the sponsors listed below, with additional funding for this particular study from the Foresight and Governance Project of the Woodrow Wilson International Center for Scholars. Please contact us with any questions and return your responses to arrive at the AC/UNU Millennium Project by April 29, 2002.

Please respond by e-mail to acunu@igc.org with a copy to Tedjgordon@worldnet.att.net and jglenn@igc.org or fax to 1-202-686-5179 or airmail to: The Millennium Project, American Council for the United Nations University, 4421 Garrison St. NW, Washington, DC 20016.

We look forward to including your views.

Sincerely yours,

Jerome C. Glenn, Director, AC/UNU Millennium Project
Theodore Gordon, Senior Fellow, AC/UNU Millennium Project

Note: An interactive on-line version of this questionnaire is available at <http://mpcollab.org> (see "Goals 2050" on left side of the page).

Current Sponsors: Applied Materials, Deloitte & Touche, General Motors, U.S. Army Environmental Policy Institute, and the U.S. Department of Energy (Office of Science). **Inkind:** Smithsonian Institution and the Embassy of Cape Verde

International Assessment of Inspiring Goals for 2050 - Round 1 -

Section 1. Please rate the following goals for their importance, acceptability, and the possibility of achieving the goal by the year 2050. For the purpose of this questionnaire, importance is defined as the ability to improve the future for all, inspire global cooperation, and help other goals to occur. Acceptability is defined as the likelihood that at least one leader of government will eventually adopt the goal and commit the resources to achieve it. Possibility is defined as the likelihood that the goal will be achieved by the year 2050. For perspective, remember that the goal to land a man on the moon was only a ten-year goal; this study is exploring fifty-year goals.

Please use the following scales:

Importance	Acceptability	Possibility of achievement
5 = among the most important	5 = absolutely	5 = virtually certain
4 = of great importance	4 = very likely	4 = very possible
3 = important	3 = likely	3 = possible
2 = of little importance	2 = unlikely	2 = little possibility
1 = of no importance	1 = unacceptable	1 = impossible

	Goal	Importance	Acceptability	Possibility
1	Reduce the environmental impact of producing each unit of gross domestic product (GDP) by a factor of four			
2	Invent a near perfect prediction system of natural disasters			
3	Develop an interdisciplinary science of decision-making			
4	End organized crime			
5	Establish a system of world justice			
6.	Eliminate virtually all corruption in government			
7	Invent a perfect and universally available lie detector			
8	Establish universally acknowledged global ethics			
9.	Educate nearly all political leaders in values, ethics, and improved decision-making			
10	Educate the majority of the world to the equivalent of a university degree			
11	Improve human intelligence 50 points in 50 years			
12	Eliminate all major infectious and inherited diseases			
13	Establish economic systems that work for all (e.g., ends hunger and poverty)			
14	Develop means for allowing individuals to triple their life span			
15	Find effective ways of coping with addictive drugs			
16	Map all brain functions			
17	Make cities more livable (e.g. eliminate traffic gridlock, crime, insecurity, lack of help)			
18	Provide clean and abundant energy			
19	Understand the origins and likely futures of the universe			
20	Move much of the industrial economy into space			
21	Establish several permanent habitats throughout the solar system			
22	Catalog all asteroids and comets for possible collision with earth and design protective systems			
23	Create permanent ocean habitats			
24	Eliminate weapons of mass destruction			
25	Eradicate ethnic and religious barriers to peaceful co-existence			
26	End water shortages and water pollution			

Section 2. Please suggest additional goals for 2050 that you think have the ability to improve the future for all, inspire global cooperation, and help other goals to occur. Please give a short explanation for each of your suggestions.

Goal:

Short explanation:

Goal:

Short explanation:

Goal:

Short explanation:

Please return this questionnaire by April 29, 2002 via e-mail to acunu@igc.org with a copy to jglenn@igc.org and Tedjgordon@worldnet.att.net or fax to +1-202-686-5179 or airmail to: The Millennium Project, American Council for the United Nations University, 4421 Garrison St. NW, Washington, DC 20016, USA.

Thank you for your participation. We will send you the results in the *2002 State of the Future*.

2. ROUND 2 QUESTIONNAIRE

AC/UNU Millennium Project International Assessment of Inspiring Goals for 2050 Round 2

On behalf of the Millennium Project of the American Council for the United Nations University, we have the pleasure to invite you to participate in the second and final round of an international assessment of inspiring goals for the year 2050.

During the first round 26 audacious goals that might inspire cooperation to make a better world were rated by the international panel. The results are enclosed in Round 2 for your further consideration. You are also asked to rate additional goals suggested in Round 1. These were condensed from over 100 suggestions.

The results of this international assessment will be published in the *2002 State of the Future*. Previous editions have been used by policymakers and educators around the world. The project developed a normative scenario for 2050. While reference to this scenario is not necessary to answer this questionnaire, it might provide useful information; the scenario is available at: <http://www.acunu.org/millennium/normscen.html>.

No attributions will be made, but respondents will be listed as participants in the *2002 State of the Future*. A complimentary copy will be sent to all those who respond to the enclosed questionnaire. It is not necessary to answer every question, just provide your judgments about those that match your expertise and interest.

The Project is funded by the sponsors listed below, with additional funding for this particular study from the Foresight and Governance Project of the Woodrow Wilson International Center for Scholars in Washington, D.C. The Woodrow Wilson Center will conduct a workshop based on the results of this study May 20-21. Hence, to have your views included in this session, please return your responses by 16 May 2002.

Please respond by e-mail to acunu@igc.org with a copy to jglenn@igc.org and Tedjgordon@worldnet.att.net or fax to +1-202-686-5179 or airmail to: The Millennium Project, American Council for the United Nations University, 4421 Garrison St. NW, Washington, DC 20016, USA. Please include your name, institutional affiliation and title, along with your address (where the *2002 State of the Future* should be mailed) and e-mail addresses and fax number.

We look forward to include your views.

Sincerely yours,

Jerome C. Glenn, Director, AC/UNU Millennium Project
Theodore Gordon, Senior Fellow, AC/UNU Millennium Project

Note: An interactive on-line version of this questionnaire will be available at <http://mpcollab.org> (see "Goals 2050 – Rd2" on left side of the page).

Current Sponsors: Applied Materials, Deloitte & Touche, General Motors, U.S. Army Environmental Policy Institute, and the U.S. Department of Energy (Office of Science). **Inkind:** Smithsonian Institution and the Embassy of Cape Verde

AC/UNU MILLENNIUM PROJECT

International Assessment of Inspiring Goals for 2050—Round 2

Section 1.

The goals below were rated by: a) *importance*, defined as the ability to improve the future for all, inspire global cooperation, and help other goals to occur; b) *acceptability*, defined as the likelihood that at least one leader of government will eventually adopt the goal and commit the resources to achieve it; and c) *possibility*, defined as the likelihood that the goal will be achieved by the year 2050. The full list of goals and ratings from Round 1 is provided at the end of the questionnaire for your information.

- 1.1 The goals below were rated the most important and likely to be acceptable to government leaders, but the likelihood of their achievement was rated relatively low.

How can the likelihood of achieving these goals by the year 2050 be improved?

Goal for the year 2050	Who should provide the leadership to create the political will to get the goal accepted? How might that be done? What has to happen to make these goals achievable by 2050?
Establish economic systems that work for all (e.g., ends hunger and poverty)	
End organized crime	
Eliminate virtually all corruption in government	

- 1.2 The goals below were rated as highly important, more easily acceptable to government leaders, and have a high likelihood of success.

What will make us ready to move on these now?

Goal for the year 2050	What is the strategy to commit to this goal? Who has to make what decisions?
Provide clean and abundant energy	
End water shortages and water pollution	
Eliminate all major infectious and inherited diseases	

Section 2.

Please rate the following goals suggested in Round 1 for their importance, acceptability, and the possibility of achieving the goal by the year 2050. For perspective, remember that the goal to land a man on the moon was only a ten-year goal; this study is exploring fifty-year goals.

Please use the following scales:

Importance

5 = among most important
 4 = of great importance
 3 = important
 2 = of little importance
 1 = of no importance

Acceptability

5 = absolutely
 4 = very likely
 3 = likely
 2 = unlikely
 1 = unacceptable

Possibility of achievement

5 = virtually certain
 4 = very possible
 3 = possible
 2 = little possibility
 1 = impossible

Newly suggested Goals for the year 2050:

	Goal	Importance	Acceptability	Possibility
1	Create permanent civic mechanisms for deliberation, monitoring, and evaluation of the performance of the state and its officials			
2	Achieve gender-parity in all major decision-making systems			
3	Ratification and implementation of all major UN treaties and Summit action plans			
4	Catalog and preserve the world's species diversity			
5	Establish world government			
6	End slavery			
7	Effective union of science and religion acknowledged by majority			
8	World peace insured by an improved UN			
9	Provide universal health care for all			
10	Establish a global system to review science and technology directions and impacts			
11	Provide universal on-line education for all			
12	Eliminate all land mines			
13	Create a system for the co-existence among of cyborgs, artificial life, and natural life			
14	Normalize international pursuit of key technologies to benefit humanity in a manner similar to the Human Genome Project			
15	Create a fully integrated human/brain/computer merger			
16	Nearly zero emissions and nearly full recycling in production			
17	Reinforce values that lead to consciousness and mental development eventually passing material growth as primary human activity			
18	End Hunger			

Comments:

Thank you for your participation.

Please respond by e-mail to acunu@igc.org with a copy to jglenn@igc.org and Tedjgordon@worldnet.att.net or fax to +1-202-686-5179 or airmail to: The Millennium Project, AC/UNU, 4421 Garrison St. NW, Washington, DC 20016, USA. Please include your name, institutional affiliation and title, along with your address (where the *2002 State of the Future* should be mailed) and e-mail addresses and fax number.

For your information, the table below presents ratings from Round 1 using the scale above. The goals are listed in order of importance.

Rd-1	Goals for the Year 2050	Imp.	Accept	Possib
26	End water shortages and water pollution	4.662	4.000	3.086
13	Establish economic systems that work for all (e.g., ends hunger and poverty)	4.605	3.547	2.587
18	Provide clean and abundant energy	4.600	3.932	3.446
24	Eliminate weapons of mass destruction	4.493	3.500	2.581
25	Eradicate ethnic and religious barriers to peaceful co-existence	4.474	3.400	2.467
4	End organized crime	4.347	3.703	2.365
6	Eliminate virtually all corruption in government	4.329	3.347	2.373
1	Reduce the environmental impact of producing each unit of gross domestic product (GDP) by a factor of four	4.282	3.429	3.143
9	Educate nearly all political leaders in values, ethics, and improved decision-making	4.253	3.342	3.014
12	Eliminate all major infectious and inherited diseases	4.187	4.054	3.162
17	Make cities more livable (e.g. eliminate traffic gridlock, crime, insecurity, lack of help)	4.171	4.040	3.053
8	Establish universally acknowledged global ethics	4.105	3.173	2.867
5	Establish a system of world justice	3.947	3.440	3.120
15	Find effective ways of coping with addictive drugs	3.918	3.639	3.083
2	Invent a near perfect prediction system of natural disasters	3.743	3.608	2.880
16	Map all brain functions	3.722	3.863	3.451
3	Develop an interdisciplinary science of decision-making	3.693	3.486	3.297
10	Educate the majority of the world to the equivalent of a university degree	3.658	3.236	2.397
22	Catalog all asteroids and comets for possible collision with earth and design protective systems	3.514	3.534	3.192
19	Understand the origins and likely futures of the universe	3.473	3.438	2.792
11	Improve human intelligence 50 points in 50 years	3.304	2.957	2.600
23	Create permanent ocean habitats	3.278	3.310	3.229
20	Move much of the industrial economy into space	2.880	2.743	2.405
21	Establish several permanent habitats throughout the solar system	2.877	2.904	2.676
14	Develop means for allowing individuals to triple their life span	2.795	3.042	2.479
7	Invent a perfect and universally available lie detector	2.608	2.822	2.861

3. FULL RATING FOR ALL THE 44 GOALS

The participants were invited to rate the goals for their:

- Importance, defined as the ability to improve the future for all, inspire global cooperation, and help other goals to occur
- Acceptability, defined as the likelihood that at least one leader of government will eventually adopt the goal and commit the resources to achieve it
- Possibility, defined as the likelihood that the goal will be achieved by the year 2050.

