THE Williamsburg CONFERENCE

Los Baños, Laguna, The Philippines
May 20 – 23, 2010

Asia Society®

IRRI 50 1960-2010 Rice Science for a Better World

Founded in 1956 by John D. Rockefeller 3rd, the Asia Society is an international, nonprofit organization dedicated to strengthening relationships and deepening understanding among the peoples of Asia and the United States. The Asia Society presents a wide range of public programs, including major arts exhibitions, performances, lectures, international conferences, and K-12 educational initiatives about Asia. Headquartered in New York City, the organization has regional centers in the U.S. in Houston, Los Angeles, San Francisco and Washington, D.C. Regional centers in Asia include Hong Kong, Manila, Melbourne, Mumbai, Seoul and Shanghai.

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*Delivered by Undersecretary Joel S. Rudinas

Agenda

The 38th Williamsburg Conference was held in Los Baños, Laguna, The Philippines, from May 20 to 23, 2010. The Conference was cohosted by the Asia Society and the International Rice Research Institute (IRRI).

The Security Implications of Climate Change in the Asia-Pacific: Food Security, Water Security, and Adaptation

Thursday, May 20, 2010

Opening Reception and Dinner

Opening Discussion
Cameron R. Hume, U.S. Ambassador to Indonesia, U.S. Embassy in Jakarta
Ong Keng Yong, Director, Institute of Policy Studies, National University of Singapore

Moderated by:
Jamie F. Metzl, Executive Vice President, Asia Society

Friday, May 21, 2010

Opening Session
The Security Implications of Climate Change in the Asia-Pacific: Food Security, Water Security, and Adaptation

This session set the scene and included a scenario presentation on the potential impacts of climate change on the Asia-Pacific region, with a particular emphasis on food, water, and adaptation.

Facilitator:
Alexander Van de Putte, Senior Director and Operating Officer, Head of Scenario Processes and Applications, PFC Energy International

Discussants:

Suruchi Bhadwal, Fellow and Area Convener, Centre for Global Environment Research, The Energy and Resources Institute (TERI)

Asanga Gunawansa, Assistant Professor, School of Design and Environment, National University of Singapore

Peter Timmer, Cabot Professor of Development Studies, Harvard University; Adjunct Professor, Crawford School of Economics and Government, Australian National University

Zhang Jingjing, Deputy Director, Public Interest Law Institute, Natural Resources Defense Council

Session II
Food Security: Exploring the Challenges

Building on the work of the ongoing Asia Society/IRRI Task Force on Food Security and Sustainability in Asia, this session:

- Examined the factors and trends undermining food security in the region;
- Assessed current national and international measures being implemented to achieve food security and sustainability in Asia; and
- Explored why these efforts are insufficient to meet demand

Facilitator:

Simon S.C. Tay, Chairman, Singapore Institute of International Affairs

Discussants:

Achim Dobermann, Deputy Director General for Research, International Rice Research Institute (IRRI)

Ursula Schaefer-Preuss, Vice-President, Knowledge Management and Sustainable Development, ADB

Xuan Vo-Tong, President, An Giang University

Kyaw Win, Managing Director, Myanmar Agricultural Services, Ministry of Agriculture and Irrigation

Session III
Food Security: Exploring the Solutions

Building on the work of the ongoing Asia Society/IRRI Task Force on Food Security and Sustainability in Asia, this session:

- Outlined what steps can be taken to enhance food security in the Asia-Pacific; and

- Discussed how the necessary financial and practical support can be garnered to catalyze this action

Facilitator:

Peter Timmer, Cabot Professor of Development Studies, Harvard University; Adjunct Professor, Crawford School of Economics and Government, Australian National University

Discussants:

Arsenio M. Balisacan, Professor, School of Economics, University of the Philippines Diliman

Dipayan Bhattacharyya, Head, Food Security, World Food Programme – Philippines

Petteri Vuorinen, UN-REDD Regional Coordinator, FAO Regional Office for Asia and the Pacific

Saturday, May 22, 2010

Session IV
Asia's Next Challenge: Securing the Region's Water Future

Building on the work of the Asia Society's April 2009 Task Force on Water Security, this session explored:

- The scope of Asia's looming water crisis;
- The underlying issues causing this crisis;
- What steps could be taken to best address this situation; and
- What will it take to make this type of action possible?

Facilitator:

Andrew MacIntyre, Professor of Political Science, College Head and Dean, College of Asia and the Pacific, Australian National University

Discussants:

Asanga Gunawansa, Assistant Professor, School of Design and Environment, National University of Singapore

Shaw Chen Liu, Director, Research Center for Environmental Changes, Academia Sinica

Charles Rodgers, Senior Water and Climate Change Specialist (Consultant), Regional and Sustainable Development Department, ADB

Session V
Addressing the Challenges of Adaptation to Climate Change: A Focus on Migration

Environmental change will likely become a significant catalyst of migration in parts of Asia. With these ideas in mind, this session:

- Mapped the risks and vulnerabilities of migration under various climate change scenarios;
- Discussed the impact of climate change induced migration on existing and international socioeconomic structures; and
- Explored options and recommendations for multilateral cooperation, infrastructure needs, and financing arrangements for addressing climate change induced migration.

Facilitator:
Kathleen Reen, Vice President for Asia, Environment, and New Media Programs, Internews

Discussants:
Suruchi Bhadwal, Fellow and Area Convenor, Centre for Global Environment Research, The Energy and Resources Institute (TERI)
Syed Saiful Haque, Chairman, Welfare Association for the Rights of Bangladesh Emigrants (WARBE) Development Foundation
Armi Susandi, Vice Chair, Working Group on Adaptation, National Council on Climate Change Indonesia

Session VI
Building Bridges – Breakout Sessions

- Based on issues raised in the sessions dedicated to food, water, and adaptation, what action steps can best be taken by Williamsburg participants, individual countries, and the international community?

Each group was asked to give a 10 minute presentation (in Session VII) based on their conversation.

Facilitator:
Jamie F. Metzl, Executive Vice President, Asia Society

Session VII
Report Back from the Breakout Sessions

Facilitator:
Jamie F. Metzl, Executive Vice President, Asia Society

Presentations by breakout groups and discussion. Focus on how we get from where we are to where we need to be.

Dinner
Host: **Doris Magsaysay Ho**, Chair, Asia Society Philippine Foundation, Inc.

Sunday, May 23, 2010

Session VIII
Advancing a Human Security Agenda

Building on the discussions over the last two days, how do we ensure that the issues addressed are part of the larger discussion of security issues in the region? What regional architecture currently exists to facilitate this conversation? How can local, state, and regional actors work together on the issues of common concern?

Facilitator:
Alexander Van de Putte, Senior Director and Operating Officer, Head of Scenario Processes and Applications, PFC Energy International

Discussants:
Bhavani Fonseka, Senior Researcher and Lawyer, Centre for Policy Alternatives
Cameron R. Hume, U.S. Ambassador to Indonesia, Embassy of the United States in Jakarta
Shen Dingli, Professor of International Relations, Executive Dean, Institute of International Studies, Director, Center for American Studies, Fudan University
Richard Woolcott, Founding Director, Asia Society AustralAsia Centre; Former Prime Minister Rudd's Special Envoy for the Development of an Asia-Pacific Community

Session IX
Open Space Exercise

Facilitators:
Jamie F. Metzl, Executive Vice President, Asia Society
Arnel Paciano Casanova, Executive Director, Asia Society Philippine Foundation, Inc.

Concluding Remarks
William Padolina, Deputy Director General for Operations, IRRI

Foreword
Moving Asia-Pacific Relations Forward

The Asia-Pacific region lies at the heart of some of the most complex and urgent challenges in global food, water, and human security, but it is, for the same reason, also home to the greatest number of stakeholders with the capacity for developing the solutions that the world needs over the long term. As a start, Asians and Americans need to come to common understanding and agreement about the nature of the parallel crises we are facing in the areas of climate, natural resources, and leadership. The 38th Williamsburg Conference, co-organized by the Asia Society and the International Rice Research Institute (IRRI), convened at IRRI headquarters in Los Baños, Laguna, the Philippines, from May 20-23. It provided an important and timely platform for 37 distinguished Asian and American leaders and authoritative subject experts to advance the transnational dialogue necessary for forging common ground and for developing an action agenda at the international, national, and individual levels.

The home of the Green Revolution in Asia, IRRI was established in 1960 with the support of the Ford and Rockefeller Foundations and the government of the Philippines. Its achievements and expanding international influence to date are a testament to the large scale progress that can result from committed global leadership and responsibility for collective interests.

Today, however, we face what Philippine Secretary of Agriculture Bernie Fondevilla described in his speech to Williamsburg delegates as "unprecedented circumstances – circumstances that demand urgent and innovative approaches and a new sense of responsibility." Today, at the same time that the world is being forced to confront the global specter of human induced climate change, we are also making the uncertain transition to a different world order with no clear source of leadership, and as yet undetermined guiding principles for member-states.

In such a context, it is imperative that Asia-Pacific and global stakeholders articulate their vision and principles for a renewed international system through demonstrated action on the converging crises that threaten communities and societies across the world. Some countries currently have more resources to act than others, but all are equally bound by their responsibility to future generations to begin investing now in a viable, peaceful, and secure future.

To begin identifying and bridging some of the gaps in knowledge, expertise,

and resources that have stood in the way of implementing sustainable solutions, the Asia Society has spearheaded the development of international leadership groups to comprehensively assess current crises in food and water security and to generate immediately actionable recommendations for decision makers through an influential series of Asia Society Task Force reports. The Asia Society Leadership Group on Water Security, for instance, released their report in 2009 entitled Asia's Next Challenge – Securing the Region's Water Future, which was launched in multiple Asia-Pacific countries and discussed at influential international and regional fora, including the Asia-Pacific Water Forum, the 3rd World Water Forum, and Singapore Water Week, among others.

This year's Williamsburg Conference was directed towards providing a platform for Asia-Pacific stakeholders and experts to generate relevant insights and plans of action that will be incorporated in an upcoming Asia Society task force report on regional food security, which will be released in September. In response to the urgent need for the creation of transnational action agendas with a timeline for implementation, the Asia Society plans for future Williamsburg Conferences to serve as an international platform for meeting these objectives. We would like to take this opportunity to express our appreciation to all our sponsors and partners for the 38th Williamsburg Conference, who have helped us take an important first step towards fulfilling this role.

We wish to express our sincere appreciation to our co-organizer, the International Rice Research Institute, and to Dr. Robert Zeigler, Mr. Achim Dobermann, and Mr. Duncan Macintosh for sharing in our vision and for supporting and hosting this year's conference at their beautiful facilities in the Philippines. We would like to especially thank the entire team at the IRRI Events and Visitors Office, in particular Ria-Anna Dimapilis, Ruth Ann Calanog Felismino, and Bita Avendaño, for their utmost professionalism, tireless dedication, and warm hospitality to the delegates of this year's conference.

We would like to extend special thanks to the Philippine Undersecretary of Agriculture, Joel S. Rudinas, for participating in the conference and delivering a keynote speech on behalf of Secretary Bernie Fondevilla. We are tremendously grateful to our sponsors, the Lee Foundation, ITOCHU Corporation, Mitsubishi Corporation, Tokyo Electric Power Company, and Kyushu Electric Power Company, for their financial support, and we give our special appreciation to the leadership, vision, and support of Mr. Sumitaka Fujita, Senior Corporate Advisor at ITOCHU Corporation and a dedicated member of the Williamsburg Conference Executive Committee, who was also present at the conference. Although they were not able to attend, we owe our heartfelt thanks to the rest of

the Williamsburg Conference Executive Committee as well.

Finally, we owe our special and heartfelt thanks to our Asia Society colleagues, whose foresight, dedication, and meticulous organizational skills underpinned the success of the entire conference. Michael G. Kulma, Director of Global Policy Initiatives at the Asia Society, was a source of spirited and visionary leadership for the Asia Society team in realizing this year's conference. Hee-Chung Kim, who has seen the annual Williamsburg Conference through its evolution over the years, demonstrated yet again her unparalleled expertise and creativity in the planning, logistics, and execution of the conference. Su Yin Tan provided invaluable contributions and input to conference and agenda planning, and also ably fulfilled the critical role of conference rapporteur. Abigail Pacquing, in addition to helping with coordination of conference logistics, also did extensive interviews with conference delegates to produce a multimedia web feature. Robert Hsu, who has been vital to coordinating the Asia Society task force initiative on food security, will build off the work done at the Williamsburg Conference to see our task force report through to production. We are also extremely grateful for the support, partnership, and hospitality of our other Asia Society colleagues in the Philippines – Arnel Casanova, Executive Director of the Asia Society Philippine Foundation, and Doris Ho, Chairperson of the Foundation, who hosted an unforgettable dinner for delegates at her beautiful home in the Philippines. In New York, our colleagues Suzanne DiMaggio, Azadeh Fartash, Sandhya Kumar, and Elizabeth Lancaster were important contributors to the process of facilitating and following up on this year's conference.

At such a time of unprecedented global challenges in resources, finances, and leadership, it is our hope that you will continue to join us in imparting your ideas and your vision for the future of global governance and sustainable and inclusive growth. We look forward to your continued engagement in and support of the Williamsburg Conference for many years to come.

Jamie F. Metzl
Executive Vice President

Michael G. Kulma
Director, Global Policy Initiatives

Executive Summary

In addressing the security implications of climate change in the Asia-Pacific, the broader and more fundamental question that emerges is how to deal with the human actions, institutions, and systems that have created and perpetuated the threats to food, water, and human security confronting the world today. Climate change, in such a context, is more accurately interpreted as a multiplier or catalyst of these wide scale threats and challenges. From May 20-23, the 38th Williamsburg Conference convened at the International Rice Research Institute in Los Baños, Laguna, the Philippines. Thirty-eight distinguished Asian and American leaders and authoritative subject experts representing 16 countries and economies came together to understand the convergences of the crises and to propose concrete next steps that could be taken at the individual, national, and international levels to start moving the world towards a preferred future scenario in the next 20 years.

Two extreme but plausible scenarios could materialize in the future – the Protectionist scenario or the Transformative Scenario. The Protectionist Scenario is an antagonistic one that sees countries prioritizing sovereign over collective interests, thereby preventing the international networking and collaboration necessary for addressing the transnational triggers and effects of climate change. The capacity for proactive policy making is undermined, with countries reacting belatedly and disjointedly to rapidly changing circumstances and developments. The Transformative Scenario sees nations sharing and acting upon a vision of effective global leadership, governance, and responsibility. Partnership and collaboration minimizes tension between local interests and global concerns, and the world sets itself on a path of sustainable growth and development.

Where the Asia-Pacific region stands today is somewhere in between the protectionist and transformative scenarios, with no guarantees as to its ultimate inclination. On the one hand, climate change induced challenges that individual countries perceive themselves to be facing could well set the stage for international conflicts over resources. On the other hand, the recognition that sustainable solutions depend on international collaboration and mutual consideration could also lead countries to forge common ground and act in tandem with each others' interests.

As home to some of the largest and most densely populated countries in the world, which are also set to be most at risk to the hazardous impacts of climate

change, the Asia-Pacific region is both the epicenter of global challenges in food, water, and human security, and a key actor in addressing these challenges.

Impediments to equitable food access and security in Asia are the result of productivity problems, inefficient markets, restrictive trade structures, and supply and distribution problems. These have led to the production-poverty paradox afflicting the continent, which is simultaneously the largest producer of rice in the world and home to the largest number of people suffering from hunger. Poor infrastructure and declining investments prevent productivity and efficiency enhancing technologies from being successfully or sufficiently incorporated into developing Asia's agricultural sectors. The expected economic and climate shocks to its system also imply that Asia will soon be forced to increase production with reduced resources, yet its resilience is both untested and uncertain. International commitments to enhancing human capacity and financing research and development of appropriate technologies will go a long way towards food security efforts. Creativity and persistence in interpreting and presenting the challenges are also needed to secure substantial increases in international funding for agriculture. While there are common characteristics to the problems facing the region, there can be no single solution that is applicable to every country. Action plans must be implemented at the national level to benefit households and to move international cooperation forward. Investments in human capital, capacity building, and public-private partnerships in the agricultural sector are also necessary to overcome limitations in government resources and leadership.

The Asia-Pacific region is both the epicenter of global challenges in food, water, and human security, and a key actor in addressing these challenges.

The challenges to water security, similarly, go beyond resource shortages and flooding issues induced by rising global temperatures. The parallel crisis in water management and governance, if not addressed, will accelerate the depletion of already scarce resources and undermine the water accessibility of vulnerable communities. Traditional national security and development concerns could be exacerbated by competition for resources – particularly in the context of rivers that transcend national boundaries and other shared resources – to culminate in water disputes and conflicts of an unprecedented nature. While all countries are committed to increasing water efficiency, there are variances in the policies of different countries, which could prove increasingly critical given anticipated water stresses and the presence of seasonal and chronic shortages. To date, the status of the water crisis in Asia has not been assessed or addressed in a regional framework. In the absence of such integrated dialogue, it will be difficult for nations to move on to the urgent

next step of committing to and investing in collaborative and innovative changes in management, socioeconomic structures, and lifestyles. A multi-stakeholder approach will be critical to balancing the needs and rights of multiple segments of society, as well as the rights of different states in one country.

In general, the development of international mechanisms and structures has failed to keep pace with the transnational effects of human responses to climate change. This inadequacy is particularly evident in migratory flows of people who are driven to move for increasingly complex and intertwined societal and climate induced reasons. Current structures also lack the capacity to address the pursuit of unsustainable national economic development models that have spillover effects on people and resources across national borders. Migration is driven by different insecurities, and having an accurate sense of the big picture would require migration studies from different disciplines to be integrated. There is currently a lack of data collection and of integrated studies and analysis. National policy makers should begin engaging in scenario planning for the impact of domestic migration and of rising sea levels, as this is the only way to provide enough lead time for adequate responses to be designed. Governments must recognize the need for and commit to capacity building of global and national governance structures through shared information, resource pooling, increased networking, and people oriented agendas.

...the development of international mechanisms and structures has failed to keep pace with the transnational effects of human responses to climate change.

The common bottom line in dealing with the different implications of climate change is the security of people. While it was acknowledged that the ongoing transition to a "new" or "post-American" world order sends mixed signals about the paramountcy of human security on the global agenda, delegates agreed that countries must still persevere with securing the basics of establishing accountability at multiple levels for human actions. A rights-based approach and an emphasis on good governance is key to consolidating and enhancing the long term adaptive capacities of societies. For these reasons, climate change adaptation strategies should be mainstreamed and integrated with development strategies, with the overarching aim of inclusive growth. Climate change, instead of being conceived solely as a threat, should also be seen as an opportunity to rethink development. Countries are urged to commit to anticipating, understanding, and acknowledging the complex consequences of problems that international cooperation is meant to address. Pioneering collaborative initiatives have the capacity to set the Asia-Pacific community on its way towards the outcomes envisioned by a transformative scenario.

Keynote Address

Secretary of Agriculture Bernie G. Fondevilla*

**Delivered by Undersecretary Joel S. Rudinas*

Delegates and distinguished guests, colleagues and friends from the government and private sectors, partners from the academic and scientific community, ladies and gentlemen: Good Afternoon.

On behalf of the Philippine government, we at the Department of Agriculture wish to express our utmost gratitude to Dr. Desai and the Asia Society for making us part of this Conference.

The idea behind the Asia Society when it was founded in 1956 by Mr. John Rockefeller was simple and candid: Foster greater understanding and ties among the people, leaders and organizations of Asia and the United States.

Today, the Society has evolved into a truly global Pan-Asian organization, working relentlessly to raise awareness about Asia among Americans, and to strengthen friendships between Asians and Americans. Thus, its relevance as a medium of cooperation in an economically vibrant and politically stable Asia-Pacific is as great as ever.

Likewise, we commend the International Rice Research Institute for the excellent arrangements made for this event to guarantee that the country's third hosting of the Williamsburg Conference would be as successful and meaningful as envisioned.

We meet under unprecedented circumstances – circumstances that demand urgent and innovative approaches and a new sense of responsibility.

Since early this year, the El Niño phenomenon has been causing losses in agriculture across the Philippines – from farmlands up north, to poultry farms down south, threatening the very foundation of our economic stability and food security.

Based on our preliminary data from local government units and Department of Agriculture Directorate Programs on Rice and Corn, the El Niño induced dry spell has thus far damaged more than 400,000 tons of standing palay crop and 500,000 tons of corn, affecting almost half a million farm families nationwide.

Other parts of East and Southeast Asia are as affected.

In China, some 51 million people are affected by the drought, including more than 16 million people and 11 million livestock that suffer from a shortage of drinking water. This is based on end-March data from China's State Commission of Disaster Relief.

In Thailand, authorities estimate that nearly 4 million people in some 36 out of 76 provinces have been affected since November last year, reflecting the huge impact of the worst drought in its most recent history. Vietnam, the world's second largest rice exporter after Thailand, faces the possibility of a drop in spring-summer crop production this year.

Ladies and gentlemen, weather risks such as El Niño expose the vulnerabilities of our communities, both urban and rural, to the climate, and highlight the fact that we are now living through a climate changed world.

Global climate change is no longer a concept, or an abstract thought. For Asia-Pacific nations, it is real – seen and felt in the form of rising sea levels, and increased frequency of weather extremes such as violent storms, intense flooding, or protracted droughts.

Climate change could also mean water shortage incidents, crop failures, and emergence of old and new plant and animal pests and diseases. And for many of our Pacific Island States, it has become an issue of survival or extinction.

Clearly, world security and sufficiency in food, energy, and water are at stake. And it is the poor and the powerless among us, especially women, children, and the elderly, who stand to suffer most from this massive force.