The following scales were used:

Importance	Acceptability	Possibility of achievement
5 = among the most important	5 = absolutely	5 = virtually certain
4 = of great importance	4 = very likely	4 = very possible
3 = important	3 = likely	3 = possible
2 = of little importance	2 = unlikely	2 = little possibility
1 = of no importance	1 = unacceptable	1 = impossible

The table below presents the results of the rating of all 44 goals submitted in the 2 questionnaires. The goals numbered 2-1, 2-2, etc. were suggested by the participants in round 1 and rated in the round 2

International Assessment of Inspiring Goals for 2050

Study conducted by AC/UNU Millennium Project in cooperation with
Foresight and Governance Project of the Woodrow Wilson International Center for Scholars

	GOAL	Imp.	Accept	Possib
1	Reduce the environmental impact of producing each unit of gross domestic product (GDP) by a factor of four	4.282	3.429	3.143
2	Invent a near perfect prediction system of natural disasters	3.743	3.608	2.880
3	Develop an interdisciplinary science of decision-making	3.693	3.486	3.297
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19	Understand the origins and likely futures of the universe	3.473	3.438	2.792
20	Move much of the industrial economy into space	2.880	2.743	2.405
21	Establish several permanent habitats throughout the solar system	2.877	2.904	2.676
22	Catalog all asteroids and comets for possible collision with earth and design protective systems	3.514	3.534	3.192
23	Create permanent ocean habitats	3.278	3.310	3.229
24	Eliminate weapons of mass destruction	4.493	3.500	2.581
25	Eradicate ethnic and religious barriers to peaceful co-existence	4.474	3.400	2.467
26	End water shortages and water pollution	4.662	4.000	3.086
2-1	Create permanent civic mechanisms for deliberation, monitoring, and evaluation of the performance of the state and its officials	4.246	3.667	3.316
2-2	Achieve gender-parity in all major decision-making systems	3.754	3.281	2.947
2-3	Ratification and implementation of all major UN treaties and Summit action plans	3.946	3.321	2.929
2-4	Catalog and preserve the world's species diversity	4.214	3.893	3.357
2-5	Establish world government	3.107	2.321	1.982
2-6	End slavery	4.439	4.018	3.491
2-7	Effective union of science and religion acknowledged by majority	3.111	2.500	2.296
2-8	World peace insured by an improved UN	4.439	3.526	2.789
2-9	Provide universal health care for all	4.351	3.702	2.772
2-10	Establish a global system to review science and technology directions and impacts	4.018	3.607	3.214
2-11	Provide universal on-line education for all	4.052	3.862	3.103
2-12	Eliminate all land mines	3.849	3.849	3.226
2-13	Create a system for the co-existence among of cyborgs, artificial life, and natural life	3.140	2.880	2.500
2-14	Normalize international pursuit of key technologies to benefit humanity in a manner similar to the Human Genome Project	4.250	3.615	3.385
2-15	Create a fully integrated human/brain/computer merger	3.000	2.700	2.740
2-16	Nearly zero emissions and nearly full recycling in production	4.368	3.789	2.930
2-17	Reinforce values that lead to consciousness and mental development eventually passing material growth as primary human activity	3.944	3.204	2.741
2-18	End Hunger	4.625	3.982	2.911

4. FULL TEXT COMMENTS RECEIVED IN ROUND 2

In Round 2, the participants were also asked to comment on the achievement of the goals from the following 2 categories:

- A. goals rated the most important and likely to be acceptable to government leaders, but the likelihood of their achievement was rated relatively low.
- B. goals rated as highly important, more easily acceptable to government leaders, and have a high likelihood of success.

This appendix presents the full text of all the comments received.

A. Goals rated most important and likely to be acceptable to the government leaders, but low possibility of achievement

The goals in this category were:

- Establish economic systems that work for all (e.g., ends hunger and poverty)
- End organized crime
- Eliminate virtually all corruption in government

The question was: *How can the likelihood of achieving these goals by the year 2050 be improved?*

The participants commented on who should provide the leadership to create the political will to get the goal accepted; how might that be done; and what has to happen to make these goals achievable by 2050?

Establish economic systems that work for all (e.g., ends hunger and poverty)

Leadership: Scenario 1: a world government as substitute to G7, G8, OMC and UNO, where each State would have one voice and no more, even for the USA. Scenario 2 : an NGO, funded by foundations such as Soros, Ford and so on, able to attract private money and to deal directly with governments all over the world.

About hunger: science can provide a nutritive pill as substitute to hunger during the time that a sustainable agriculture is being settled.

It is highly unlikely, considering the asymmetry of the quality of life that divide the world at present to find this kind of system. Any project of globalization of economic systems will imply a considerable increase of the interference of developed nations on the underdeveloped countries at unbearable costs for the first ones.

Only united civil society through influence to and enforcing the government can help build a system. After the creation of a national civil council with special form of management and participation mechanism for any individual, civil or private organization, institution, company, this can be possible.

UN, WB, IMF. Needed for the system are sustainable development indicators, Tobi tax, green budgets, internationalization of externalities and principal reform of relevant national / international indicators.

The United Nations and the Nobel Prize Committee could provide via the Internet for a voluntary world anti-poverty tax and promote cooperation from UN member-nations to permit citizens to deduct their world anti-poverty tax from their national tax returns.

- 1) Progressive political groups and national governments in favor of underdeveloped countries
- 2) Specific polls and by popular referendums
- 3) A massive redistribution of investments and higher taxation on rich classes of developed countries

We must push for wider acceptance of democracy, and accept the concept of supply & demand along with personal freedom to make individual choices.

To establish economic systems that work for all, (to finish with the hunger and the poverty) we must form a critical education that begins from the basic levels to the college students; followed by the formation of groups interested in constructing comprehensive economic projects. We need leadership and a consortium of NGO's with economic development missions. How might it be done? A Millennium Node engages an interested, qualified NGO to organize a common voice around the world to address the issue to get it done by 2050 –We need agreement on what “success in achieving this is.” We need a lead qualified NGO, to develop a recruiting (of other NGO's), implementation and communications strategy with clear achievement timelines.

“Free”-market Capitalism is incompatible with this goal, which is envisioning economic intragenerational equity. Capitalism is fundamentally competitive, wasteful, unaccountable and strives to increase intra and intergenerational inequity. In a democratic system, leadership must rise from within the majority of citizens. This may be done by dramatically improving their general awareness, education, communication and cooperation abilities. (those with wealth and market control will resist with all strength, those with little will fight for life with heavy losses) In my estimation, will take much longer than 50 years for the western world to lose its power.

We must see into "common frames of reference" so that people feel part of the matters and issues. We must realize our "egocentric" mouse behavior.

The United Nations should provide the leadership in fostering the development of non-industrialized and developing countries.

Governments and international organizations should stem predatory business practices. And we must end the cyclical dependence of individuals on governmental welfare systems and

implement a system that promotes a protestant work ethic; "the harder you work, the better you will do".

Leaders of poor and undeveloped nations should not have discretion of international aid dispersal. Instead, a UN sponsored organization should oversee the handling of humanitarian as well as financial aids. Far too often leaders will spend money intended on infrastructure, health, education and food to fund wars and personal purposes.

Educating those in areas with rapid population growth and economically deprived areas will set forth a progression to a maintainable population coupled with acceptable living conditions.

We need leadership in international organizations such as the UN and OECD as well as political parties in developed countries, influential NGO's and media networks.

The following is what has to happen: targeted scientific/technological research (to find effective solutions to these problems), international cooperation, better education and management in the poor countries, and less corruption.

1-We need a democratic consensus and a "government-civil society- economic sector" deeply committed to a human centered national development. 2-A more just and equitable distribution of the wealth created by society (programmatic narrowing of the GINI Index). International collaboration and solidarity.3- Deep domestic democratic transformations (political, structural, economical and social) -Elimination of the arms race at the international level; channeling the defense budgets to national and global human development programs.

We must strengthen the UN system across the board (bank-fund, UNDP, FAO, WFP, etc.) ... They have a mandate but not the resources.

It must be created a leadership of Presidents of all countries, through meetings by blocks of countries where consensus is reached and with a spokesman who goes to a meeting of delegations by block of countries. In order to achieve this goal, they must understand that if things continue in this way, by domino effect we all are going to end losing.

The organized civil society of the countries. In order to achieve the goals, intensive efforts of dissemination and discussions of them is needed.

Establish a tax of extreme emergency intended for social investment.

NGOs and grass root movements must work locally to convince the country leaders of the global importance of this goal for the survival and betterment of human kind. Maybe more wars, conflicts and cross-border terrorism (like September 11, 2001) will occur before we realize that hunger and poverty are two of the main reasons of specific economic, and general world, problems.

1) UN should take the initiative with a pre-formulated consortium of Western world and Arab world and Asian countries and African and Latin American countries as equal partners of the initiative allies. 2) Initiated by a UN Summit for setting the agenda and process. 3) A culturally

mosaic vision pattern with a common ethical code to be found and articulated and put in competition with no-vision alternatives.

The non-governmental organizations do a tremendous fieldwork to inform those who are far from hunger and poverty of the benefits to free all the inhabitants of the planet of these flagellums. But this is so difficult to achieve that it is probable the cause that whenever tried, it irremediably fails.

International cooperation.

Non-governmental organizations. Strategy of information/increase consciousness. Increase the production per capita.

I believe that this only will be possible with the union of the force of the many existing churches and creeds in the world, which certainly exceeds the present very strong political powers.

Leadership: at the national level and international community. Consensus on the priority and initiatives towards this end. Implementation of adequate policies and initiatives at the national, regional, and international levels.

This it is a goal that can be suggested by the UN but it must be implemented by each country. I do not believe that there is a unique pattern of conduct, but its success depends on the political decision and implementation of the plans of action that guarantee valuable work for all, with the right remuneration.

G-8 countries through the UN. Establish a system which values all goods and services, including black market and underground economies of the poor. Provide incentives for capital generation and leverage so that the economic benefits of democracy can reach developing countries. Adopt goals that are politically neutral.

Raise the infrastructural capacity of countries to deal with economic crises by building the education and training levels of their citizens, with the assistance of foreign countries if needed and requested.

The United Nations. To do it by means of a Summit of all Heads of State and have them to accept a commitment on principles, systems and concrete measures to implement them gradually adapted for each specific situation.

At the global level, the UN can provide leadership to have the goal accepted, however, acceptance does not mean that the energies will actually make this happen. It seems that democracy and the participation of the civil society in moving this goal forward together with strong public/private partnerships is essential. The establishment of these global economic systems that benefit all require reducing gross inequalities in the disparities of ownership of production systems.

Leadership needs to come from wherever it can be mustered. The UN is potentially the best institution to push hard in this direction, but with national sovereignty being as strong as it is, this will be difficult - especially by 2050. 2150 maybe. As politically dangerous as it might be (partly because the UN already has image problems), it is conceivable that the UN could directly take on the question of economic systems and make recommendations of global long-range nature. Perhaps an International Body for the Long-Range Future could help facilitate this. If economic recommendations came from such an entity, it might not be unduly antagonistic because it would come from what could be an "advisory" body that would be looking long-range, so some countries/leaders may not feel too threatened. Uncertain, of course, but the level of negative reaction might not be intolerably high.

Selfish nature of human beings is arguably the cornerstone of capitalist/market economies and unless greater checks are placed on these systems, hunger and poverty will continue. The US, with the most successful capitalist economy can also help lead the way to greater checks - as can other countries - especially since we already have many checks, and maybe a certain amount of credibility and power (justified or not). But history (and biology/anthropology/ sociology) suggest that any population will tolerate a certain percentage of hungry and poor, both within their own country/region and especially globally. And many will argue this is not even an appropriate or desirable goal. As long as it tolerated, as long as selfishness dominates, there will not likely be the required political will.

Selfishness could be addressed directly, for example with extremely strong cultural forces or perhaps by genetically moderating it if possible, or by electing elect radical leadership that will override most lobbyists and perhaps the general will as well. E.g. Green Party in more than just the White House. Arguably, this has been tried in other countries, but has had serious shortcomings for other complicated reasons.

It is improbable by the present configuration of the international organizations that they would have to lead the process. The overcoming of the inequality of political weights is essential and in the conditions of the present configuration of the international political and economic power, to obtain it, a true "conceptual revolution" should take place.

Leadership from relevant NGOs is needed.

World government (if there is one) should decide and take actions. The emphasis should be educating children to start a more mature generation to grow. Global education systems network should be activated to start creating better understanding on that political priorities should change everywhere. I would expect this to take 1-2 generations, provided children can and do go to school globally. Establish youth governance networks to connect on-line and participate in decision making with all governments and global organizations.

By respect to Latino-American situation, I believe that after these countries understand what they really what as a future, they should integrate as a block, like the European community. In this sense, it will be easier to implement economic systems that eradicate or ameliorate poverty, and other problems, as well the group will have enough power to negotiate favorable conditions for

their countries. If Latino American countries are separated and the gap between them grow year by year, it will not likely to have a global economic system that bring benefits to every nation. The group of leaders in Latin America conformed by the most prosperous countries presidents, would have the responsibility to carry their ideas to the less prosperous economies. As this process has to be a game where EVERYBODY WINS, leaders cannot pursue nationalist interests.

The organized civil society, with support of the governmental organizations. By means of participative long term planning for food security. Dignify the civil societies that become virtually societies in eradication of the poverty and hunger. To design strategies of new forms of food production from the biodiversity.

Only a global catastrophe can lead to a new mindset thereafter that can achieve such goal.

In the long run UN's 'global governance'; starting with more binding global agreements (no Bush-Kyoto tricking) in cooperation with the UN WTO, G7/8 countries, EU and Russia; you just proceed stepwise with these agreements using carrots and sanctions; there cannot be One Big Player.

In a globalized world I suppose that it must be the responsibility of international organizations with the sufficient credibility and prestige, to coordinate the policies of the diverse countries; they should ensure communications and integration and promote the overcoming of setback of the slowest economies. The globalization is already done but the problem is the benefits of it. Each country should give a proportionate contribution for the development of a strategy for this and subsequent goals.