Oxfam Australia estimates that as much as 83 million people in Asia and the Pacific, including 8 million Pacific islanders, face the danger of becoming environmental refugees in the next 40 years.

Here in the Philippines, the swath of destruction inflicted by powerful tropical cyclones Ondoy and Pepeng last year, as well as the extent of agri losses due to the ongoing El Niño episode, is a demonstration of the power of climatic changes to adversely affect our water resources, agriculture, land resources, and biodiversity.

Typhoon Ondoy/Ketsana alone cost the Philippines some $4 billion in farm and infrastructure damages, which is equivalent to 2.7% of our Gross Domestic Product. Major food regions lost 8%-10% of their GDP because over 600,000 hectares of farmlands were destroyed, while the industrial areas lost 6% to 8%.

In these tragedies, stories and images of hardship and hopelessness were seen, heard, and experienced. But for every story, image, and moment of difficulties and despair, there were also stories of heroism, revival, healing, and moving on – thanks to the Filipino's innate optimism, deep faith in God, and ability to get back on his feet and come up stronger and wiser after debacles and storms.

Sometimes, however, it's not enough to be strong or optimistic under these extraordinary circumstances. To be resilient, we have to be very prepared for future weather risks, as experts are projecting that the world's climate will continue to change because of global warming.

Climate change and agriculture

Undoubtedly, achieving food security in the light of the impact of climate change is one of the biggest challenges that the region faces today and in the years to come.

It is because farming – or the business of growing crops and raising livestock and fisheries – is a weather dependent endeavor. In addition, agriculture is a major wealth creator and job provider in all of the Asia-Pacific. It is estimated that more than half (60%) of the population and their dependents – equivalent to 2.2 billion people – rely on agriculture for livelihood and incomes.

These facts underscore the need for bold and decisive actions and creative long term strategies versus this global menace, which, ironically, is a result of mankind's centuries of neglect of his fragile environment.

The call of the times is loud and clear: as development forces, it is our duty to utilize agri-technological innovations and multi-sectoral cooperation to boost food production and prevent more peoples, especially the children, from going hungry and undernourished. And this must happen against a backdrop of our growing population and dwindling agri-fishery resources.

For us at the Philippine Department of Agriculture, our focus this year and within the medium term is on increasing the capacity of agri-fishery stakeholders to cope with climate variability.

In response to the El Niño phenomenon, we continue to deliver location specific mitigation measures on drought affected areas nationwide, in tandem with local governments and stakeholders. These include cloud seeding operations, distribution of shallow tube wells, and delivery of inputs such as assorted vegetable seeds to affected farmers. We are also closely monitoring a possible drought triggered outbreak of pests and diseases.

To offset projected production losses on rice, the staple food for most Filipinos as for other Asians, we aim to expand rice farms planted to high yielding hybrid varieties by an additional 64,170 hectares this year. This recovery plan – which covers major palay growing provinces across the country – will also enable us to attain our targeted harvest for this year, and bring us closer to sufficiency.

At the same time, as part of our centerpiece food security program called FIELDS, the Department of Agriculture is looking at several adaptation and mitigating measures to enable us to cope with climate variability:

Promote combined fertilization using organic and inorganic materials to improve soil condition while achieving higher yield;

Construct and/or rehabilitate irrigation facilities and small water impounding projects as we vigorously encourage the proper maintenance of existing ones;

Intensify the mobilization, upgrading, and dissemination of information and technologies, including conducting training in crops science and planting techniques;

Introduce and enhance weather based insurance schemes;

Construct or provide additional post-harvest facilities such as flatbed dryers, rice and corn milling centers, and chillers for fishery and aquaculture commodities.

FIELDS stands for Fertilizers, Irrigation and other infrastructure, Extension, Loans, Dryers and Seeds. It is grounded on a steadfast commitment to food security, competitive and free trade, sustainable agriculture, and profitable farm and fishery enterprises.

We have also aligned a significant amount of resources on training personnel who will design and implement programs using satellite based Remote Sensing and Geographic Information Systems. With these state of the art technologies, we could identify and map vulnerable areas like drought prone sections in the country. Through this, we can recommend crops that can be planted in specific areas to optimize land use.

We will also strengthen data analysis and forecasting capabilities, and develop and distribute climate ready crops and seeds which are submergence, drought, and disease tolerant. In fact, through a partnership between IRRI and the Department of Agriculture (Philippine Rice Institute and GMA Rice Program), a drought tolerant variety was approved by the National Seed Industry Council last September, and is being prepared for mass distribution.

But we in the government recognize that the success of these initiatives will require greater involvement of farmers, institutions, and communities. Enabling factors – such as policies, institutional support, and investment in human and physical capital and capacity building – are also necessary.

We will therefore encourage, by precept and by example, stronger collaboration and synergy between national and local governments, between government and the private sector, and between the extension worker and the farmer. Among other things, it will help us ensure an effective implementation of our national climate adaptation strategies and funding mechanisms.

We will also continue to seek international and regional cooperation through fora such as this. They serve as perfect venues to define, refine, and enhance our respective roles and goals, to successfully deal with the risks and opportunities that global climate change brings in our daily lives.

Conclusion

Ladies and gentlemen, we are at a defining moment in the world's history – our actions and the wisdom demonstrated today are likely to become the legacy by which we will be judged tomorrow.

There is no more time to waste. With the Copenhagen Climate Change Summit now a thing of the past, it's now time to move on. Each of us has a role to play in rescuing the future. Hence, in these trying times, we – policy makers, implementers, and stakeholders – must intensify efforts to carry out our respective development tasks and shared goals with greater commitment and enthusiasm.

This is our commitment to our respective countrymen, notably the farmers, fishers, and other rural folk. And they deserve nothing less.

Thank you. Mabuhay!

Global Scenarios 2030

The 38th Asia Society Williamsburg Conference was co-organized by the International Rice Research Institute in the Philippines and brought together delegates who were stakeholders in the shared future of the United States and the Asia-Pacific region. To provide context for the discussions on the implications of climate change, the opening session provided a series of scenarios for future developments based on decisions made today.

Snapshots of the World: The Global Scene Today and in the Year 2030

Scenarios can be defined as "alternative, plausible, internally consistent, and divergent views of the future." Through the use of intuitive logic, they provide an alternative and a challenge to established or conventional norms. Within the context of scenarios, there are relatively stable and predictable megatrends that constitute predetermined elements even if their consequences are unclear.

Megatrends: 2010-2030

Alexander Van de Putte, a scenario planner, presented a series of seven identified megatrends through the year 2030.

1. Demographics

The world population will increase from 6.8 billion people to approximately 8.2 billion by 2030, and it will be an ageing world. Large variations will exist in the demographic profiles among Asian countries, with China tending towards an ageing population that could see it get old before it gets rich, India experiencing a demographic boost in the 18 to 25 year age group, and Japan experiencing an increasingly ageing population. Gender imbalances could also lead to migrations by males.

2. Hydrocarbon Resources

Fossil fuels comprise 80% of total energy needs today and will continue to dominate over the period through 2030, but a shift from oil to natural gas is already underway and coal is making a return. The fear that the world is running out of oil is not justified.

3. Renewable Energy Potential

In the long run, renewable energy will prove sufficient to meet global energy needs, but its energy potential is not equally distributed across geographic regions. Solar energy will be the key, and the move to renewable energy will take 60 to 70 years, although Europe and Asia have the lowest potential for self-sufficiency globally. In the long term, there is sufficient potential for renewable energy substitution, but there are unresolved problems with storage and intermittence.

In the long run, renewable energy will prove sufficient to meet global energy needs, but its energy potential is not equally distributed across geographic regions.

4. Low Clock Speed of Renewable Energy Technologies

Moore's Law – which implies that the costs of technology are halved every two years – does not apply to renewable energy technologies such as wind and solar energy. The current costs of electricity generation from renewables are too high to enable a rapid transition away from fossil fuels. The energy density of renewables is also very low.

5. Nonlinear Relationship between Energy Demand and Economic Growth

With higher disposable incomes, people move to urban areas and have magnified energy consumption demands due to their demand for cars and appliances. In developed and fully industrialized countries, further economic growth requires little additional energy, whereas in developing countries, energy demand grows exponentially with economic growth. Global energy demand will grow again after the financial crisis.

6. Dual-Speed Economy

The world economy is very much connected and is not decoupling, but is instead growing at different speeds. Historically, economic growth was driven by the countries in the Organization for Economic Cooperation and Development (OECD). Since the early to mid-1990s, large emerging markets such as the BRIC countries – Brazil, Russia, India, and China – have been growing much faster.

...in developing countries, energy demand grows exponentially with economic growth.

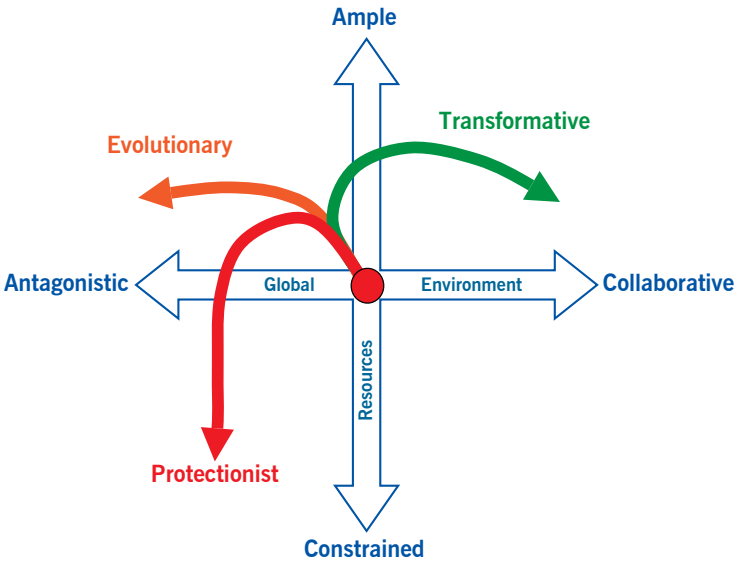
7. Public Sector Fiscal Stresses

Public sector fiscal stress has been building for some time and has now reached extremely serious levels as a consequence of the deficit spending and resultant elevated levels of debt taken on by many industrial countries, such as Japan and the

United States. The implication for climate change adaptation is that infrastructure needed to transition to sustainable energy, such as smart grids, will not be able to obtain government funding or the subsidies needed to incentivize shifts in demand patterns. As utility providers have yet to invest in such infrastructure, governments need to initiate it.

Global Scenarios to 2030

Three alternative global scenarios were developed. The two most divergent futures – the protectionist and the transformative scenarios – were presented and used to explore the potential impacts of climate change on the Asia-Pacific region.



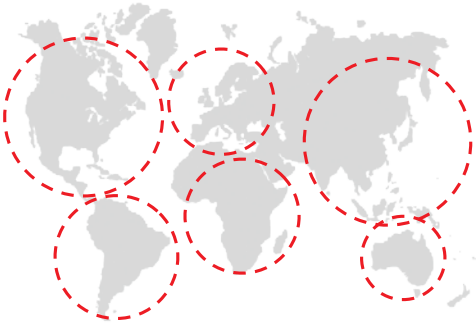
The evolutionary path outlined in the diagram above is the "official" future if current trends continue without change. Focusing on discontinuities is critical for anticipating what will push the world towards either the protectionist or transformative scenarios, with the latter being the more sustainable scenario.

...in the protectionist scenario, events outpace human actions...

The critical distinction between the two extremes is that in the protectionist scenario, events outpace human actions, where humans act only in response to challenges and new realities, which end up being inadequately addressed. Responses are extremely limited by

the lack of collaboration among countries, as future challenges cannot be solved by individual efforts. In the transformative scenario, a general sense of urgency motivates human actions to correctly outpace events. Even in a tough environment for individual countries and persons, there are real opportunities for individuals to connect with global networks, which provide the dimension of sustainability to the transformative scenario. The two scenarios are contrasted in the table below.

Protectionist



- A world that is largely unable to meet the challenges of the 21st century given an antagonistic global environment, resulting in constrained resources.
- This is a 'dog eat dog' world with national interests overriding international concerns.
- The notion of a 'green economy' stagnates as little progress is seen towards achieving this goal in this 'Protectionist' environment.

Transformative

- This scenario is driven by a change in vision where problems are addressed through deep and long-lasting cooperative agreements.
- A world in which stakeholders work in partnership to create effective ways to reconcile the tension between local interests and global concerns.
- The 'green economy' gains significant momentum, particularly in the important emerging markets of Asia and Latin America.

Drivers of Scenarios

Many factors contribute to the shaping of global trends that might push the world towards one or the other scenario. They can therefore be described as the drivers of these scenarios. As indicated in the table below, the following key drivers will shape the international dynamic and unravel in different ways for the protectionist and transformative scenarios:

Driver	Protectionist Scenario	Transformative Scenario
Regulatory context	• Ineffective regulatory environment driven by 'command & control' • Antagonism leads to protectionism and bilateral agreements	• Collaborative and pragmatic regulatory environment stimulates sustainable business growth • Global imbalances are addressed
Demographics	• Protectionism and concerns over employment severely limit labor mobility	• Student and labor mobility is encouraged • Emerging markets benefit from increased labor mobility and knowledge sharing
Economy	• Antagonistic environment stalls globalization • Restricted knowledge sharing results in low productivity growth • Access to capital is restricted, hindering economic growth	• Globalization resumes after the imbalances have been addressed • Strong emphasis on efficiency and productivity • Capital flows globally with few restrictions
Innovation	• National governments fund fundamental research driven by security issues • Limited technology transfer and duplication of efforts hinders innovation	• Cross-border public private partnerships (PPPs) stimulate funding for fundamental R&D • China, Brazil, and India gradually emerge as the 'new innovators' • Industry R&D is driven by 'co-opetition'
Climate change policies	• Lack of global climate policies leads to climate stress • Emerging markets focus primarily on growth. • Focus on national climate policies by OECD countries favors local and short term aspects	• An integrative 'Copenhagen 2' climate change policy is enacted and provides the foundations for sustainable global trade and economic development
Product, labor, and capital markets	• Trade barriers favor regional trade and hinder global trade • Capital and labor flows severely restricted	• Strong and increasingly 'sustainable' global trade • Capital and labor flows globally with few restrictions

1. Regulatory Context

In the transformative scenario, global imbalances – including trade imbalances – will be addressed, with China adjusting its currency. Global imbalances in externalities could be addressed initially by bilateral rather than multilateral agreements. Positive developments would see the BRINK countries of Brazil, Russia, Iraq, Nigeria, and Kazakhstan achieving stability and bringing significant new resources to the world at low cost. Production of oil is projected to increase by 20 million barrels a day from current global consumption of 80 million barrels a day.

2. Demographics

Blue and white collar movements around the world will benefit from increased mobility and knowledge sharing. Singapore's fluid and dynamic education system offers a useful illustration of the anticipated cultural and intellectual exchange that occurs at local and international levels due to such flows of people. The transformative scenario will be characterized by far more of such movements.

3. Economy

Productivity growth will be an important determinant of sustainability in both scenarios.

4. Innovation

In the protectionist scenario, funding for innovation will depend predominantly on governments, which lack access to cross-sector partnership and collaboration. Policy makers will be driven by traditional security concerns, and their capacity for approaching and interpreting problems will be constrained by this traditional framework of operation. The alternative to this scenario would offer more constructive possibilities, as in the present day example of the European Organization for Nuclear Research (CERN), which sees multiple governments coming together to invest capital for private firms to conduct nuclear research.

The concept of "co-opetition" sees countries cooperating in research and development, but competing fiercely in markets, to the benefit of consumers.

The transformative scenario would see an accelerating transition from the phase of imitation to that of innovation, particularly in the context of China, Brazil, and India. The concept of "co-opetition" materializes, which sees countries cooperating in research and development, but competing fiercely in markets, to the benefit of consumers.

5. Climate Change Policies

While policies concerning climate change will be present and increasing in both scenarios, the transformative scenario will see a constructive and progressive collective movement that starts with bilateral agreements, followed by add-ons and buy-ins by increasing numbers of nations.

6. Product, Labor, and Capital Markets

In the protectionist scenario, barriers to global trade flows will cause some countries (such as India and China) to gain, and others (such as countries in Africa) to lose out. In the transformative scenario, the world will see strong and increasingly sustainable global trade, also known as globalization with a "green" face.

A Timeline for Scenario Evolution

Protectionist	
Time period	**Scenario dynamics**
Early years to 2015	In this minimally cooperative antagonistic global environment, regionalization increases. BRINK country resources enter the energy market in force. Fortresses emerge in a world of economic volatility and limited technology sharing. Some oil giants fail.
Middle years, 2016-2026	There are big (economic) winners (e.g., China, Brazil) and big losers (e.g., OPEC). Rising protectionism puts the brakes on international collaboration. Friendly nations share technology, while outsiders are cut off from innovation. Energy is constrained and industrial inefficiency grows. Strong immigration controls favor the best of the labor pool. Resource wars are on the horizon.
End years, 2027-2030	Countries and the international community in general are unable to meet many challenges (e.g., climate change, clean energy). This world is characterized by a great deal of unrealized potential and very clear winners and losers.

Transformative	
Time period	**Scenario dynamics**
Early years to 2015	The resolution of trade imbalances (China-U.S.) and security concerns (particularly, a nuclear Iran) are the key issues in this period. Economic recovery is proceeding in an increasingly collaborative global environment. The notion of sustainable energy becomes a real part of the energy policies in both more established and emerging economies. There is a renewed commitment to the international system.
Middle years, 2016-2026	Countries try to seriously tackle security and economic challenges in tandem, first bilaterally then using international mechanisms. Economic growth is more resilient. Co-opetition characterizes technology development for the most part. Important strides are made in terms of addressing externalities like climate change.
End years, 2027-2030	Changes in energy use and technology development are paying off. The foundation is laid for a global energy governance structure. This is a world in which stakeholders genuinely and broadly (i.e., at local, national, regional, and global levels) engage with each other to solve global problems. Affordable, clean energy for many is becoming the rule rather than the exception.

Contrasting the Scenarios

In the transformative and protective scenarios, there are potential and distinct differences that will be experienced by the world where the following key areas are concerned:

a. Global real GDP growth

From 2015 to 2020, real GDP growth in the transformative scenario has the potential to be double what it would be in the protectionist scenario.

b. Average real GDP Growth
(in the selected countries of the U.S., OECD Europe, Japan, Brazil, Russia, China, India)
After global imbalances are addressed, it will take three to four years for average GDP growth in the transformative scenario to catch up with the rate in the protectionist scenario. In the transformative scenario, India and China grow steadily but less rapidly, and have less volatile growth driven by internal and more sustainable trade.

c. Carbon Intensity
(in the selected countries of the U.S., OECD Europe, Japan, Brazil, Russia, China, India)
The transformative scenario will see a decline in carbon intensity from 0.8 to 0.5.

d. Global Energy Mix
The global energy mix is what drives carbon intensity, and the transformative scenario will see a reduced proportion of coal usage in the mix. Currently, accumulation of coal reserves is motivated by security concerns and the low cost of coal, as evident in the policies of the U.S., India, and China. In the transformative scenario, coal usage will decrease, and usage will be restricted to "clean coal," for example through the use of carbon capture.

Nuclear energy will make a comeback in both scenarios, though in the transformative scenario, there will be limited to no risk of proliferation, and the conventional problem of nuclear waste will be addressed with the use of super computers that will enable waste to be stored on site and in proximity to communities without fears of radiation. Such breakthrough technology will not happen automatically, and only the conducive environment of the transformative scenario can support such technological breakthroughs. Increased use of nuclear energy will be critical to reducing carbon intensity, which would otherwise expand exponentially given anticipated population and economic growth.

In the use of renewable energy, first generation biofuels such as sugarcane and corn will compete directly with the food supply, but the evolution to second and third generation biofuels in the transformative scenario will eliminate this conflict.

e. Real Oil Prices
In the transformative scenario, the emphasis on environmental and economic sustainability will motivate oil exporters to invest their profits into the development of renewable energy technology. Assuming the price of US$60 per barrel for oil exporting countries to balance current accounts, oil prices of US$75 a barrel would

be high enough to enable such investment. A global energy governance system will also be established.

In the protectionist scenario, oil prices are likely to be more volatile, with anticipated peaks in oil prices after a collapse in 2015. Assuming that the BRINK countries would flood the market and cause the sudden supply spike, corporations like Shell and Exxon might go into severe financial distress, with the possibility of bankruptcy. Oil exporting countries would have to dig deeply into sovereign wealth funds in response to price collapse, thus channeling resources away from investment in research, development, and infrastructure. In the absence of a global energy governance framework, the world will continue to see exacerbated socio-economic consequences from the political and economic instability caused by fluctuating oil prices and the paralyzed development of renewable energy technology.

f. Atmospheric Carbon Dioxide Concentrations

In the transformative scenario, carbon dioxide concentrations would initially rise due to current trends, but would begin stabilizing between the years 2050 and 2060. The protectionist scenario would see extremely unsustainable atmospheric carbon dioxide concentrations, which could lead to catastrophic climate change.

Potential Implications of Climate Change on the Asia-Pacific

If climate change remains unchecked, as suggested by the Protectionist scenario, there will be grave implications for food, water, and adaptation in the Asia-Pacific. The higher temperatures, changes in precipitation patterns, and extreme weather events induced by climate change will result in lower crop yields and higher global food prices, particularly for wheat. Rice and maize will also be adversely affected. With climate change, Asia and developing countries are projected to become far more dependent on food imports, while other developed countries remain net exporters.