The UN seems to be the most experienced and worldwide recognized organization to provide leadership. Other purpose-oriented organization can be created.

There is no much space to discuss the second question here, however, I would say, developing countries has to have the opportunity to take part actively and transparency on decision-making processes is needed.

In developing countries should happen: a) education, b) industrialization, c) specialization, e) international trade promotion and f) reduce corruption, within the next 20-30 years.

In developed countries should happen: a) avoid subsidy, b) promote investment abroad, c) reduce corruption and d) reduce racial differences. Right now!

Who: The citizens, connected by non-governmental organizations working in favor of specified goals, analyzing different aspects of the proposals for the same problematic from each organization, according to the motivations and interests that connect them, but each panel composed by professionals of diverse disciplines and citizens of diverse goals.

How: said NGOs coordinate with each other and also with international forums where they propose joint strategies and policies for implementation in the states and representative organizations of nations.

What: develop at citizens the consciousness about our common destiny like members of a same and unique race: the human race.

Ethical, mega-wealthy individuals and consortiums must drive changes with the aid of like-minded political leaders. Mechanisms have to be invented to channel and reward the psychic needs of the portion of humanity that crave power and influence.

The heads of state reach previous consensus in their respective countries to act in economic blocks to help to compensate the deficiencies and then reach agreement between blocks within the auspices of the WTO.

World powers are needed to lead.

State governments, international organizations, NGOs, spiritual leaders. Basic precondition is design of new economic theory based e.g. on Buckminster Fuller's principles of isentropic stage of evolution of humankind and plurality in economic models and theories.

Civil Society should provide leadership and convince the government after generating public opinion.

Specific positive long-term planning and action programs to be provided by academicians and professionals.

Action and funds are required from government, the public, NGOs and the private sector under proper regulations and then monitored.

Leadership

- Should come from the more enlightened or sensitive celebrities, intellectuals (including the media and civil society leaders) and political leaders

Methods (such as)

- Write off Third World debts
- Tobin Tax
- Investments in social development (education and health)
- Increase cooperation and reduce wars/conflict among nations

Critical Steps

Massive value / attitudinal shift away from consumerism / materialism is required

1. Tripartite consisting of government, and representatives of employers and employees
2. Negotiation
3. Good will and economic resources

State, and politicians. Any economic system as such is not the goal and economic systems do not work in vacuum. Economic system is only the subsystem of society therefore it must be led by society leaders. Society, it is not only state, of course but politicians on every levels of public power have the responsibility to make decisions. To get change of economic systems accepted it is important to co-operate among politicians, entrepreneurs and NGOs. Academicians could give proposals how to change the economic system, proposals should be discussed included NGOs and entrepreneurs with politicians and politicians must realize conclusions. The role of NGO I see as very important because it is representatives of public opinion and public will. Any changes of economic system could be successful only if public will support it. And if economic systems have to bring "end of hunger and poverty", in generally it means "satisfaction" (human

satisfaction is not only about "economic efficiency") to the people it is necessary to ask them what is this "satisfaction" about.

What I want to stress is that change of economic systems is not a question for academicians or economists but for all the people.

Each man, thinker and educated media man, has to put the exertion of each possible effort to obtain the most of these acceptable targets. This is done by the help of the deepening realization to the tragic results in the ignorance of these targets and to make clear the human motives and the religious ones, and the benefits that return on the individuals from the achievement of these targets. 2-The allocation of some of the international prizes to these targets and the truth in its execution, and the execution of schools and universities by its upbringing on this basis. 3-The creation of gradual programs to the arrival to the year 2050, and the creation of punishments to those who fail to follow it.

The leaders of countries must impose an agenda to discuss the implementation of a system of World-wide Justice, with capacity to punish without limitations of sovereignty.

G-8 countries through the UN. Establish a system which values all goods and services, including black market and underground economies of the poor. Provide incentives for capital generation and leverage so that the economic benefits of democracy can reach developing countries. Adopt goals that are politically neutral.

1. Leadership - nobody: If it happened it would be a result of a slow evolutionary process but so far it is difficult to be more specific about the origins and the pace of this evolution (of course it is my subjective opinion). 2. How it might be done? It is possible to achieve if a sustainable economic growth were guaranteed and the ways of overcoming resource barriers invented. Liberal economy has forgotten about the physical limitations. Of course, we should not exaggerate as it was the case of the First Report to the Club of Rome, but in the same time we may not be so overly optimistic and expect that free trade + free financial flows + technology will help to solve all problems of economic development. My prediction is that in 50 years two new ideological economic and political trends will emerge: I. A more egalitarian market system in which limits on extreme wealth will be imposed (self-imposed) by society. It is difficult to decide if it will be achieved through administrative measures or by a "new market". In that case a more equal wealth distribution would help to achieve those goals .II. The second trend will be much more negative. When it will become clear that fulfilling the needs of the entire human population will be impossible (my guess is that it will happen in the next 20-30 years), and when mastery in computer technology will give some social groups (nations, states??) possibility to control the others without awaking their awareness, then those who will possess such capabilities will be extremely tempted to transfer their will to use the resources only for themselves and to control the others. It will lead to the divide of humanity into two contrasting groupings. The one will be the "Masters" of technology (who??) and the others will be the "Underdogs" - those who will not be able to have access to the power-giving technology. I am sorry but this vision reminds an old nazi divide into "Herrenvolk" and "Untermenschen". But as somebody interested in politics, I do perceive it as the most important social and political challenge in the coming 50 years. This is a kind of worst case scenario but in my opinion it will be the greatest political challenge in the next 50 years, or even earlier. 3. What has to happen? Humanity will have to be able to face an unprecedented super-revolution. Of course each generation usually faced such

challenges. In the 20th Century it was (and still is), for example, avoidance of the nuclear war. In the years to come it will be the development of new technologies (information technology, bioengineering, nanotechnology), which unavoidably will give ground to new ideologies (economic and political - F. Fukuyama was definitely too myopic when he wrote about the end of history). It seems that we will be closer to Huxley. A new character of this revolution will be resulting from the fact that contrary to other challenges, in the forthcoming revolution, the very character of human being will be transformed and challenged via the use of biotechnology, nanorobots and super-miniaturized information technology. We may expect that this new ideology (ideologies) will not go to the direction described in point II. The positive ideology of self-restraint of course would be better- a positive development.

The leadership should continue to come from the community of spiritual leaders which is emerging. There is where the political will is. As we reach a critical mass of leaders who have influenced the public to see things differently/holistically, there will be no choice but for those in power now to change their ways. The likelihood of achieving this goal can be improved by training more community leaders in the principles of spiritual maturity.

The main actors related to the relevant public policies. The agreement of these actors always will be fundamental to advance a project in a country that counts on suitable economic and social system for the well-being of the population. Negotiations and to reduce the internal conflicts are essential. Also the agreements of regional and commercial blocks will be fundamental to advance in this process.

The Leadership must come of course from the State with the aid of the Civil Society. For the entire world this must be possible to traverse by cooperation between all the countries with the help of the International Organisms (for example the UN). The most important condition so that this is possible is application of viable macroeconomic policies and to respect these procedures to end the poverty and the hunger.

A new kind of global organization to which the World Social Forum may eventually and naturally evolve, located at a place like Canada. In order for this to happen we will need some time for increasing and strengthening and improving networks and things be ripe enough. [Present] economic systems are not suitable for these aims. Future-oriented thinking leaders and people are needed.

End organized crime

I don't see this being possible, though continued attempts are going to be necessary to keep organized crime activities under control.

Eliminating all the possibilities of money laundering and prohibiting financial operations on "fiscal paradises", excluding these from the International Bank Clearinghouse.

Civil society council. He will find how, through dialogue and involvement of citizens. Money must be subsidized from the governments or free foundations to create such a council.

NGO's such as the Red Cross, Amnesty International, and Greenpeace might establish a network of NGO's, promote decriminalization of illicit drugs and the end of paper money, and hold a global referendum to ratify their aims.

The organized crime is becoming an important social actor. Its network and influence is growing primarily in underdeveloped countries where in certain areas it is in large measure a substitute of the official government.

To end the organized crime the State should initiate campaigns against these groups, reforming the legal marks that protect the delinquents.

Leadership – A consortium of governments working towards the goal of eliminating global organized crime, not more than \$10B. How might it be done – Extend the world governance effort already instantiated under the leadership of the United States efforts to eliminate terrorism. Organized crime is just another model of global terrorism. Get it done by 2050 – Review current terrorism elimination strategy, and modify it appropriately under the leadership of the United States, Russia, and China with established goals and timelines.

At a global scale, such organizations should be viewed as social parasites. Frankly, many of us are no better at present. Stock-brokers ride the webs and flows of other people's money! I lend my money for profit in mutual funds. For the percentage organized crime makes up of our global population and the amount of parasitic effect/disruption they reap overall, I consider this a lower priority. To reduce organized crime, make cooperation more rewarding than exploitation. Will not occur before 2050 unless there is a radical shift in the economic system

See into: hunger and poverty and how some criminals can override and ignore jurisdictions.

The United Nations should punish those who are responsible for the crimes. These goals shall be achieved through the International Criminal Court.

As seen recently with the Israeli-Palestinian situation, the use of military force is more effective than dialogs and hollow promises. The suicide bombings stopped after Sharon invaded the West Bank and isolated Arafat and resumed after Israel pulled out due to int'l pressure. The assault on Afghanistan has all but destroyed the vast Al Qaeda network.

Leadership: civil organizations, mass media, educators, law enforcement
What has to happen: better education (in all levels).

1-Democratic consensus “government-civil society- economic sector” deeply committed to a Human centered national development. 2-A more just and equitable distribution of the wealth created by society (programmatic narrowing of the GINI Index). -International collaboration and solidarity.3- Deep domestic democratic transformations (political, structural, economical and social) -Elimination of the arms race at the international level; channeling the defense budgets to national and global human development programs.

Not possible

The governments. They must improve the judicial systems of each country and the socio-economical and education conditions.

Fight police impunity.

International organizations and governments have to lead this fight. Concerned citizens have to continue asking for the end of corruption, be it in private or public sectors, but the governments have to take action in representation, and on behalf, of the people. Drug smuggling, trafficking, gambling, money laundering and other forms of organized crime have to be stopped by international organizations and governments aware of the risks for the global community.

Crime is a multifaceted phenomenon of human behavior that could not to be put totally to end but to make more manageable and isolated form every day life. One must first make separations of different crimes from their motivational and behavioral origin, and then decide on what kind of crimes needs top priority to be faced. Then we go back to the first problematique and its processes of improvement. They are to improve also this item partially and significantly. We need more understanding of criminal behavior, which is attained by a new kind of research. I suggest that more efforts to put to research of criminal behavior and its relations to every day life and the values apprehended (for example the present day drug business, i.e. organized crime, is based on behavior of normal people who wants to use drugs what not regarding of their commitment to criminal business.) Moral laissez-fair as values.

Form a system of government "free of corruption" and that fights organized crime and the other countries will just follow one by one. It must be clear that the economic interests in the game are very important and therefore, if it is not manage to replace them suitably, it's impossible to eradicate organized crime. Although it is an extremely difficult goal, is not impossible to achieve if it is not tried to do it "by force" nor in a precipitate way. It requires clear work plans with well-balanced guidelines. Special attention should be given to the reintegration in society of those who are part of the organized crime.

UN system is important.

Adapted legislation. Police forces well trained, well paid and with high level of education.

National and regional initiatives articulated towards this end so as to work at the multilateral level and the UN-International Community at the global level.

First, perhaps "significant reduction" is more realistic as a goal than "ending" organized crime. There will always be crime of some sort, individual and organized, as well as drugs, prostitution, etc. What to do? A major effort must be made in indicators, both at national and UN level, bringing together data for "hard" crime (murder, rape, robbery) and "soft" crime. Of course the data for white-collar crime is not very good, but some data, properly qualified, is better than none, especially for important emerging areas of crime such as computer crime and highly controversial areas such as child sexual abuse by priests and whoever (heightened awareness ups

the numbers, and false or unproven charges, but they still should be published, with appropriate qualification). Also, more publicity for white-collar crime, more prosecution, and more punishment. Re tax evasion in the US, prosecution has declined, and the poor are prosecuted more than the rich. I doubt that the US govt. will provide a comprehensive picture of crime trends, so some foundation should sponsor an annual independent, comprehensive evaluation, with lots of op-ed spin-offs to reach the public.

Universal agreement of extradition of delinquents and criminals and application of the jurisdiction of each government, to facilitate to have the trial in the place where the crime was committed.

The economic and cultural value system favors alternate illegal markets, which thrive in closed markets. Computer tracking of goods and services, fair valuation of all commodities and fair pay systems, which yield living wages that will level the table. Enforcement is also critical to stimulate compliance with the law. For this we need a world court system, international trade laws, worldwide commodities exchanges and telecommunications.

Target police forces for additional salary increases to make bribery less viable.

The United Nations. To do it by means of a Summit of all Heads of State and have them to accept that it is a transnational phenomenon that can't be ended by means of the war but only by means of an active political consensus and a clear commitment of all States of the world to promote its elimination.

The case here is similar since organized crime serves to benefit a few and hurt many in the long run, through crime, disease, injury and insecurity. Society must repudiate organized crime in an organized manner, which may sound redundant, however, if people do not have the means to have decent housing, education, food and health care, they might be enslaved by the promises of economic profits derived from crime. At the government level, this is more serious, since it will require strict mechanisms of control, with a simultaneous change in values that reward transparency and accountability to the people they represent.

Essentially, to attack those points where "gulper" can occur, within them, end the "organized financial-crime system" of which examples are each day, especially of the part of the North American banks (e.g. Citibank). Although one does not affirm that that "organization" is indeed planned, it is at least allowed on the part of those who control the circuits of money circulation.

Leadership from police around the world, backed by citizens and politicians.

This would need a total change of human mind. Maybe gene manipulation is needed (who is however the wizard to know what genes are needed?). Actually, the only way to end criminal opportunism is human beings starting act like Jesus. Love thy neighbor as you love yourself. Not loving oneself in the first place and not been loved by someone are the source for need of criminal behavior.

Organized crime has become a global problem so the solution to attack it has to be global. Coordination between nations is a necessary condition for success. A major barrier is the existence of money and personal interests. It seems that corrupted government agents can be allies for criminals. That is why I think private associations must be integrated in the process. They must receive a lot of incentives: money, power. Unfortunately, a stand-alone state solution.

International organizations are important.

A global reach authoritarian government is needed.

See above; [In the long run UN's 'global governance'; starting with more binding global agreements (no Bush-Kyoto tricking) in cooperation with the UN WTO, G7/8 countries, EU and Russia; you just proceed stepwise with these agreements using carrots and sanctions; there cannot be One Big Player] in principle this is easier because the problem is more narrow (although extremely severe); fast and effective change of information between officials in civilized countries; extremely strong sanctions (but no death penalties)

Globalization implies internationalization of the crimes; therefore, an international forum must exist (Commission, forum, etc) that coordinates or integrates the policies of the diverse countries and handles the information necessary to supervise and control. It would be prudent to take an important premise: not to aspire to eliminate the crime, but to maintain it within certain limits.

This is the task of Interpol. Isn't it?! The international police force need political, economic and religious freedom! In plain English: what it needs is just honesty and ethic! It should happen: a) an international justice system and b) free access to information for the international police.

Who: System of education and religion. How: teaching to make specific projects based on the cooperation instead of the competition. Teaching the respect and not to lock in itself in the sectarianism. To help the children to feel from small age that they are respected and protected by the system. What: that civil employees and leader clerics surpass their egoist interests and corrupt mechanisms.

In addition the above [Ethical, mega-wealthy individuals and consortiums must drive changes with the like-minded political leaders. Mechanisms have to be invented to channel and reward the psychic needs of the portion of humanity that crave power and influence.] economic and physical violence must be practiced against criminals and their organizations.

Network of international intelligence and international prosecution of organized crime.

World powers are needed to lead.

Global Anti-crime Organization on the level of UN.

Security force to be put on this special job with proper training is important. We need a judicial system to be modified to work faster and better and quick and detrimental punishment.

Leadership

- Business leaders; Religious leaders; Political leaders

Methods

- Sensitise policy makers about negative impacts of organized crime
- Systems / bodies for much closer international cooperation

Critical Steps

Effective International cooperation to deal speedily with the international crime mafia.

Government, repressive forces, increase respect for law among citizens

This question is closely connected with economic system. Those organize the crime are gangsters but many "small" people taking part in small crimes are often victims of their personal (economic) situation.

Approximately the same points as above [Each man, thinker and educated media man, has to put the exertion of each possible effort to obtain the most of these acceptable targets. This is done by the help of the deepening realization to the tragic results in the ignorance of these targets and to make clear the human motives and the religious ones, and the benefits that return on the individuals from the achievement of these targets 2-The Allocation of some of the international prizes to these targets and the truth in its execution, and the execution of schools and universities by its upbringing on this basis 3-The creation of gradual programs to the arrival to the year 2050, and the creation of punishments to those who fail to follow it.], but add to it spending of some of which was spent on the war against terrorism is enough to stop the organized crime and the poverty suffices.

The leaders of countries must impose an agenda to discuss the implementation of a system of World-wide Justice, with capacity to punish without limitations of sovereignty.

The economic and cultural value system favors alternate illegal markets, which thrive in closed markets. Computer tracking of goods and services, fair valuation of all commodities and fair pay systems which yield living wages will level the table. Enforcement is also critical to stimulate compliance with the law. For this we need a world court system, international trade laws, worldwide commodities exchanges and telecommunications.

This point seems senseless - what will be organized crime in 50 years from now? Computerized mafia illegally controlling the transfer of information via satellite networks??? What is organized crime - various kinds of mafia in different countries?

The State must lead the fight against the organized crime. In other terms, it is the responsibility of the Central Government to face organized crime. International the regional agreements will be key to advance in achieving this objective.

All this must be solved by the State and each country must have its basic and possible adequate strategy.

Organized Crime is the result of disorganized social systems. So locally we would some maturity to lead with social illness seeking and organizing support from all kinds of private, public and community groups.

Civil control is necessary beside criminal organizations. The aim cannot be reached without love, honor and inner values.

Eliminate virtually all corruption in government

I don't think this is possible. (Christensen, USA)

It is very unlikely to eliminate all the corruption especially considering that it is turning more and more sophisticated, dramatically showing its capacities of resistance.

International lawyers' associations, guilds and organizations and international free-trade organizations could endorse a standard statutory declaration that signatories to a world anti-corruption treaty could require businesses to sign.

Only united civil society. Through influence to and enforcing the government. After creation national civil council with special form of management and participation mechanism for any individual, civil or private organization, institution, company.

Changing the fashion of financing electoral campaigns and implementing a debureaucratization process of local and national governments and also implementing on-line purchasing by bidding at a reverse auction.

No other idea than the traditional way: to increase the wages of people of working at government and also the punishment.

Create parallel institutes of monitoring the legislative and judicial powers, but always from a conscious and critical education.

I have no idea. Or, pray for the 'second coming' and have the entire world let God rule.

Same issue as above – reduce the incentives to become corrupt by making the alternatives sweeter. Government of course influences the masses more than criminal organizations, thus is more of a priority. Vision and proactivity lack in present democratic governments, because of liability. The masses must take more individual responsibility so that the onus is less on a few politicians who were never trained as problem-solvers but simply to theoretically carry out the democratic will of the people.

Make issues and decisions more open. Make decision-makers people responsible to some degree

Leadership: The leaders of the countries. Punishing those responsible for the crimes and achieving more transparency in their administrations. Citizens should be aware of the importance of their countries' administrations.

Other than term-limits in just about every aspect of governments including the U.N. and foreign governments. Monarchies such as Saudi Arabia and other countries where they actually have power, unlike the U.K., should also be phased out. The Saudi royals are riddled with corruption. To completely root out corruption in government is unfortunately a utopian and unrealizable goal. As long as humans hold some sort of position of power, they will take advantage of that position no matter how trivial it is.

Leadership: civil organizations, mass media, educators, law enforcement What has to happen: better education (in all levels)

1-Democratic consensus “government-civil society- economic sector” deeply committed to a Human centered national development. 2-A more just and equitable distribution of the wealth created by society (programmatically narrowing of the GINI Index). -International collaboration and solidarity.3- Deep domestic democratic transformations (political, structural, economical and social) -Elimination of the arms race at the international level; channeling the defense budgets to national and global human development programs.

It is not possible but comparable pay to business & industry will help.

It is not possible

The leadership must be taken by the Educators (professors and parents), who are the instructors of the new human talents. It has to be initiated from home and logically from school (from elementary to university), so that it is understood that we all are going to finish badly if the corruption continues, and if we fail to construct a better spaces of coexistence.

The governments and the organized civil society. Transparent mechanisms for the public management must be organized.

Establish an “educator” government.

The best way is to reduce the size of governments, and making their functions more transparent and accountable. Smaller governments will have to be more careful and responsible. Also, all government information should be publicly available in order to control corruption.

There are good examples of corruption free governments in the world, e.g. Finland etc. To learn good and bad experiences from practices with similar cultural frames is important – to establish global ethical competence learning centers for studying and transferring good practices. UNESCO would be a suitable organization to make an initiative.

Goal quite probable to achieve by economically isolating those countries that are governed by corrupt governments. Anyway these measures - economical isolation - in general, if they are not

handled with appropriate degree of information of the population, can finish by "fortifying" the delinquent by turning him into a martyr.

Citizen's education is needed.

Participation and constant control by the citizens, implementation of direct democratic methods of governance are important.

Maximize control audits with intervention of the different political parties.

Initiatives by each specific country, initiatives at the regional level and the international community. The role of the international system is basic (UN).

First, perhaps "significant reduction" is more realistic as a goal than "ending" organized crime. There will always be crime of some sort, individual and organized, as well as drugs, prostitution, etc. What to do? A major effort must be made in indicators, both at national and UN level, bringing together data for "hard" crime (murder, rape, robbery) and "soft" crime. Of course the data for white-collar crime is not very good, but some data, properly qualified, is better than none, especially for important emerging areas of crime such as computer crime and highly controversial areas such as child sexual abuse by priests and whoever (heightened awareness ups the numbers, and false or unproven charges, but they still should be published, with appropriate qualification). Also, more publicity for white-collar crime, more prosecution, and more punishment. Re tax evasion in the US, prosecution has declined, and the poor are prosecuted more than the rich. I doubt that the US govt. will provide a comprehensive picture of crime trends, so some foundation should sponsor an annual independent, comprehensive evaluation, with lots of op-ed spin-offs to reach the public.

It is a private subject of each country. The international penalty can be by means of economic sanctions, regional and international political isolation, but the judgment must be passed in each country.

The economic and political systems need to be simplified in terms of their overall goals and objectives. Conduct a UN workshop series to frame treaties.

Increase the transparency and accountability of public officials.

Increase the R&D significantly on new energy sources with attention in equal measure to the pollution from energy sources, both new and old e.g. target the safer disposal of nuclear wastes.

Each State is individual. By means of the ethical education at all the levels and opportunities of their citizens. The people, who suffers the effects of corruption, has to evaluate the harms it produces and its multiple aspects in life.

At the government level, corruption is a form of organized crime but even more serious, because their effects spill over all of us. It will require strict mechanisms of control, with a simultaneous change in values that reward transparency and accountability to the people they represent.

"Little Brother". May sound too radical, but installing microphones/cameras just about everywhere public officials discuss and decide on public policy and making available on the internet real-time would go a long way to reducing corruption. Initially, decision makers will not be able to cope with this, but eventually they might get used to it - just like C-SPAN.

As our representative republic turns more into a pure democracy (enable by technology like the internet) there will also be greater visibility and likely less corruption.

This depends on the voters, estimating the total uses of the democratic systems, and implies a greater education in the democratic field, as well as an international cooperation between Governments to avoid one of the greater sources of corruption that is related to international contracts, concessions, bids, etc.

Change globally the representative democracy and create new models for deliberation This means that the ways to participate are based on respect and trust, which again means a dramatic change in human nature - especially that of males towards females. Academia, governments and NGO's should collaborate and finance new decision making models to be invented and experimented world wide. Best practices freely available in the net!

To make political reforms so that the organized civil society has the responsibility to administer and control, enforced by an adequate legislation that punishes the use of public goods and trust in private interests and the practice of clientele. We need to build a society with value for the public and the group.

An authoritarian world government or a biologically modified human mind can achieve this. With present humans this is biologically unrealistic.

Often corruption is least in economically strong countries (though they have it). They should start first by ending it totally from their own countries => C8 ('clean eight'), and setting economic sanctions to the more corrupted countries until they start to behave in a more civilized way; Finland could be the leader in this...

I believe that each country first of all must fortify its institutions whose functions are to assure a mutual conduct between its citizens respecting the law. Nevertheless, in a globalized world it is of the interest of the diverse countries to avoid this kind of crimes and for that reason an international body would be pertinent, although it shouldn't take the place of the national responsibilities but coordinate and establish rules of interaction between countries.

Both the "End organized crime" and "Eliminate virtually all Corruption in Government" should be considered together. A non-affiliated organization has to fight against crime and corruption.

Who: the industrialists and the people in charge of the large economic groups. How: generating production systems and wealth based on generating and creating VALUE and GROWTH in a genuine way, and not using the governments as instruments that favor businesses that no longer are useful to society. What: that the industrialists become aware that with those mechanisms do not help a development that allows a sustainable economic growth.

Let public jobs pay decently--equivalent to private sector jobs of similar significance. Also, invent governance mechanisms that satisfy officials' psychic needs without regard to corruption for power's sake.

Something difficult mainly in Latin America, nevertheless the use of the communication technology and the data networks can restrain in effective way this crime.

Split power and politics.

Precondition is system of feedbacks implemented in democratic political system on all levels national and global first.

Public opinion to be generated

Quick and detrimental punishment to both the giver and taker of illegal gratification

Make information transparent and easily available through internet.

Remove unnecessarily restrictive laws and procedures

Rules and regulations should be clear and non-discretionary

Separate monitoring agency outside the government.