With the advent of climate change, and the densely populated nature of the most vulnerable cities in the Asia-Pacific, many people will find themselves living in "hot spots." The Asian Development Bank defines a hot spot as a "specific area or region that may be at relatively high risk of adverse impacts from one or more natural hazards which result from climate change." The four types of hot spots identified as being very vulnerable to climate change are low lying coastal areas, deltaic regions, low lying small island states, and semi-arid or low humidity regions. Anticipated impact takes the form of coastal vulnerability due to sea level rise, cyclones, riparian flooding, and water stress. Water stresses are expected to

be particularly dire for the South Asian region comprising Pakistan, Afghanistan, and Bangladesh, with virtually the whole of Bangladesh coming under water stress. About half of China's population is projected to be at risk, together with almost the entire populations of India and Bangladesh.

The international structures, systems, and networks facilitating cooperation and collaboration that are consolidated in the transformative scenario would present the world's best hope for a sustainable global environment, and to reduce the effect of climate change. These would require concerted global action immediately.

Setting Up Walls or Building Bridges: The Protectionist versus the Transformative Scenarios

On the road leading to either the protectionist or transformative scenario, a whole series of decisions need to be made based on a set of underlying assumptions or calculations regarding the nature of the problem being addressed. Focusing on the issue of food security, delegates embarked on a deliberative process to identify actions and decisions that need to be taken to bring the world towards the transformative scenario.

Taking Stock of the Problems

The overarching concept of food security requires it to be addressed as a big picture, with consideration of its meaning at international, national, and household levels. Internationally, the world might become more food secure as some countries will grow in productivity and become exporters, but many individual countries might not be in a position to take advantage of the benefits offered by trade and world food pricing. The Asia-Pacific region looks likely to become a net importing region. Climate change might also exacerbate the critical nature of food insecurity experienced at the regional, national, and household levels.

Internationally, the world might become more food secure as some countries grow in productivity and become exporters, but many individual countries might not...

There are significant lessons to be learned from Asia's recent past in improving food security, as a delegate specializing in development and agricultural economics explained. From a historical perspective, Asia has had a remarkable record in alleviating poverty and hunger through massive investments in rural infrastructure and human capital, thereby fulfilling the political mandate issued to many governments to feed their people. The benefits of the technological revolution could be reaped because new technology was by and large incorporated by small farmers. The returns from incredible economic

growth spread to everyone due to important linkages forged between agriculture and the rest of the economy, thereby connecting poor households to the overall growth process. The critical characteristic of the system then was stability of the food system, and consequently of food and rice prices in Asia.

With economic growth and increased wealth came a massive structural transformation in the rice industry, and changing trade, production, and consumption patterns. While rice used to form 3.6% of China's GDP, it now forms less than 1%. Supply chains are being revolutionized because of information technology and the role of supermarkets.

The constant challenge even today is how to keep small farmers engaged in modern supply chains – domestically or internationally – at the lowest possible cost. Vietnam, for instance, produces a one million ton rice surplus annually, but has no access to consumer demand. There is the option of exporting rice to Africa, where it is greatly needed, and where rice exports could be traded for cashews that are brought back to Vietnam for processing to earn farmers profits. Farmers are constrained, however, because they lack the capital or mechanism to enable them to bring rice to Africa. A transformative scenario would see the facilitation of progressive change to tremendously improve the quality of life for farmers.

The constant challenge is how to keep small farmers engaged in modern supply chains domestically or internationally at the lowest possible cost.

Climate change complicates the challenge by creating uncertainty about harvest, which negatively affects growth and investment at a time when the world needs more, rather than less, trade. In 2007, for example, India banned rice exports to ensure domestic food security, suggesting that the country's approach to climate change might tend towards the protectionist scenario of addressing issues in an isolated, non-coordinated manner. When climate change is coupled with the deficiencies in good governance at a micro level in many countries in the region, the world seems geared towards a protectionist rather than transformative scenario.

Climate change also exacerbates all existing challenges faced in dealing with food security, such as the degradation of resources. A delegate from India described the huge environmental fallout there as a result of chemical contamination of groundwater and land. Going beyond the focus on land, the ocean and maritime dimensions need to be more seriously incorporated in discussions about food security, and the problem of deeply entrenched ecological irrationalities and injustices must be addressed. By the years 2050 to 2060, the net impact of carbon dioxide on the environment will be negative. A delegate from Taiwan who

specializes in environmental research pointed out that the long lifetime of carbon dioxide implies we need to be focused on adaptation at this moment, instead of mitigation.

While there is an apparent role to be played by investment and technology, many developing countries are collectively facing the challenge of improving and sustaining the productivity gains from the Green Revolution. India's experience illustrates common challenges affecting many other developing countries. With 600 million people dependent on agriculture in India, investment levels in this sector and in infrastructure development have nevertheless fallen over the years, from 27% of GDP in 2000 to 15% today.

Existing protectionist tendencies within governments are compounded by a silos approach towards policy. A delegate who works on environmental issues in China described the ecological threats facing her country, with hot spots expanding from eastern to western China, where the most fragile ecosystems are located. Water stresses are also extending from northern to southern China, particularly in the southwest, which is home to the most biodiversity in the nation. Severe water shortages and stresses, as well as droughts, have prompted officials to construct dams to provide sufficient irrigation in villages, with many more of such construction projects planned.

In many countries, such projects are similarly not integrated into a larger strategy for climate change adaptation. Food and water shortages are not addressed or discussed in the context of climate change, and neither are the significant social implications. Official policy in China has focused more on energy efficiency and investments in technology, yet this approach does not comprehensively address the spectrum of issues confronting society. At the same time, many countries continue to be preoccupied with keeping their own citizens secure, rather than jointly considering the interests of other countries.

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At present, economic inequality is rapidly growing in Asia. Thailand witnessed food price spikes in 2007, and prices continue to soar as a result of increasing economic insecurity in the country. There is a perception by the majority, especially the rural unskilled, that they are being left out of the development process. Such effects are compounded by the effects of the global financial crisis on Thailand. In such an unstable context, a climate crisis could serve as the catalyst to tip the balance.

Working Towards a Transformative Scenario

A transformative scenario entails dimensions of both efficiency and equity. Realizing a transformative scenario will be far less costly and more stable for the Asia-Pacific region in the long run. In mapping out the path towards a transformative scenario, delegates emphasized the role and responsibilities of governments and regional mechanisms.

Building Structures and Systems for Global Governance

One perspective is that the world is already in a transformative scenario, but there is much more that needs to be done. Despite the existence of substantive multilateral dialogue and consensus on key issues, much of Asia – with the exception of Singapore and China – is characterized by very fragile democratic systems with multiple changes in government. With governments pandering to voters, there is a lack of capacity and incentive for making long term scenario-based planning as these might not bring short term political benefits to governments.

The region also lacks mechanisms to deal with the impact of collective vulnerabilities brought on by climate change, such as the issue of climate migrants. Asia will come to contain the ten largest megacities (defined as cities with more than 10 million inhabitants) in the world over the next 10 to 15 years, and large movements of people can be anticipated given the prevalence of hot spots across the continent. No international legal framework currently exists to address climate induced migration, and while individual countries have developed political and economic scenarios related to climate change, none have accommodated the possibility of mass-scale migration. There exist neither bilateral nor multilateral regional mechanisms that would enable one country to absorb the entire population from another, which is a plausible scenario if climate change continues on its trajectory in a protectionist world.

In order to address the expected risks to coastal cities and vulnerable communities, new construction technologies must be applied, and adaptation and mitigation strategies must be developed, particularly from the legal and long term policy perspectives. Most Asian countries have failed to establish such structures as they lack the financial capacity, and potentially beneficial international cooperation is absent due to the unstable investment and political structures in many developing countries.

Pooling Resources for a Shared Future

Key to the evolution from the protectionist to transformative scenario will be international collaboration and sharing of resources, particularly in the joint

development and implementation of research and development in technology. Due to serious underinvestment in agriculture over the last 30 years, partly motivated by the agricultural surplus in some countries, huge investments are needed now for the returns and impact to materialize after 30 more years. A delegate from the U.S. who is a professor of development and agricultural economics warned that the world will be in trouble if it is unable to dramatically increase productivity to deepen its agricultural base by 30% to 50% over the next 20 years.

In the interim, Asia needs much better regional collaboration on the rice trade, and substantially larger grain reserves. Food insecurity is caused in part by a disparity in purchasing power and the absence of a mechanism that enables surplus countries to export rice to deficit countries. A delegate from Japan noted the recent price hikes in grain and inquired about a methodology for each country to assess sufficiency of reserves. He suggested a regional scheme to allow borrowing and loaning among countries. Although the concept of a regional reserve scheme is highly controversial, the delegate from the United States acknowledged that such a mechanism made the most sense as a buffer system. The Association of Southeast Asian Nations (ASEAN) has committed 50,000 tons of rice for a regional reserve, but 50 million tons should be the target amount. Reserves are meant only to address temporary shocks such as speculation, and would not help in the long term if a growing scarcity of grain is anticipated. A delegate from the Asian Development Bank (ADB) described an integrated food security system that the Bank is about to start for the ASEAN+3 countries (including Japan, South Korea, and China). The system aims to enhance reserves and boost the rice trade.

Countries need to work towards a more liberalized and better functioning rice trade system, in addition to committing to reserves.

Countries need to work towards a more liberalized and better functioning rice trade system, in addition to committing to reserves. Transparency is a key pillar of a trade system, as a delegate from the International Rice Research Institute (IRRI) emphasized. In the absence of the "back door deals" in trade that are prevalent now, rice trading volume has the potential to be doubled. He suggested that a focus on trade offered more chance of success than the mechanism of a reserve system.

While trade agreements can be put in place, however, governments might not necessarily adhere to them in times of crisis. Reserves are necessary as short term operational structures to deal with temporary shocks, and should definitely be increased in the context of a more unstable world. A combination of reserve systems and genuine trade liberalization would in fact solve 90% of the problems

of food insecurity, but there are practical reasons for not being able to achieve free trade, which results in every country in Asia building up a rice reserve as a form of security. Even as we work towards liberalizing trade, developing a more nuanced understanding of the constraints faced by policy makers is important for resolving structural and systemic obstacles in the way of achieving food security.

SESSION II

Food Security – Exploring the Challenges

With Asia home to two thirds of the world's undernourished and two thirds of the world's 1.4 billion poor, most of whom spend more than half their income on food, the continent must occupy a prominent focus when considering global food insecurity. Asia embodies a spectrum of perplexing challenges to food security, chief among them the production-poverty paradox that has made the region simultaneously the largest producer of rice in the world as well as home to the largest number of people suffering from hunger. The region is also confronting a conflux of exacerbating problems such as accelerating urbanization, rapid population growth, increasingly protein rich diets triggered by rising affluence, land and resource degradation, and climate change.