Leadership

- Enlightened civil society and political leadership

Methods

- Transparent governance
- Deeper democratic participation by citizens
- Effective legal system

Critical Steps

Citizens' / Public pressure against corruption.

Independent media + public opinion

Transparency of policy, more strict measures and control mechanisms

This is goal for civil society. Politicians or entrepreneurs who profit from corruption will not do it. As big pressure as possible must be done by NGOs on politicians to eliminate corruption. Implementation of broad and cheap access to the Internet and legislation that enables public administration decisions to be on the websites is good way. Corruption is possible only in environment of lack of information. On the other hand easy access to the information for everyone is the best way to combat corruption.

1-The organizations of the civilian society—straight clean ones not followers. 2 –Create the firmest hand-hold attempt to the corruption fight. 3 - Specification of a gradual red lines identification until 2045, and who oversteps it is faced by a complete boycott from all of the sides in addition to his disclosure in the media.

The leaders of countries must impose an agenda to discuss the implementation of a system of World-wide Justice, with capacity to punish without limitations of sovereignty.

The economic and political systems need to be simplified in terms of their overall goals and objectives. Conduct a UN workshop series to frame treaties.

This point seems senseless - what will be organized crime in 50 years from now? Computerized mafia illegally controlling the transfer of information via satellite networks??? What is organized crime - various kinds of mafia in different countries?] In addition, this issue has two aspects - ethical and institutional. Ethical question is if in the next 50 years we may expect deep changes in human behavior. An institutional aspect of this story is even more intricate. Today we have problems with explaining corruption and first and foremost it will be necessary to say what will corruption mean in 50 years from now.

The same government should work as an example. Make public the cases of corruption, and punish diverse types of the corruption. However, to end the flagellum it is necessary to reform the civic education in the basic schools; this will be perhaps the unique way that will allow in long-term to eliminate governmental corruption.

This it is a quite difficult goal; it's necessary to begin to attack all the institutions of a country without leaving any out. The state and the civil society play a fundamental role.

Transparency nowadays is an important tool against corruption; and this may be attained through the use of efficient Information and Communication Technology. So we only need political good will as well as appropriate technical support from software houses interested in developing citizenship.

The elections and the activity of the governmental organizations have to be absolutely open and transparent.

B. Goals rated as highly important, more easily acceptable to government leaders, and have a high likelihood of success.

The goals in this category were:

- Provide clean and abundant energy
- End water shortages and water pollution
- Eliminate all major infectious and inherited diseases

The question was: *What will make us ready to move on these now?*

The participants commented on what is the strategy to commit to this goal, and who has to make what decisions?

Provide clean and abundant energy

Is nuclear energy considered as clean? If so, the decision belongs to population in each country. But the example of Germany is obvious enough about the social vision of nuclear energy.

If such an energy is provided by alternative sources (wind and so on), the strategy is to decide of a mega-program in R&D in order to discover a radically new way to stock this energy, esp. in a car. The problem is to resist to the petroleum lobbying.

The Kyoto Accord nations could reconvene and agree to increase gas and energy taxes, not across the board, but according to the fuel efficiency of the energy-using machine, vehicle, or equipment. Gas for gas-guzzlers should be taxed higher than fuel for economy cars.)

Effective, rational use of energy and raw material for energy production where is expedient and cheap use of energy of water, solar and wind. The decision must be made by producers and governments.

To enhance technology and the pressure of NGO, as well as limiting the market demand increase by effective conservative programs.

Increase levels of independent research that is not linked to existing energy interests.

Although apparently, the State always must be the one who makes the decisions, the groups of citizens worried about sustainable development are those who initiate the decisions, but the problem is with the investment in research.

What strategy – Agree on a range of “success measures”, and then set up a global market for developing and distributing clean and abundant energy. Who makes the decisions – “Success” is decided by the UN; NGO’s knowledgeable about this area; or governments of each continent. Funding is provided to encourage entrepreneurs to compete to solve the need as defined by the organizations describing “success.”

Providing energy for life and comfort to the standards western cultures are accustomed to may only theoretically be conceivable globally with a population a fraction of the size, let alone having “clean” and abundant sources. With fewer people, resource management and refinement must become the dominant profession of our species again (like every wild species) because the present infrastructure is unsustainable by a smaller population, miracle technology or not. Remove petroleum as the fuel to maintain the infrastructure, which is necessary, get ready to suffer downsizing as significant as our unbridled growth has been. Possibility of achievement: 1 (the degree of change necessary to globally reform our biological role within the organization of the Ecosphere will take centuries to engrain if there is no apocalyptic collapse in the meanwhile, mitigating strategies will simply ease the severity of suffering)

Go to solar, wind and geothermic energy. The population has to make the decision, and the industry needs to be taxed according to the degree it contributes to this goal.

Tax reductions and adherence to the international regulations. The United Nations and industrialized countries should lead.

Governments should create incentives for industries that either use alternatives to fossil fuels or are in the transition of phasing them out. Particularly within the U.S. government, our politicians

are too easily influenced by lobbyists, which include cash rich oil industry. A "re-education" of the public of sort should be utilized to highlight the advantages of balancing being eco-responsible and maintaining the economy as a consumer.

Any breakthroughs or innovations in alternative technologies should be free to the public to use and improve on.

Well funded R&D. Decision makers (in governments) must give high priority to these issues in budget allocation. Also - technology foresight studies to show the potential of new technologies to solve the energy and environment problems, and by that to convince decision makers.

Close international collaboration in the field of R & D (international programs and laboratories with the participation of scientists from developed and developing countries alike).

Leadership: -The sovereign countries (their agencies) and the respective UN bodies and other international organizations and institutions.

Convince world automobile industry; this is in their self-interest. Start with Germany and Japan; US would eventually follow.

To stimulate the activities of research and development on these technologies as well as their use.

Eliminate industrial pollution.

Corporations will lead the way, supported by government regulations. New technologies will be developed thanks to tax incentives, that will help have more output energy with less input materials.

Universities, technology development centers and companies are the executors of strategies, while governments and business allies must supply the resources soon and adequately.

The decision and leadership must start from the countries that have the technology suitable to achieve this goal; attention should be also paid to the economic interests of those interested in this, "compensate them", to avoid an enduring attitude against this goal.

Education. Constrain the energy generating companies to respect the obligations they assumed. The population should be informed/consulted before each decision.

Increase the commitment toward the environment and achieve collaboration of governments.

Design and apply articulated programs between developed and developing countries with active participation of the whole of the international community.

International and internal commitment of each country to control; control and penalty by an international organism.

International companies, cartels, and research must commit to this goal. Individuals must also learn what options are available for energy and conservation. Energy users and designers of infrastructure and housing must commit to energy saving designs and materials manufacture. Targets could be set through treaties and G-8 agreements.

Increase the R&D significantly on new energy sources with attention in equal measure to the pollution from energy sources, both new and old e.g. target the safer disposal of nuclear wastes.

To promote and to develop the sustainable technologies corresponding to the recognized clean power plants. The regional UN organizations, the States and the NGOs must do it using the means of information dissemination, the organizations of R & D and agreements with companies that offer services.

For these three goals, which contribute to a healthy society and a healthy world in all respects, it the UN and governments can have a key role, but we need to go beyond declarations to actual sanctions to those who do not comply (governments) but with a clear sense of each national reality; we need investment in clean environmental technologies, as well as investment in health research for those diseases that are endemic and ravage the health and well being of the most disadvantaged (malaria, dengue, HIV/AIDS, etc.)

The technical challenges here may be more difficult than many imagine, but nevertheless, R&D in this area must be dramatically increased if we want to find better sources of energy for the long-term. The technical challenges seem, in principle anyway, possible to overcome if enough smart folks get enough \$ to solve them. The reward for those who devote themselves to this kind of work also has to be high so we ensure getting the best and brightest to work on the problems.

United Nations-adoption and implementation of international agreements in the matter of cooperation to overcome the deficiencies and higher global cooperation concerning oil matters.

Invest heavily in R&D of alternative energy sources that are available to all people. This needs targeted energy solution strategies. Governments should make a global treaty in the UN, however, this is not enough. No UN treaty is applied without the understanding and approval by majority of ordinary people.

We need to educate the citizens and the industrial economy to change from the programs of formation for traditional economy to environmental economy. To use taxation system and/or give financial incentives to companies.

Drastic reduction of corporate power exerted in governments is needed.

The UN could establish an Energy Council with at least as high status as the Security Council. Its first task should be to create a global, fair and realistic strategy for clean and abundant energy everywhere in the world; after that a global meeting of world leaders would commit themselves to it.

Establish incentives both at consumers side and the suppliers' side so that the agents develop more quickly alternative sources of energy. Accompany these policies by rules (real and legal) that regulate or imply increasing costs or greater risks for who generates polluting energy. As far as the abundant thing, it implies to promote the productivity from the producers. These policies must be joint initiatives of the diverse countries but under the frame of international interaction

The strategy: Taxes and liberalization! Who and what: Governments: liberalization and controlling. Companies: research and investment.

How: to inform the citizens on the subject and the actions necessary and to generate actions and pressure each one in its own environment of life, work and communitarian action. Who: the municipalities, counties and governments of great cities must begin to present locally within their small district, raise awareness and sharing experiences.

There needs to be truly international cooperation on research. Ensure that parton-archy glouts a major role in this game and profits to match patron-profit.

We need technology, development, government, industry and university

In the case of Latin America great projects of development of power generation exist; it's necessary to extend and improve the ways of distribution between countries and to extend the operation for alternating energies.

Scientists with support of world powers, development of new technologies for cosmic energy, solar energy, water energy etc.

Make solar energy as main energy source in economies on national and global level.

We need to improve distribution systems with involvement of private sector and the public and need suitable tariff and recovery system More energy generation through eco-friendly means Demand management and energy conservation

Strategy

- Make clean energy economically attractive for producers and consumers
- Remove hidden subsidies in conventional energy

Decisions

- Economic taxes and incentives to facilitate use of clean energy sources

Actors

Policy makers, Businesses, Consumers

Technological and scientific development of alternative sources. Scientists, research workers and NGOs

1-The imitation of the Islamic strategy. "Do not injure (trouble yourself), or injure others"2-The decision is to be made truthfully by the gathering of organizations between actors to the selected parliaments and between actors to the specializations with the relationship and power. And the

decisions to the progression are to be made aiming towards the clean energy and the economy of its use.

Provide subsidies and incentives to mixed partnerships private-state, like the one created for the research of the Human Genome.

International companies, cartels, and research must commit to this goal. Individuals must also learn what options are available for energy and conservation. Energy users and designers of infrastructure and housing must commit to energy saving designs and materials manufacture. Targets could be set through treaties and G-8 agreements.

Strategy: search for new and renewable sources of energy (fusion) and/or exploitation of the sources of energy from other planets.

The international agreements will be key, along with the participation of the developed countries in endorsing these agreements. The decisions must be of the participant governments in the diverse international organizations.

Ministry of Energy and Mining should be involved.

No doubt this will depend on the ability to convince large corporations the investing in clean energy is in the long run more profitable. In we add to this the possibility of conscious consumers to choose which kind of energy they are more willing to buy; the rest will go by itself. All this may be accomplished by the pressure groups from the Organized Society.

End water shortages and water pollution

Education, high eco-taxes and punishment, large program to identify the priorities in water pollution producers. Targeted actions against the main pollution producers. Create a world market of clean water, with controls and regulation.

An alternative to the excessive consumption of water and its waste, might very soon, be considered under the optics of the police and eventually military surveillance

International environment groups such as the World Wildlife Fund could promote small, local experiments in which municipalities allow residents to own and trade an annual allotment of water. Eventually annual water consumption needs to be capped, starting with local governments.

Rational use of water. Governments must do decision about and population must be educated and informed. Also ethical code must be accepted and controlled on water use.

To enhance technology and the pressure of NGO, as well as limiting the market demand increase by effective conservative programs.

Telecommunication capabilities will allow corporations to operate virtually, permitting workers to live in areas where water is available. Research is essential.

All my answers are based on the fact that only the education will allow constructing conscientiousness for the care of the planet, with the support of governmental economic programs.

What strategy – Agree on a range of “success measures”, and then set up a global market for developing and distributing clean (define) water. Who makes the decisions – “Success” is decided by the UN; NGO’s knowledgeable about this area; or governments of each continent. Funding is provided to encourage entrepreneurs to compete to solve the need as defined by the organizations describing “success.”

Sheer numbers of the poor with the greed of the rich is a bad combination. One or both must give. And the awareness and participation by individuals must rise. Within the time frame suggested, I’d expect to see water and energy wars if current trends are not dramatically altered.

We have to invest into re-use and cleaning of water, more efficient use, and awareness by the consumers that water is a rare, precious commodity. The people and the parliaments setting appropriate frameworks and reward schemes.

Implement measures so as to avoid wasting water. Reduce the level of water pollution or eliminate water pollution. United Nations and the industrialized countries should lead.

The national government of where the offending organization is polluting the water tables should face stiff penalties, both criminal and financial. An international treaty should be drafted outlining the standards of emissions, as many corporations are multinational.

The world is over 60% water. Despite it being saltwater, countries such as Japan and Israel utilize and export desalination technology. There should be an international push to wee off usage of fresh water lakes and move to improve and spread the use of desalination facilities.

Well funded R&D. Decision makers (in governments) must give high priority to these issues in budget allocation. Also - technology foresight studies to show the potential of new technologies to solve the energy and environment problems, and by that to convince decision makers.

National and regional policies. National and international programs with international aid.

UN should hold a second World Conference on Water (first one was in 1977) in 2005 and launch 2nd decade on water and sanitation. The first one was in 1981-1990 and was very successful. One billion got access to safe water and 700 million got sanitation.

Difficult. Will require coordinated effort of continental unions.

The strategy is education. The decisionmaker is the whole population, because the water is vital for the survival of the human.

To develop innovating programs of environmental education. The governments and the civil society of the countries have this responsibility.

Establish monitoring social organizations.

NGOs have a role to play to bring this issue about. The problem is not really water scarcity but water distribution. The world has enough water, but it is necessary to have more equitable and efficient distribution channels. With more water and more consciousness of its importance, there will be a better handling of it and less pollution.

Every day development workers trained and educated and equipped with technology to make changes of every day life in villages and everywhere needed. And the same as above.

(The same as to the previous question.) The decision and leadership must start from the countries that have the technology suitable to achieve this goal; attention should be also paid to the economic interests of those interested in this, "compensate them", to avoid an enduring attitude against this goal.

Citizens' capacities should be studied.

Increase research by universities, dissemination of information and public consultation.

With technological advances and great investments, from the detection of new water sources to the cleaning and maintenance of the contaminated rivers.

Design and apply articulated programs between developed and developing countries with active participation of the whole of the international community.

International and internal commitment of each country to control; control and penalty by an international organism.

This goal will require substantial investment in conservation, water reuse, and innovative exploitation. It will also require limits to population and agricultural use of water to equitably distribute the available supply in the short term. Extracting water from polar ice caps, the oceans, and even deep space will all be developed over the next 50 years by governments and private corporations.

Charge individual users for water use rather than just for water distribution, billing systems as it is now in North America- and use the funds collected as incentives for finding better methods of keeping the water non-polluted.

To use a strategy of promotion good preservation, use and distribution of the potable water. Leadership: the UN and the Heads of State by means of international and national legislation and active political control in its achievement, with the power of an appropriate polices.

For these three goals, which contribute to a healthy society and a healthy world in all respects, it the UN and governments can have a key role, but we need to go beyond declarations to actual sanctions to those who do not comply (governments) but with a clear sense of each national reality; we need investment in clean environmental technologies, as well as investment in health research for those diseases that are endemic and ravage the health and well being of the most disadvantaged (malaria, dengue, HIV/AIDS, etc.) For this goal and the next, government intervention, and work through subregional economic and social integration mechanisms (MERCOSUR, NAFTA, etc.) are very important since they provide mechanisms for encouraging and forcing countries to comply.

United Nations-adoption and implementation of international agreements in the matter of cooperation to overcome the deficiencies and higher global cooperation concerning effective international supervision of the contamination sources.

A global "hype" for clean water is needed. Join all forces - government, science, communities, armies -stop the local wars, and move the money from arms to natural science and technology R&D for this campaign.

Worldwide goal, culture of the life. Protection and return resources to countries with hydro resources. Organized civil society, and national states, multinational organizations.

Vast expenditures on water desalination and pollution controls. Drastic reduction of corporate power exerted in government.

UN activities and resources for these issues and for ao. Education should be raised; the US should pay its huge debt to the UN.

To promote environmental protection nonpolluting policies and technologies, that imply block costs and make less attractive the agents whose activities are polluting. The water begins to be real economic resource. Establish rules with international jurisdiction and control globally and each country.

I believe that it is an ambitious prosperous goal for a so short period. In any case, the health of the citizens is already a joint responsibility of international coordination (for example, World Health Organization). It implies a solid policy of prevention, education, etc, and a rational canalization of resources of the countries of greater productivity.

The strategy: Taxes and punishments! Who and what: Government: laws and controlling. Companies: research and investment.

How: to educate ourselves and our children in the schools on this theme. Who: international organizations dedicated the education on the subject and coordination and control of the hydro resources.

Spend 1/3 of world's military founding on training and infrastructure development. Most technology exists, though it can get better. Solving energy with go a long way. Everybody has to decide to fight this "war."

Technology development and environmental management / Government - Industry –University

To consolidate the existing urban areas and create the others based on proximity of water sources and work opportunities and to develop projects of aqueducts, taking care of the river basins and the sources of water supply.

International collaboration via agreements that allow non-commercial collaboration in the main diseases and in the diseases that were already eradicated but still exist in many countries. (Giuseppe Croce, Venezuela)

Highest efficiency in households, wider education.

New technologies, new patterns of consumption, education.

We need involvement of communities at lower levels for water and land management. Only bigger projects should be managed by governments with involvement of representatives of all water users. We need to demand management and conservation.

Strategy

- River basin management approach with involvement of all user groups

Decisions

- Adoption of legal and managerial approaches to involve all water users / sectors in management

Actors

- Policy makers

Leaders / representatives of water users from all sectors.

Sanctions for waste and pollution

The raise in the price of water to what exceeded the limit. Teachings should be in accordance to the Islamic idealism which states that we should not misuse or overuse water even if it is needed from washing for prayer and you get it from your neighbors river.

To become aware that the main oxygen source of the planet are the oceans and not the forests, to avoid the contamination, simultaneously must be implemented of a system of World-wide Justice, with punishment capacity.

This goal will require substantial investment in conservation, water reuse, and innovative exploitation. It will also require limits to population and agricultural use of water to equitably distribute the available supply in the short term. Extracting water from polar ice caps, the oceans, and even deep space will all be developed over the next 50 years by governments and private corporations.

This is a sort of objectives that are quite sensible for the next 30-50 years. There is no problem of water shortages. We simply need fresh water. And in this case I do believe in econo-techno fix. Some day, when the real problems with fresh water will emerge, new technical solutions of desalination will be invented. Look what happened with food shortages. Of course, per analogy, similarly as with the food right now, there may be problems of allocation resulting from poverty but it is hardly to predict.

Once again to advance, international agreements are required, where the major industrialized nations commit themselves to respect the environment. Also, at national level, the governments of the developing countries must orient their environmental policies and make territorial reorganizations considering these factors.

Establish mechanisms and regulations by the Ministry of the Environment.

A network of Governments should promote public and private research initiatives to develop fast more efficient filters and processes, with companies to foster best practices all over. Conscious Consumer and usage should be permanent goals.

Eliminate all major infectious and inherited diseases

World scale vaccinations and genomics.

Improving technological applications. More investments on health care and science researches and innovations

Support biomedical and bioscience research.

The Vatican could convene an international council of religions to commit followers to enjoy special tax breaks when they donate pharmaceutical company shares to a common World Fund Against Disease. Governments need to deregulate pharmaceutical research, replacing preemptive controls with stronger penalties against drug companies and other health providers for malpractice.

Countries must accept coordinated actions and policy with global control and monitoring.

Not only support from the State for research but, but from the rich international corporations too, for more assistance of the disadvantaged groups.

What strategy – Agree on a prioritization and a range of “success measures”, and then structure the global market for inoculations. Who makes the decisions – “Success” is decided by the UN; NGO’s knowledgeable about this area; or governments of each continent. Funding is provided to encourage entrepreneurs, or venture philanthropists ala Bill Gates, to compete to solve the need as defined by the organizations describing “success.”

It seems inhumane, but medicine is the art of dodging nature's check on our lifespan and thus population/consumption. Only at a time of population and consumption "sustainability" would this be potentially beneficial to the "Big-picture" (no matter its social perks). Sadly, long life is a personal ambition that may have been put too far ahead of the best interest of the species given its current predicament.

A nice dream - there is body and mind and so the general conditions need to be improved as well.

Adopt measures of prevention and to improve methods to eliminate the inherited diseases, from the genetic point of view.

This area should be overseen by a single international agency, perhaps a beefed-up WHO, with satellite offices in political regions throughout the world. Diseases are fought merely on a local or national level rather than overall global level. All financial resources should be pooled together. Competition between pharmaceutical companies is beneficial in the creation of new drugs and vaccines. Biogenetic research, including cloning, will save us.

Well-funded R&D. Decision makers (in governments) must give high priority to these issues in budget allocation. Also - technology foresight studies to show the potential of new technologies to solve the energy and environment problems, and by that to convince decision makers.

National public health policies. Governments and close international collaboration and solidarity, especially with WHO.

Triple research budget in US and triple US contribution to WHO – who did get rid of smallpox, and is working now on polio, TB, malaria and AIDS.

This is difficult.

The national and local governments and the nongovernmental organizations.

Increase resources for research in developing countries.

This should be a major goal for mankind, lead by international organizations (like WHO) and NGOs (like the Rotary Foundation). Worldwide cooperation make this goal very achievable, also thanks to collaboration of private enterprise (like some pharmaceutical companies) and governments.

Medical research and application, and dissemination of appropriate knowledge of infections and their origins and avoidance and cure of them to people, make medicine as power cheap to people to have and use for cure. Governments and development policies are the most important strategic player in this.

Once again it falls to countries that lead - the first world - and in its scientific organizations- the work to research and develop the means and tools adapted to achieve this goal.

Increase research by universities with adequate budgets.

Advancements in biotechnology are important.

Design and apply articulated programs between developed and developing countries with active participation of the whole international community, with the specific participation of international health organizations and institutions. National and regional initiatives articulated towards this end so as to work at the multilateral level.

It is an action to be undertaken internally in each country, with support and international aid of the WHO or the OPS.

Genomics, gene therapy, nanotechnology, and research on coatings are likely to nearly eliminate both infectious and inherited diseases. Most of this work will arise in private research institutions and universities. Organizations like WHO and FDA will evaluate and license them for international use and efficacy. Slippery coatings will prevent foreign organisms from attacking our bodies, reproducing, and spreading disease. Other barriers will protect food and consumer products.

The strategy must be global and oriented towards research on such diseases and to allow producing and distributing the medical solutions to all the humans equally.

These three goals contribute to a healthy society and a healthy world in all respects. The UN and governments should have a key role, but we need to go beyond declarations to actual sanctions to those who do not comply (governments) but with a clear sense of each national reality. We need investment in clean environmental technologies, as well as investment in health research for those diseases that are endemic and ravage the health and well being of the most disadvantaged (malaria, dengue, HIV/AIDS, etc.)] plus more research and development in genetics with practical and affordable applications. However, in most cases, being healthier also requires an educated society, therefore health and education must go hand in hand.

Genetics, of course, holds remarkable promise to eliminate disease in the next 50-100 years. But again, even though we do devote lots of \$ to R&D, it appears it isn't enough given the potential benefits. If rewards were greater for folks who worked in science and tech R&D (not just if you have success - that's not enough of a motivator) than we'd likely be able to more quickly address challenges in proteomics - which is where much of the challenge will lie in using genetics to prevent and cure disease. We now need a robust "Human Protein/Proteomics Project".

Bioinformatics, and processes by which there could be better, less expensive sharing of certain knowledge about genes and proteins, would also help in using genetics to eliminate disease.

United Nations and International Organizations of Assistance—effective scientific cooperation with governmental political will are necessary to reach those goals.

Public health officials and organizations around the world should take the lead, but it will be necessary to get the world's military and terrorist organizations on board too for all the diseases that can be used as weapons, such as smallpox and anthrax.

Since theory of chaos and self-organized criticality rule over natural evolution, such aim is not achievable but is unpredictable and ultimately beyond total human control. However, major improvement may be achieved if financing of medical and bioscience R&D is globally organized as towards this goal, and if prices or cures and disease prevention are subsidized by somebody (government, foundations, rich people...) to ensure low enough prices for all.

Worldwide goal; the WHO, local governments, organized civil society in health, financing of production and discovery of antigens and vaccines.

Impossible. New mutations will always create new diseases. It is a continuing battle.

Again, UN, and its resources, education, comprehensive vaccination programs.

The strategy: Education and laws. Who and What: Government: education, patent framework for medicaments and economic aids. Companies: research and investment.

How: to work with the causes that affect the majority groups and disadvantaged. .Who: the laboratories and the governments, working and leaning together to turn health into a main social right.

This is basically a research issue but highly sensitive to cost/profits in the private sector. Public research and production of medicines might be required. Not the pure capitalism or socialism will succeed. This is a natural field for the UN.

R&D with international cooperation / Industry - University – WHO

International collaboration via agreements that allow non-commercial collaboration in the main diseases and in the diseases that were already eradicated but still exist in many countries.

Best scientists together with politic leaders of world powers, wider education, non-expensive drugs for all.

Eliminate all diseases is not possible.

Spread awareness and educate people regarding preventive methods. Blood and other medical tests before marriage to prevent inherited diseases.