Delegates discussed the impediments to equitable food access and security, which can result from productivity problems, inefficient markets, restrictive trade structures, and supply and distribution problems. There was a consensus that Asia needs to start producing much more with much less, and that the region is not yet equipped with the resilience to accommodate expected economic and climate shocks to its system. Productivity and efficiency enhancing technologies, though they have been developed, have not been successfully or sufficiently incorporated into developing Asia's agricultural sectors, which suffer from poor infrastructure and declining investments. In such a context, climate change is more usefully construed as a threat multiplier, rather than a direct trigger of food insecurity. Delegates also articulated other challenges, such as potential conflicts in addressing different forms of insecurity that the Asia Pacific simultaneously faces, the viability of agricultural self-sufficiency, and obstacles to advancing an effective international agenda for cooperation.

The Asia Society has convened a task force that will provide in-depth analysis of the challenges to food security and propose a series of actionable recommendations for policy makers that incorporate the insights obtained from this year's Williamsburg Conference. The task force report will be released on September 27, 2010.

Asia's Production-Poverty Paradox

Humans and human created systems need to shoulder much responsibility for the food insecurity facing the Asia Pacific today, and a significant number of the

problems generated are independent of climate change. The production-poverty paradox that sees Asia producing 90% of the world's rice even as it is home to two thirds of the world's undernourished has its roots in the region's pragmatic socioeconomic challenges. As climate change serves to catalyze and multiply threats and crises, current systemic and structural problems need to be addressed in order for implemented or planned adaptation and mitigation responses to reach their full potential.

Myanmar's situation represents a critical reality for developing nations that are confronted with a convergence of different threats, but that are not yet equipped to adequately address them. In Myanmar more than 70% of the population lives in land areas vulnerable to climate change. They are also facing shortened monsoon seasons that affect water security, and consequently, food security. While there are already 232 dams across the country, more needs to be done to have a fully effective irrigation system in place.

Humans and human created systems need to shoulder much responsibility for the food insecurity facing the Asia Pacific today, and a significant number of the problems generated are independent of climate change.

Systemic constraints resulting from socioeconomic structures are often a pragmatic obstacle to farmers harnessing the technological advances in agriculture. So, for example, the International Rice Research Institute is twice as productive in rice production as a Filipino farmer on a single plot of land because it possesses the very tools and infrastructure that most farmers lack: a thorough understanding of the interaction between climate and crop yield, adequate knowledge of soils, and capital for investments in machinery to enable complete control over water and resources.

Illustrating the tremendous potential offered by investments in agricultural research, a participant from IRRI revealed that US$3 billion invested over 3 years would lead to 130 million people rising above the US$1.25 a day poverty line, 120 million people attaining economic self-sufficiency, and a 300 million hectare reduction in the land needed to grow rice. The implementation of the benefits, however, would require a multi-sectoral approach, along with necessary sociopolitical and infrastructural changes. The socioeconomics of agriculture could also undermine mitigation efforts, for instance, if farmers refuse to reform their management practices to reduce greenhouse gases due to perceptions of interference with their livelihoods.

In this context, delegates discussed practical challenges at the individual, societal, and international levels that both perpetuate the production-poverty paradox and also undermine the communities' capacity for resilience and

adaptation in the face of climate change.

Market Distortions and Lack of Strategic Intervention

Despite technological and scientific advances related to rice production, many rice farmers in the Mekong region still face unsustainable livelihoods because of low incomes resulting from market distortions, such as the presence of profit making middlemen, and time lags in shipping and payment. Learning from Australia's deliberate transition from rice production to grape production, many rice farmers are ready to switch to the production of other "boom crops" that offer far more profitable returns. Vietnam, for instance, is prepared to switch to producing cassava, a highly valued biofuel that can be harvested twice a year with five times the profitability of rice production.

Strategic market interventions which enable developing countries to provide mutual help in attaining food and income security are critical to addressing key characteristics of the production-poverty paradox.

There is a role for governments to play in eliminating systemic and structural impediments such as market distortions in order for societies to reap the benefits of scientific progress. For developing countries in particular, which do not have the means of providing domestic subsidies to offset insufficient returns from trade, a new trade model that directly connects producers and consumers in different developing countries would be key to securing sustainable and viable markets for farmers. A delegate from Vietnam described a marketing model he established to bring Mekong rice production surpluses directly to consumers in Africa, which would provide African consumers with a fair price and give Mekong farmers access to profits they would not have under the existing middlemen dominant structure. Strategic market interventions like these, which enable developing countries to provide mutual help in attaining food and income security, are critical to addressing key characteristics of the production-poverty paradox.

Facing Up to Climate Change: Challenges in Adaptation and Mitigation

Obstacles to Applying and Incorporating Scientific Knowledge

Many problems in agricultural yield arise due to a lack of practical knowledge of new practices and crop species' adaptability to climate change. Often, farmers lack the requisite depth in knowledge of buying seeds of "climate proof" crop strains, setting planting dates to obtain maximum yield, and changing management practices to increase efficiency and protect harvests against natural disasters.

Crop diversification is also an important practice to apply, but it is critical that it be done correctly. A delegate from the Asian Development Bank pointed out that up to 25% of organic soil matter could be lost within a few years if crop diversification is incorrectly carried out. Switching from one crop to another also requires access to market chains, and farmers find it difficult to know how to produce the right quantity of crop at the right time. Effective reforms to the agricultural sector would require such approaches to be scaled up in size gradually, while always being mindful that people's livelihoods are at risk when implementing any attempt to introduce change.

Farming practices and infrastructure have yet to catch up with the effects of climate change, and there are time lags between all the stages of addressing it – from scientifically understanding the problem, to proposing solutions based on that understanding, to implementation and adoption into practice. As an example, the annual flooding level of the Mekong delta has exceeded IPCC projections by 1.5 to 2 metres. With this realization, the irrigation system must be redesigned to allow appropriately timed harvests structured around the timing of the flood. Dams can aid such an irrigation system by holding back water in times of flood and releasing it in times of drought, but different dams serve the purposes of different countries, which sometime lack the incentive to align or integrate their objectives. Dams built in China, for instance, affect water flows into the Mekong delta, but there is an absence of coordination and cooperation between China and the countries of the Mekong delta on the use of the river.

...even if first generation biofuels used for energy production (food crops such as sugarcane and corn) would compromise food security, they represent a learning curve that needs to be passed through prior to advancing to second and third generation biofuels that have far more caloric value and energy density.

Developing rice strains with shorter yield cycles is also necessary, but resistant strains of rice are not yet widely used. A delegate specializing in development and agricultural economics urged flexibility when designing different crop systems that fit better into local contexts. Apart from a predominant focus on rice, it might be advisable to also begin thinking about creating drought tolerant maize, which would increase in importance with the shift towards more protein intensive diets that use maize as feed grain.

Current understanding about biofuels also generated a debate among delegates. On the one hand, as biofuel production is stepped up to attain energy security for the rich, the resources going towards that could be at the expense of food security for the poor, resulting in conflicts among the different forms of security that are

desired by societies. On the other hand, even if first generation biofuels used for energy production (food crops such as sugarcane and corn) would compromise food security, they represent a learning curve that needs to be passed through prior to advancing to second and third generation biofuels that have far more caloric value and energy density. The United States and Brazil, for instance, are beginning to move on from using corn and sugarcane respectively to using algae, a third generation biofuel. Successful incorporation of scientific knowledge into best practice models would transform and greatly enhance the resilience and adaptive capacity of the agricultural sector.

Roadblocks to Effective International Cooperation and Coordination

International cooperation and coordination are critical to facilitate information sharing and lessons learned from individual states' experiences in addressing risk related issues, such as flooding and droughts. This is particularly true for developing countries, which have not yet established a platform for in-depth cross referencing on disaster preparedness and prevention. A delegate from the Asian Development Bank observed that South-South cooperation had been put on hold in past years, but is resurfacing with the spectre of climate change.

For developed countries, domestic politics usually gets in the way of adhering to an internationally responsible policy and funding agenda.

For developed countries, domestic politics usually gets in the way of adhering to an internationally responsible policy and funding agenda. A delegate from the United States pointed out that 60% of the American public does not believe in human induced climate change, which constrains decisive political action against it. Large farming lobbies in countries like the United States and Australia have also had a negative influence on progressive action.

Established patterns of human behaviour and preferences also affect the ease with which change might be implemented. Given that the grain ratio for feeding livestock versus that used for direct human consumption of crops is eight to one, however, several delegates suggested that countries begin thinking about how to incentivize more sustainable diets. As countries attain different levels of economic development, consumption patterns will shift in different but not necessarily consistent ways. Whether people will intensify consumption along the same lines or substitute food products is unclear, and different countries will proceed along different trajectories. If collective action is not taken to address unsustainable diets, a potentially useful mitigation strategy might be lost.

SESSION III

Food Security – Exploring the Solutions

Even though the whole of Asia faces the same big picture problem of food insecurity, delegates acknowledged the reality that there cannot be a one size fits all solution due to the great variation in elements and circumstances across countries, national regions, and households. Within the big picture, poverty reduction in Asia might appear dramatic due to the spectacular progress that China has made, but the region is very much heterogeneous, with non-uniform productivity growth. Understanding the binding constraints that characterize each of these contexts is key to building sustainable solutions.

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Despite the collective nature of the problem, action ultimately needs to be taken and plans implemented from the national level, both for the benefit of households and to move international cooperation forward. Within nations, there must be a mechanism to effectively translate macro-level policy decisions to positive benefits at the individual and household level. Policy planning and actions in the short run must also be aligned and integrated with broader long run objectives, such as consolidating community resilience against external shocks. In acknowledging the limitations of government resources and leadership, delegates urged investments in human capital and capacity building, as well as the creation of more public-private partnerships. Growth should be inclusive to turn back the tide of rising inequality, and climate change adaptation strategies should be mainstreamed and integrated into development policies.

In the field of food security studies and research, consistent investment is important, and organizations need to be attuned to the prospect of new funding models based on evolving trends in wealth and philanthropy in Asia.

Connecting Policies to Individuals

Policy decisions, when made, need to ensure they can directly translate to positive results and welfare for households. A delegate who specializes in development and agricultural economics outlined key considerations in current macro-level and

micro-level policy planning related to food security, and cited the ways in which the connections between them should be traced and strengthened.

At the macro level, an open trade regime is necessary to offset the impact of climate change on food security. With many economies diversifying rapidly and the variance that emerges from climate change impact, there is a need to cultivate comparative advantages and to create an environment conducive to benefitting from them. Agricultural research is vital for raising the productivity of the rural economy and could offer an avenue for creating inclusive growth. India, for example, has just seen 18 million new entrants to the labor force. Job creation for these entrants will constitute a demographic boost for the country, which would otherwise face rising inequality instead.

At the micro level, the problem of hunger and poverty among individuals continues to exist. Governments need to respond by stabilizing food prices, boosting buffer stocks with surpluses, and providing access to buffer stocks. Donor communities could also enhance traditional coping mechanisms used by locals to deal with food insecurity to create more effective and sustainable response mechanisms. Even with a successful economic growth policy, governments must consider how they will provide the poor and individual households with tangible benefits from that growth. For rural households to engage effectively with the market economy and gain access to capital, governments must work to minimize their risks and transaction costs. Efficient financial systems could also be built, that would intermediate between bigger urban banks and smaller rural banks to provide risk management skills and access to microloans. Investment in health and education will raise living standards and productivity, thereby giving people a foothold and security in the gains of productivity and growth.

Planning for the Future: The Importance of Good Governance

A striking limitation of and source of tension for most policies – including those concerning food security – is the lack of convergence between the short run and the long run due to a lack of systematic and integrated planning across an extended period of time. A delegate from the United States suggested that political instability contributes to the problem, as it results in political and social capital being invested solely for short run returns, thereby jeopardizing long run growth prospects. Eliminating political uncertainty and instability would enable policy makers to focus on long range planning and decision making.

Governments themselves, however, can also be the source of instability and tension. Programs set up with good governance structures that integrate the long and short runs do not manifest tensions between the two different phases. In many

instances though, the integrity of certain governments can be questionable and they can be driven predominantly by business interests. Another delegate from the Philippines remarked that governance is a particular challenge in the Asia-Pacific context, a region with 600 million food insecure or hungry people, yet there has been no discussion on the role of governance in addressing food security.

It is important to distinguish between household food insecurity in the short run – primarily caused by climate shocks or market collapse – from chronic food insecurity. Interim, short run measures such as drawing from rice reserves will ultimately be unable to address the comprehensive risks faced by individual countries, since food insecurity is often symptomatic of systemic problems that also cause chronic poverty. Poverty traps can result from isolation, lack of connectivity to developed areas, and immobility that prevents people from taking advantage of opportunities and resources elsewhere. A comprehensive and sustainable long term strategy would entail addressing the twin problems of poverty and food insecurity.

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Building innovation into existing systems is one facet of such a strategy. With access to formal trade, and to a knowledge system and network, farmers are able to time their selling to get better prices and boost their income from agriculture. Post-production capacity building in food harvest and storage technologies would also be an important component of the strategy. By developing human capital to create pathways out of poverty, such strategies exemplify how the short run does not necessarily have to be in conflict with the long run. They are also proactive ways of strengthening the resilience of rural populations in the long run.

India, for example, has created and budgeted 2 to 3 billion rupees (approximately US$64 million) for a National Action Plan to make agriculture resilient to climate change. It aims to achieve sustainable agriculture, efficiency in water usage, and risk management in terms of disaster risk reduction measures. It is also focused on building market infrastructure.

Innovating Governance for Poverty Reduction

At a time when most governments find themselves confronting severe fiscal stresses while they are being pressured to deliver economic growth, spending on direct poverty reductions is likely to be limited. In this instance, public-private partnerships would be very useful in enhancing public service delivery to the poor, for instance by providing fortified nutritious food at affordable prices. Over

2010 Williamsburg Conference Delegates

A tour of IRRI

Sanjay Chaturvedi (India) and Bruce Pickering (United States)

Left to Right: Cameron Hume (United States), Jamie Metzl (United States) and Ong Keng Yong (Singapore)

Cultural Performance

Left to Right: Simon Tay (Singapore) and Cao Haili (China)

Left to Right: Alexander Van de Putte (Belgium), Suruchi Bhadwal (India), Asanga Gunawansa (Sri Lanka), Peter Timmer (United States) and Zhang Jingjing (China)

Left to Right: Arnel Paciano Casanova (The Philippines) and Kyaw Win (Myanmar)

Left to Right: Shen Dingli (China) and Bhavani Fonseka (Sri Lanka)

Peter Timmer (United States)

Planting rice at IRRI

Sidney Myer (Australia)

the short and medium term, active and core engagement of the private sector for public-private partnerships is a must to compensate for the fading financial capacity of the government.

A delegate from Sri Lanka pointed out, however, that private sector investors seek profitable returns. In the case of countries like Sri Lanka, the Philippines, and India, which have to import more than half of their rice needs, it is in fact far cheaper to import rice than to invest in local production. The only exception would be if governments imposed import restrictions and directed investment towards building local capacities. The influence of traders in financing political parties makes this unlikely to happen. Investments would have to come predominantly from the public sector to direct the building of local capacity, which can then lead to a production surplus for export to sustain the industry. Another delegate from Bangladesh cautioned that investments from the private sector can also lead to significant middlemen involvement, which can add to costs. Directed investment can still be a good overall strategy for reallocation or distribution of resources, as investments in rural agricultural regions, for instance, would still incentivize people to move there for work.

Over the short and medium term, active and core engagement of the private sector for public-private partnerships is a must to compensate for the fading financial capacity of the government.

The pattern of public-private partnerships and their impact is inconsistent across the Asia-Pacific. While dynamic public-private collaborations have boosted productivity growth in the Philippines, such results have not extended to elsewhere in the region. A delegate from Bangladesh described the prospect of a South and Southeast Asian Food Bank, which has not found enough resources and commitment to materialize. While the Bangladesh Rice Institute has been developing new hybrid varieties of rice seeds for production, they continue to require imports, but find that other countries are sometimes not open to exporting. Food banks are critical as a source of buffer stocks for food security.

A protectionist scenario for the future works on the assumption of the absence of such an international framework, limiting countries to working through internally rational actions, consequences, and implications. Without international governance mechanisms, the only option would be for collective problems to be solved country by country, and hopefully in a cooperative way. Realizing a transformative scenario for the region requires the cultivation of trust to foster cooperation and collaboration, and it often requires the sacrificing of short term and narrowly based interests.

Saving for the Future: Governance and Management of Resources

The need for good governance extends to human governance over nature and natural resources. Farming practices, to be sustainable over the long term, need to be regenerative rather than exploitative. A delegate working with the Food and Agriculture Organization (FAO) emphasized the need to scale up local organic farming models and methodologies. There need to be improvements in rice cultivation, management of grazing land and water, aquaculture, agro-forestry, and restoration of degraded lands. These are also funding priorities for the FAO.

A delegate from the Philippines noted that while technology might be the key to achieving productivity growth, it cannot serve as a panacea. In the previous generation, the Green Revolution independently played a key role in dramatic poverty reduction, but solely investing in technology today is not enough. Governments must make sure growth is more inclusive than in the past to stem rising inequality. They must also mainstream climate change adaptation and align it with development policy.

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From the perspective of the International Rice Research Institute (IRRI), more work needs to be done on thinking through the sort of investment partnerships to forge, and what areas to focus on. Twenty-eight percent of the Institute's funding is spent on rice research development in Asia. The five major themes of IRRI's global program were outlined as follows:

1. Preservation and study of the world's genetic resources

Expand preservation of wild species and carry out DNA analyses to identify high value genes for making rice more climate proof and disease resistant. In the first half of 2011, biotechnology will enable the rice genome sequence to be mapped for just US$50, meaning that the sequencing of IRRI's entire gene bank could be done for US$5 million. If another US$5 million to US$10 million were to be invested over the next 5 years, it would enable detailed analysis of phenotype to study the appearance and manifestation of genes. Such analysis would lead to an unprecedented discovery of new genes that breeders can use, and would be a long lasting and permanent return on investment.

2. Re-engineer photosynthesis to make rice as efficient in biological terms (heat and drought tolerant) as maize already is

Breeding will be made more responsive to public and commercial demands in

terms of the production of high demand mega varieties. Up to 4 million hectares of hybrid rice are already present in China, and the supply could allow up to 10 million hectares in the next 10 years. There has been underinvestment for this initiative in the last 15 years due to a funding decline.

3. Improve crop management practices
Studies focus particularly on how to achieve this at a practical and broad based level, with emphasis on spreading simple and cost effective technologies that can be easily adapted and incorporated by farmers.

4. Conduct policy research at the household level to ensure research makes sense and can be applied
Only through studying and understanding the impact of new policies and technologies on households can we be sure that the research being invested in translates to practical and day to day benefits for the household.

5. Contributions to massive investments in the rice industry
Research can only act as a catalyst for the necessary structural reform of the rice industry. Big investment schemes in infrastructure, which are still absent, are a necessary complement.

Insofar as rice research development has not received the attention it deserves, several delegates pointed out that non-crop food resources have been even more neglected.

A delegate from India urged the importance of going beyond continental and land-centric perspectives to devote more attention to fisheries. Increasing ocean acidification has profound implications for fisheries and aquaculture. Existing governance mechanisms, such as international legal frameworks like the United Nations Law of the Seas, must be re-examined for the obligations it poses on countries. The delegate's recommendation was that the coastal states of the Asia-Pacific integrate fully all issues concerning marine ecosystems, fisheries, and aquaculture into their climate change adaptation strategies. In the same vein, animal husbandry must be addressed as part of the strategy for food security. Another delegate from India emphasized that fisheries and milk production affect dietary patterns as much as crop production, and need to be included in the big picture.

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Interacting with a Changing Landscape

Productivity in Agriculture

A professor of agricultural economics and poverty research described two contemporary schools of thought concerning global agricultural trends. The first group, from Iowa State University, claims that agricultural productivity growth is slowing down. Their studies have focused mainly on the countries belonging to the Organization for Economic Cooperation and Development (OECD). The second group, from the United States Department of Agriculture, refutes the first claim, holding it to be untrue across all regions in the world. They argue that productivity has not slowed down, but rather that public investment in research has declined. There is a causal relationship between public research and productivity growth, though with a substantial time lag. As a result, they anticipate an eventual slowdown in productivity.

Accompanying the slowdown in public investment is a rise in private investment, but it has not risen enough in quantity or quality to compensate for the slowdown. Private investment has been oriented towards commodities rather than staple crops. It focuses on the development of pesticides, herbicides, and genetically modified seeds. Such trends work against productivity growth in smallholder producers, and are in conflict with the critical need to raise agricultural productivity among them.

The delegate from the World Food Program offered the perspective that productivity has remained constant, and variations in production are due to the land that crops are grown on. The land that is used for cultivation is not always cultivable land due to the effects of natural disasters, but often that is the only land that people might have access to. Productivity is also affected by increasing pestilence and the geographical spread of diseases, which introduce an additional element of uncertainty for crop yields. A professor in development and agricultural economics from the United States pointed out that this is a dimension that has not received enough consideration.

The Future of Financing for Food Security

A delegate from the Philippines started a discussion on establishing a mechanism for Asia to start self-financing food security initiatives that have historically been funded by external sources. To provide context, an observer from IRRI outlined the Institute's fundraising and budget. IRRI spends US$100 million a year on its global program, and has an annual operating budget of US$50 million. Funding peaked in the 1990s and declined till 2006, when IRRI was awarded a grant from

the Bill and Melinda Gates Foundation. Japan had been one of the Institute's strongest contributors, but has reduced funding due to economic struggles. Support for rice research has declined in general.