Strategy

- Emphasis link between health and economic prosperity as well as human development

Decisions

- Commit financial and other resources to 'health for all'

Actors

International and national policy-makers and decision-makers (including multi-lateral, bilateral and private development and donor agencies)

1. The goals listed here are of two types. Most goals, such as about health, water or peace, are likely to be considered widely or universally important and acceptable. But regarding some other goals (especially 13 and 15, and to a lesser extent 2 and 7), there can be great differences of opinion, which cannot be ignored and should be taken into consideration.
2. With regard to number 3, the acceptability and possibility of ratification of treaties will be higher (say 4) but the chances of implementation will be lower (say 3).

Higher investment to medical research

The strict assertions in the protection operations and the prevention of infections. And making punishments to those who disobey this. And the breeding of people on the principle: "The cleanliness is part of religion".

Provide subsidies and incentives to mixed partnerships private-state, like the one created for the research of the Human Genome.

Genomics, gene therapy, nanotechnology, and research on coatings are likely to nearly eliminate both infectious and inherited diseases. Most of this work will arise in private research institutions and universities. Organizations like WHO and FDA will evaluate and license them for international use and efficacy. Slippery coatings will prevent foreign organisms from attacking our bodies, reproducing, and spreading disease. Other barriers will protect food and consumer products.

This is a true challenge for the new Century. It will be likely achieved in a large proportion due to the development of biology. Of course, the problems of access to that "good" - healthy life, will be also depending on the social stratification.

The preventive work will continue to be the fundamental one to diminish the indices of the infectious diseases and the application of the advances of science in the previous stages and during the pregnancy. These are decisions of health policies that are at the responsibility of the State. But the advances that can be developing science, by means of private or prevailed research laboratories, also will help to that the policies can have larger reach. One again, the participation of the tie international organisms to these subjects will be fundamental to advance more effective strategies to affect the diminution of these diseases.

Conform and respect the basic rules of hygiene of the country; the fundamental task must come from the Ministry of Health.

Most likely a close monitoring of infectious diseases now possible through ICT is needed and may be attained by global health organizations like the WHO, that could also help to bring relief to inherited diseases through global research genome kind of projects.

Other Comments

I see that the whole world is realizing for the very first time that it is one. Even movies like "Star Wars" help create this global concept, we are all linked and interlinked in multiple ways. This will contribute to make these 2050 goals really achievable, since our own survival is at stake. The concept of "Gaia" also helps to understand this new approach to the future, which I still believe is bright for human kind as a whole.

The best goals could nevertheless be very praiseworthy, the true ones reside in very few hands and that power and will does not exist to improve the quality of life of the large part of humanity. Therefore, the good goals will be only intentions. The neo-liberalism has damaged the small economies because it is protectionist with respect to the market economy.

The international organizations do not seem to be able to act and they do not fulfill the true roll that the world needs. Latin America, is the great forgotten one, is the great exporter of brains toward the first world where they find means and the economic safety to be able to do what they know. While the small strip of middle-class agonizes, suffering the pain of disappearing, sacrificing the education of its children who will only be able to be taken care by the state, as opposed to a huge external debt generated and multiplied not without the stained conspiracy of local corruption. Nevertheless, neither the statement of the Nobel Prize winner Stiglitz nor of other members of multilateral organizations of credit intimidate; stillness, silence.

The challenges are enormous, the goals also, but the true aspirations of the hegemonic power will not allow a maintained growth of vast areas of the world if their own interests are in threatened. The only exit for the periphery is to negotiate the best possible way with the powerful without losing its dignity, but it requires uncorrupted intellectuals with knowledge of policy and international experience, other people whose only interest is the aspirations of the improvement of the conditions of their countries. If something in this sense does not happen and if the blocks and regions of Latin America as the Mercosur are inoperative the future, only restlessness will result. Latin America needs to trade and to place its products, to generate manufacture and to develop science and technology; the external debt must be restructured and the responsibilities shared by the irresponsibility that placed countries as Argentina like model for the world in the decade of '90.

The cultural, religious and ideological barriers and idiosyncrasies of each people, its history, traditions and customs, will be impenetrable obstacles for standardization and homogenization of the world and therefore impede the application of patterns of behaviors and decision making that are universally acceptable.

I still feel we are avoiding the basic questions of limits to growth and consumption, which foster war, crime, greed, aggression, disease and hunger. The rise of terrorism and fanaticism is difficult to control. Without trust among cultures, many of whom now feel exploited by the G-8, these goals will not be achieved. At once, I find this exercise to be inspiring and daunting, pessimistic and optimistic, and both a hopeful vision and humbling impossible dream. Nevertheless, I feel it is an important beginning and I am pleased to have been a small part of that important beginning.

All the presented goals are extremely interesting for an exhaustive, deep and interdisciplinary analysis by scientists of the highest level. I think that they should also be put under consideration by great philosophers of all the present cultures, who think about the future of the world and the humanity, from different cultures and with universal criteria. This would allow us to extend the views and to give more sustenance that can offer more wisdom. The results of scientific and philosophical level had to be distributed at global levels so that they contribute to the formation of a global conscience on these subjects. Their importance deserves it.

I suggest REDUCE instead of END (hunger, water shortage, diseases).

If you haven't already don it, might be interesting to do this within a 100-200 yr timeframe, because I would have answered many things quite differently based on that. The answers may also reflect on the time-frames we should use for long-range policy/planning. Terrific and important work. Thanks for the invitation to participate.

After completing the Round 2 questionnaire this morning, I continued thinking about truly INSPIRING goals for 2050. I eventually realized that most of the bold 50-year goals that inspire me the most are not in the list.

1. Abolish all nuclear and biological weapons, and achieve a world without war or terrorism.
2. Engage in an educative dialogue with at least one other advanced civilization in our galaxy.
3. Widespread caring for the well-being of future generations--a caring so deep that it affects most personal and political choices.
4. Major advances in our fundamental understanding of the universe, including the life and intelligence that it contains.
5. Humanity's knowledge of global issues increases much faster than the problems themselves increase.
6. Universal freedom of speech, assembly, inquiry, dissent, and political opinion.
7. No second-class citizens; everyone can be a full-fledged member of society.

1. Invest heavily in interdisciplinary R&D on
 - alternative energy "life cycles"
 - human brain
 - education for all children by human teachers in the first place
2. Criminalise prostitution, slavery and women body, mind, financial abuse
3. Initiate new global innovations creation movements for issues important to all, make work on them sexy, enthusing, lucrative, brave, rewarding, desirable entertaining, spiritual - whatever, to make people WANT it.

I think, points number 2 "Gender parity", 9 "Provide Health care for all", and 18 "End Hunger" are consequence of education and economic wealth.

I believe that the goals included all the important subjects and urgent to solve and are really very deep and praiseworthy in ethical objectives. It is really an admirable work and highly necessary the one that you try carrying out with these analysis. As only critic observation, it is surprising

that not even tangentially the subject of the familiar planning for the third world countries is considered, considering the gravity of the subject in its long-term perspective.

The union of science and religion will never happen due to the nature of each field, but the religion may be an inspiration source for science and vice versa. It would be appropriate to replace "union" by "complementarity".

I still feel we are avoiding the basic questions of limits to growth and consumption, which foster war, crime, greed, aggression, disease and hunger. The rise of terrorism and fanaticism is difficult to control. Without trust among cultures, many of whom now feel exploited by the G-8, these goals will not be achieved. At once, I find this exercise to be inspiring and daunting, pessimistic and optimistic, and both a hopeful vision and humbling impossible dream. Nevertheless, I feel it is an important beginning and I am pleased to have been a small part of that important beginning.

1. The challenges should be classified into some groups - a typology should be elaborated.
2. Some of the issues are too specific - see the land mines.
3. There is too much of linear thinking. The point is that in such a long period many non-linearities occur and many unexpected events happen. Therefore it is not possible to be too specific - see the role of the UN or global governance.

However, most of the challenges are synthetic and sufficiently "non-linear", e.g. those about cyborgs or the world government. It makes such a discussion sensible.

We have not indicated the rating of "acceptability" because we think it is useless according to the upper definition, since it is unlikely that just one leader will succeed in implementation of such goals (except in dictatorial regimes, that supposedly shall not be considered).

5. EXCERPT FROM "EARLY WARNING AND TIMELY ACTION" STUDY

"Early Warning and Timely Action" study was conducted by the Millennium Project in 1998-1999 and is included in the *1999 State of the Future*. The principal findings are included in this appendix, as they relate to actions/impediments/policies necessary to achieving long-range goals.

ACTION IMPEDIMENTS FOR TIMELY DECISION

One of the principle objectives of the 1998 Global Lookout Study was to identify the reasons why the time between the identification of potential problems and opportunities and actions based on these perceptions was so long. What could make the warnings credible and therefore actionable?

In order to pursue this question, the Project performed face to face and telephone **interviews** with more than 100 decisionmakers around the world. In the first part of these interviews, the participants were presented with a list of potential impediments to decision making and were asked to add to the list. The given list included:

- *Financial impediments* such as lack of funding or the fact that the people who ought to pay are unwilling to do so.
- *Institutional impediments* such as the fact that no one has responsibility to act.
- *Political impediments* such as the action interferes with national interests or it has been proposed by a political opponent.
- *Cultural impediments*, such as roles of men vs. women, racism, or ethnocentrism.
- *Psychological impediments*, such as the fear of making a mistake or looking silly.
- *Information impediments*, such as the lack of reliable and sufficient data and information, or the uncertainty of the risk.

The interviewees added several categories that include:

- *Educational impediments*
- Impediment from *lack of policy-maker professionalism*
- *Non financial resource* impediments
- *Planning system* impediments

Using these categories, the interviewees provided many examples and extensions, as follows:

Financial impediments

Agenda 21 has not been implemented all over the world up to now [because of financial impediments].

It is not so much lack of funding, as it is missing priorities in funding, money is being used for secondary and silly projects, and does not reflect visions,..... aims and priorities. In Slovakia [there was a chance to create] new state-wide or nation-widevisions e.g. vision of sustainable society in Slovakia, but politicians and policy makers have their own interests connecting with power e.g. propaganda.

Very often political institutions have interest in problems in order to get money from state budget, but society as a whole does not need it or this is not the correct approach to solution (necessarily). Ministries' interests may be oriented toward advancing the more expensive approach, which is very often less effective. The Russian-American space project is designed in non- effective ways. Many American scientists were against the approach itself. But I think that it was comfortable for NASA: it was a problem of money.

I do not think that there are inadequate resources. I think the problem (lies) in how we use what we have. A great part of our resources is spent on the development of the military complex and more middle-level developed countries are involved in this.

Institutional impediments

New problems, new hot spots result...in organizing new departments..... But their problems are interconnected (with issues addressed by existing organizations). That is why I think sharing of functions, responsibilities and coordination of actions between different departmentsis very important and helpful in policy development and implementation.

Institutional and legislative infrastructure can also block policy implementation. For example: one problem for Russia is lack of investments in industry. Actually banks have money, but there are not (many) channels (which transfer) financial resources to corporation and small and medium companies. As a rule, banks deal with solid, big clients. That is why there should be some transitional institutions between banks and companies. Lack of legislative base to protect investors' rights [also] hampers implementation of investment policy in Russia too.

[Various] approaches to the solution of complex problems should be widely discussed by the experts from different spheres. This can help to advance understanding about possible ways of problem evolution in the future and to develop adequate actions, and mechanisms of [addressing the issues].

Solutions of problems should involve different institutions, ministries. One of the most important issues is the development of coordinated actions between different ministries and political institutions. Why are space opportunities and achievements not implemented in other spheres of activity and in industry? I think that one of the reasons is the isolation of [our] Space Agency activities from the Ministry of Economic Affairs, and the Ministry of Industry. One ministry does not know what is happening in another..... It is clear that the absence of this relationship influenced the evolution of space projects and industry as a whole. [Lack of coordination also affects] the time between problem's emergence and implementation of actions. So coordinated actions between different institutions at the political level play a more and more important role and could influence the time between problems emergence and implementation of actions.

Inertia of political institutions, political parties' ideas and behavior. They are oriented toward traditional views about problem evolution and traditional approaches to the solution of problems.

International political institutions serve the interests of small part of the population and keep the interests of a couple of nations in the focus. The attempt of some nations to build the world in accordance to their own model and interests could not be successful and it is very dangerous illusion. Partnership of civilization is a model of policy development and implementation of the new millennium, but international and national political institutions do not understand it.... Lack of safe global channels for sensitive information....

As to institutional impediments, the lack of necessary organizations and groups, such as NGO's also belongs to this type of problem.... [Lack of] coordination within government institutions.

Although it is true that coordination yields better assessments and solution to social problems, which are most of the time very complex and ill structured, it is one of the hardest objectives to achieve. The problem lies in part in the flawed process of structuring complex problems; the visibility of the problems that each government institution deals with (for example, trading with a neighbor may be higher on the political agenda than the problem of aging minorities). It also lies on the robustness of national governance to lead and face deal successfully with the old, the new and the emerging challenges.

Less important in authoritarian governments....

Political impediments

Any problem is interdisciplinary and could be solved more effectively and rapidly if different actors are involved (from the start).... If we distribute this information post factum then industry and regions need time for adaptation of achievements, but if they are involved from the beginning, then it could shorter time as well as improve financial possibilities.

Consensus among different actors and transparency of policy itself have a great impact....
Confusion as to who has the responsibility for implementing.

I don't think China has political impediments.... The centralized leadership and pluralistic economy will cause conflicts, just as in the current China.

[The key is] ideology. If suggested actions...are in conformity with ideology and the key positions of national/international policy, then these actions are accepted. In this case, all of the obstacles play a secondary role...contradictions can be solved, financial resources can be found.... Ideology plays the key role. Policy makers will use all of the information [delineated] in this questionnaire, but only when this information is in conformity with ideology.

Political instability in the world [is an impediment] which hampers the development of coordinated actions and [inhibits the formation] of a common view of our present and future.

The problem does not seem to be one of having the information about the early warning, but of recognizing its importance vis a vis the position, interests, motivations, and beliefs of the particular stakeholders. If the decision-maker or stakeholder does not feel some kind of threat, it may not act upon the information.

More often than not, resources are allocated to those projects or initiatives that are politically attractive, and not necessarily to those that will bring the greatest benefit to the majority. This happens at all levels of local, state and national governments, and at the global level as well. The interests of industries and enterprises are well represented by powerful lobbies.

Early warning and action advice should include political trade offs (e.g. Chinese energy requirements and Global Warning)... Legal mechanisms can diffuse political & ethnic problems (e.g. World Court in Czech-Slovak dispute).

Cultural impediments

Cultural impediments have to do with inconsistencies or conflicts in the systems of shared beliefs, values, customs, and behaviors that people use to cope with their world and with one another. People will therefore, chose a decision that is in line with his/her beliefs, values, customs and behaviors, that seems logical in that person's or group's world view. A cultural impediment is then relative.

The impediments do not stem from gender roles such as men vs. women or from racism, but [the meaningful distinction is based on community size]... small communities are at a great distance from the sources of information, therefore they are more conservative and resistant to changes.

Stereotypes play a very important role at every level of thinking. In order to conform to new realities, one should change their own stereotypes of thinking and behavior.... We are all in a transition to a knowledge-based society. In order to move forward one should understand what is changing around us, what is my (or my corporation's or my country's) place in these new conditions, what should be changed and how we should change ourselves, our strategy, our models of thinking, our tools and methods.

The stereotypes of thinking which have been formed within industrial society hamper the development of adequate actions and have resulted in ineffective distribution of financial resources, political barriers and weak political institutions. The strongest obstacle is the paradigm of thinking of industrial society.

Psychological impediments

In some regions, there are people who are easy to satisfy. They show little enthusiasm to pursue a better life.... They reply: "It is enough to raise my newborn kid if everyone of my family saves a mouth of food."

Conservatism of [a] country, conservative approach of [a] country.... Indolence and conservatism of decision-makers. Many of them are interested in good jobs, making good careers, but they are lax about their work. In this respect a great number of countries of central and Eastern Europe are taking on the characteristics of banana republics.

Western society has lost the sense of evolution toward goals.... The cult of leisure has been starting to dominate and at the same time attitudes toward work are changing.... Motivations of people push or hamper the implementation of actions.

Lack of a sense of sacrifice, materialistic attitude...

I do not think that fear of making a mistake should be at the top of the list. I think that lack of confidence, the loss of morality and ideology play the key roles. [In addition,] the loss of goals and ideas, which form the background for building policy at different levels as well as the building of family and the lives of people.

Information impediments

First, before policy development, one should to explore the problem itself. Well-explored problems provide the opportunity to develop adequate actions, to understand the consequences and mutual influence and interdependence of actions, and different alternative approaches to the problem's solution. But this is more and more difficult to do: problems become more and more complex; one may observe a lack of information,... [and] uncertainty of consequences.... So the first problem is a methodological and information one. Complexity theory can also help to develop solutions... Complexity theory could also develop effective actions and mechanisms.

I think.... modeling of different influencing events, modeling of interdependence of these events, could provide an in- depth view into the problem and actions. It gives the opportunity to keep the problem under control and to develop adequate mechanisms of regulating, to explore the sequences of actions, linkages between different branches of development in their evolution. Such kind of networks modeling give also rise to new ideas, and to give opportunities to develop priorities and evaluate the amount of necessary resources, etc.

I would like to add: the need for an inventory of capabilities which nations and regions have as well as their targets and priorities....

Further, often, it is also not easy to understand the problem itself.... If we won't understand the problem, we won't be able to develop adequate actions. In-depth [understanding of] the problem itself is already 50% of successful solution of a problem.... Provide information that reduces uncertainty of response to a decision.

Lack of reliability of early warning signals that have been generated....

Educational impediments

I want to stress the educational impediment that is very evident in developing countries.... Education should be developed energetically...

...I think there is an important role for science and education and even NGO's to help form policy makers' world outlook. [They could be] a new political elite. It could help them understand the new conditions of change, to adapt their actions to ideology, perhaps even to affect ideology itself.

Impediment from lack of policy maker professionalism

Sometimes the continuity of a policy may become the restricting factor... The low professionalism of policy makers plays a role too.

Factors in the way of policy implementation are connected with two issues: professionalism of policy makers and their competence and responsibility. As a rule, policy makers solve current problems. This does not mean that they do not understand long- term problems and long- term consequences. Current problems are put forward before them, that is why they are oriented toward the solution of current problems.

Non-financial resource impediments

Resources may be an impediment: both natural [resources] and talent.... One of the more important impediments is technology. There is an absence of interdisciplinary technologies in the fields of physics, chemistry and biology.... Lack of human expertise.... Indolence... The value is not perceived.

Planning system impediments

Planning on the Western model; new cars manufactured but not new roads.... Long term strategy [is needed]. If one [does not have] long term strategy, it is hard to develop current action, to evaluate current actions and resource distribution.... Policies are oriented to the solution of current “hot” problems; this is bad. Such policies influence the psychology of policy makers. They are pressed by current problems; but one should have a force of spirit to put forward strategic issues and to coordinate current actions with strategic ones.

GENERAL COMMENTS

Precise, essential information distilled and transmitted by a person who is trusted by the policy maker, but who is external to the usual political-governmental personnel system. Connect action to national objectives and strategy in political, cultural, and social terms, not in technical terms. Make an information system rather than trust in personal expertise.

Political early warning time horizons are shorter than the lead-time of general humanitarian and social problems. Political early warnings should lead immediately to quiet UN talks to identify solutions.

ADDITIONAL IMPEDIMENTS

Early warnings that go public and include very sensitive information can make problems worse. Yet, it is necessary to make some kinds of early warnings public like information about nuclear issues and human rights. Policy makers need a sufficient depth of personnel to provide early warning information. It is difficult for the public to understand why preventive actions cost less than solving the problem when it occurs.

Where did early warning work

Gorbachev was told that human-rights was a growing issue, and Glasnost was the response.

The early warnings about nuclear terrorism and the international system are responding reasonably well to create cooperative procedures.

Ozone hole and Montreal Protocol.

Form of Information Needed for Timely Decision

Using information derived in the decisionmaker interviews, the respondents were asked to judge the usefulness of various kinds of information used in decision making. Table 1 displays their average responses (where 5= extremely useful and 1= likely to be counterproductive).

Table 1

Information Type	Usefulness
1. Information that demonstrates unequivocally that a crisis is pending.	4.44
17. Knowledge about what is possible: how science and technology might affect the outcomes of decisions	4.08
19. Education of decision makers and opinion shapers on issues of long term significance, rather than those of short term populist interest	3.91
16. Simple, clear, precise information in political, cultural and social (non-technical) terms, connected to goals and strategies	3.80
13. Sufficient information about what is required to implement various policy options: e.g. manpower, systemic effects, technological change, etc.	3.80
18. Information about how a contemplated decision may affect stakeholders	3.68
6. Information about the success or failure of other institutions and countries that have similar problems and have attempted to implement policies; inspiring success stories.	3.62
5. Development and popularization of appropriate indicators; coordination of indicators among institutions that rely on cooperation to design and implement policy.	3.62
2. Testimony of eminent scientists.	3.61

11. Information about probability and risks associated with issues and their policy solutions.	3.56
14. Attention paid to the issue by the media.	3.55
3. Accurate projections of computer models.	3.44
20. Clarity of forecasted condition without action and technical feasibility of proposed action	3.41
12. Creation and use of accurate simulations and training that make clear the consequences of actions.	3.40
4. Intended actions of other ministries, countries or decision-makers.	3.39
7. Popularization of issues through public communities, business, research institutions, individuals under leadership and guidance of government.	3.38
15. A set of long-term scenarios, ranging from dreadful to positive.	3.18
8. Popularization of visions showing the consequences of and possible outcomes of the issues; cooperation between artists (e.g. Spielberg) and futurists.	3.16
10. Information about (or derived from) corporate lobbying that could influence decision making by institutions and governments.	3.01
9. Knowledge about criminal activities that could adversely influence decision making by institutions and governments.	2.90

In this portion of the study panelists were also asked to provide examples of activities that utilized the forms of information that they evaluated for usefulness; the responses of the panel are summarized in Table 2.

Table 2

Information Leading to Decision Making	Examples Cited
1. Information that demonstrates unequivocally that a crisis is pending.	6 hour weather forecasts Mettur Dam release Species depletion Ozone hole Forecasts depicting the potential spread of AIDS, cancer, etc.
2. Testimony of eminent scientists.	Montreal Protocol Natural calamities AIDS forecasts IPCC's influence in global warming debate Manhattan Project Acid rain in eastern Canada/northeastern USA Population forecasts
3. Accurate projections of computer models.	Weather forecasts Forecasts of spreading epidemics Global climate models Population forecasts
4. Intended actions of other ministries, countries or decision-makers.	International police information Sustainable development strategies of other countries. Most examples in this category come from the

	<p>intelligence community:</p> <ul style="list-style-type: none"> the Israeli assessment of a future nuclear weapon threat from Iraq the Israeli pre-eruptive air strike on the OS Iraq nuclear reactor <p>US strikes on Afghanistan and Sudan as a result of the assessed threat from Osaman bin Laden</p>
5. Development and popularization of appropriate indicators; coordination of indicators among institutions that rely on cooperation to design and implement policy.	<p>Municipal air quality Flow of financial resources Currency reserves Human Development Index in UNDP Human Development Report Bulletin of Atomic Scientists clock showing time to doomsday State of the Environment reports Russian Central Bank and Ministry of Finance system of indicators reduced to a common methodology Socially responsible investing. e.g. Domini social 400 index</p>
6. Information about the success or failure of other institutions and countries that have similar problems and have attempted to implement policies; inspiring success stories.	<p>Privatization process in former socialist countries - e.g. voucher privatization Asian financial crisis Polish experience of "shock therapy" was studied by Russian before implementation of "shock therapy" in Russia in 1992 IMF used its experience in Lat. America for the development of recommendations for Russian reforms</p>
7. Popularization of issues through public communities, business, research institutions, individuals under leadership and guidance of government.	<p>Agenda 21</p>
8. Popularized of visions showing the consequences of and possible outcomes of the issues; cooperation between artists (e.g. Spielberg) and futurists.	<p>Jurassic Park Toffler's forecasts of migration Sagan's nuclear winter Russian Government was going to change the riverbed of some Siberian rivers. Developed scenarios of the consequences of this action) and wide discussion of this issue by media blocked the action of Government</p>
9. Knowledge about criminal activities that could adversely influence decision making by institutions and governments.	<p>Colombian and Mexican narco cartels and its political parties financing and penetration. Clinton & Lewinski affair and its adverse results to Republican party. Construction of nuclear power plants (e.g. Temelín in the Czech Republic) US tobacco industry and lobbying Middle East governments lobbying in</p>

	Washington D.C. for financial and military aid
10. Information about (or derived from) corporate lobbying that could influence decision making by institutions and governments.	Can't think of a single lobbying effort linked to early warning of an issue. All lobbying examples that came to mind had negative results. (Lobbying is) 10. Mostly narrow self-interested misinformation without full disclosure.
11. Information about probability and risks associated with issues and their policy solutions.	EPA regulations of removal of lead from gasoline Quarantines for infectious diseases Warnings about potential for AIDS spread Nuclear warfare risks and START actions Global warming Security strategy of Central European countries and their efforts to join NATO Contraceptives, tobacco, some medical technologies
12. Creation and use of accurate simulations and training that makes clear the consequences of actions.	Flight simulators
13. Sufficient information about what is required to implement various policy options: e.g. manpower, systemic effects, technological change, etc.	Technology assessments of 2nd order social and environmental consequences.
14. Attention paid to the issue by the media.	TV images of famine in Somalia affected decision to get involved.
15. A set of long-term scenarios, ranging from dreadful to positive.	The Shell scenarios World Bank Demographic forecasts were used (as one of the sources of information) for the planning of the system of education development in USSR
16. Simple, clear, precise information in political, cultural and social (non-technical) terms, connected to goals and strategies.	The Apollo project in the USA in sixties.
17. Knowledge about what is possible: how science and technology might affect the outcomes of decisions.	U.S. Office of Technology Assessment providing policy recommendations to Congressional staffs.
18. Information about how a contemplated decision may affect stakeholders.	
19. Education of decision-makers and opinion shapers on issues of long term significance, rather than those of short-term populist interest.	
20. Clarity of forecasted condition without action and technical feasibility of proposed action	Nuclear winter Acid rain