A delegate from Singapore observed that Asian governments have evolved to prioritizing food security on their agendas, but they have not followed the OECD countries in developing mechanisms for Overseas Development Assistance. He advised looking to private companies and individuals in Asia, much as IRRI can trace its funding to the philanthropy of the Gates and Rockefeller Foundations in the United States. Increasing private wealth has been generated in Asia over the years, and philanthropy in Asia is waiting to evolve to the stage where philanthropists want to think strategically along the lines of Gates and Rockefeller. Philanthropy currently focuses on the "bottom of the cliff" and helping people after they have fallen off it. Looking ahead, philanthropy should focus on building protective fences to prevent people from falling off in the first place. The Global Philanthropy Forum in 2010, for instance, had an in-depth focus on food security and water management, as well as climate change mitigation and adaptation.

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Citizens can be called on to begin taking up the responsibility for food security as well. While food security has traditionally been addressed at the level of the state, philanthropists have an important strategic role to play in sustaining and directing investments for a period beyond the regular term of democratically elected governments. With a large and strategic thinking model, philanthropy has tremendous potential for positive impact.

SESSION IV

Asia's Next Challenge – Securing the Region's Water Future

The Asia-Pacific region faces a sobering and challenging water future, with communities set to face increasingly pronounced water stresses that are severely compounded by the effects of climate change. Asia's near future will be characterized by simultaneous extremes of severe glacial retreat from Asian water basins and rapidly rising water levels that threaten to wipe out Asian coastal cities. Projected trends reveal increasingly polarized effects, with dry regions suffering more intensive droughts, and regions with heavy rainfall set to face much more severe flooding.

The session discussion benefitted from the conclusions of a 2009 report prepared by the Asia Society Leadership Group on Water Security in Asia. In it, the Leadership Group issued a 10 point agenda for the region, based on the premise that water needs to be addressed from multiple perspectives beyond the environmental. Water must also be discussed in the context of complex national security and development challenges as water scarcity intensifies, particularly around the issue of how the water disputes of tomorrow will look different from those of today. The Asia-Pacific region today faces a parallel crisis in water management and governance that, if not addressed, will accelerate the depletion of already scarce resources and undermine the water accessibility of vulnerable communities. Such circumstances make it imperative for nations to commit to and invest in collaborative and innovative changes in management, socioeconomic structures, and lifestyles.

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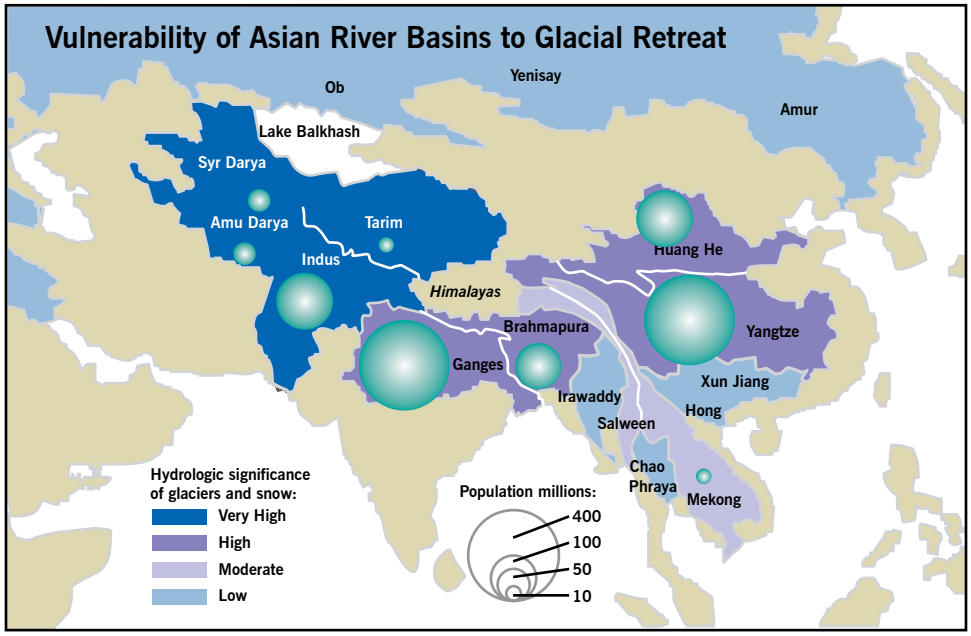
Despite the replication of water security related issues across the Asia-Pacific region, however, there has been no integrated dialogue to instill a sense of urgency towards the crisis or to establish a regional dimension and framework to the problem. It will be critical for leaders in the region to move forward in overcoming such impediments so as to lay the foundation for advancing progressive, coordinated, and comprehensive solutions towards water security.

From Glacial Retreat to Rising Sea Levels: The Paradox of Having Too Little and Too Much

Following initial presentations by a panelist working on water and climate change issues for the Asian Development Bank, delegates discussed the scope and nature of Asia's water crisis. Vulnerability to glacial retreat is very high in key Asian river basins, such as the Indus and Ganges in India, and the Yellow River and Yangtze River in China.



Source: ICIMOD Sustainable Mountain Development 56 (2009)

In this map from the International Centre for Integrated Development in Kathmandu, Nepal, the size of the globes signifies the population size dependent on these river basins. They number up to 400 million in some of the most vulnerable areas. The scale of vulnerability and risk depicted are certain; what is uncertain is when it will occur. Due to changes in the variability of extreme events, climate change projections usually involve a large extent of uncertainty and have therefore not been widely used in operationalizing water management. We can, however, begin planning for the solutions to the definite problem of glacial retreat by creating storage mechanisms such as large dams or trading in embedded water. Careful long term planning is necessary for sustainability since some of the apparent solutions, such as dam construction, generate their own problems of environmental degradation.

Even as key river basins in Asia are confronted with a looming water shortage, an overwhelming number of Asian coastal cities are exposed to rapidly rising sea levels that demand serious defensive and adaptive work. According to the UN Habitat Global Urban Observatory in 2008, the most vulnerable of these happen to be some of the most densely populated megacities (defined as cities numbering over 10 million inhabitants) such as Jakarta and Bangkok.

Security Implications of Global Temperature Changes

The paradox that Asia confronts of simultaneously intensifying droughts and floods has a scientific explanation, as delegates learned from a panelist who has been studying and analyzing the relationship between precipitation trends and changes in global temperature from 40 years of data. According to research and case studies done by the Research Center for Environmental Changes at the Academia Sinica in Taiwan, changes in the patterns of extreme weather events such as floods and droughts are connected to the warming of the climate. Recent studies have established a theoretical link between global temperature and changes in precipitation extremes. For each degree centigrade change in global temperature, there is an almost twofold change in precipitation affecting a certain area. Areas with the heaviest precipitation therefore experience significantly increased precipitation, whereas areas with the lightest precipitation experience significant decreases. These effects in sum cancel each other out, causing the amount of overall precipitation to remain about constant, but the intensification of existing precipitation patterns translate to extreme conditions on the ground.

Increases in heavy precipitation in areas already prone to it will result in more and increasingly severe flooding and mudslides. In areas that historically experience light and moderate precipitation, there is a critical dependence on such precipitation as the only provider of soil moisture. A significant drop in precipitation means more severe drought and failed harvests. Low latitude countries (defined as those located 0 to 30 degrees North in latitude) experience the most significant increases or decreases in precipitation intensity, and most of them are developing countries. Between 1960 and 2005, there was a 100% increase in the heaviest precipitation categories and a 20% decrease in the lower precipitation categories for the low latitude countries. Compared to them, corresponding changes in higher latitude China, Japan, and South Korea were about half.

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With the continued climate warming trend, a similar round of changes is predicted by the year 2035. The impact of these changes will be felt long before

the effect of any efforts we make now to reduce greenhouse gases, given that the lifetime of carbon dioxide is about 80 years. Our only viable response in the interim must therefore be adaptation strategies such as flood control and carefully crafted and considered policies on water resources and land usage. These must go beyond drafting and planning to be developed and implemented as quickly as possible within the next 25 years.

The Many Dimensions of Water Security: A Focus on Governance and Rights of Access

Today, one out of six people – totaling more than one billion – lack adequate access to safe water. The United Nations projects that by 2025, half of the countries worldwide will face water stress or outright shortages. While Asia is home to more than half of the world's population and almost two thirds of global population growth is occurring in Asia, it has less fresh water than any continent except Antarctica.

Dealing with Water Supply and Demand

A parallel crisis in the governance and management of water means that already scarce resources are being wasted and drained even more quickly. A panelist specializing in water and climate change with the Asian Development Bank spoke of how inadequate governance of groundwater in Asia has led to unregulated, disproportionate, and irresponsible usage that has caused unsustainable drops in the level of groundwater. In India, which has one of the highest rates of groundwater usage in the world, the government has been using groundwater to support agriculture for its growing population. Heavy government subsidies of energy needed for pumping groundwater has led to a distorted excessive demand for it, with the result that by 2025, many parts of India could run out of groundwater and face a water crisis. In China, the production of inexpensive pump sets has encouraged farmers to extract deeper groundwater for just US$100 to $150, and groundwater has been decreasing as fast as a metre a year in northern China since 1974. In other areas, it has suffered serious contamination from heavy metals and other pollutants. The magnitude of this problem can only increase, and in order to begin addressing it, groundwater needs to be managed as a community resource within a long term framework. Deficiencies in water management are also reflected in the disastrous levels of water quality experienced by many countries in Asia, to

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the extent that the water cannot even be used for irrigation and instead produces malignant effects.

On the demand side, a recent study by McKinsey has projected – not considering the impact of climate change – that by the year 2030, China will experience a shortfall of 1 billion cubic metres of water, or the equivalent of 25% of its projected demand. India will experience a shortfall of 750 million cubic metres.

Water as a Human Right?

With the severity of anticipated problems in water supply and access, and the potential for aggravated disputes over water within and between countries, a delegate speaking from the legal and policy perspective raised the necessary question of whether water ought to be recognized as a fundamental human right. To take India as an example, water is a subject that falls under the cooperative jurisdiction of both state and central governments, with statutes providing for inter-state water disputes. India has seen more than 50 such disputes to date, with the nature of the challenge crystallized by a Punjab minister's proclamation that every drop of water flowing through Punjab belongs to Punjab. A police commissioner in Mumbai has also commented that one of the most serious law and order problems that his city could face is water riots.

If people do have a right to water, then how should this right be incorporated into existing laws and legal structures? Recognizing water as a human right in turn necessitates establishing legal and technical limitations for sharing a water supply that will inevitably prove insufficient for all to share. Addressing rights to access of water must also involve examining the distribution of water. In many cases in Asia, water shortages are a problem not of availability, but of distribution, a problem that can be attributed to lack of proper infrastructure or lack of management skills by the public sector.

Recognizing water as a human right in turn necessitates establishing legal and technical limitations for sharing a water supply that will inevitably prove insufficient for all to share.

While the absence of a good water governance system can be addressed by public-private partnerships, bringing in the private sector brings in the need for profit making – a daunting prospect considering that water has traditionally been provided for free or heavily subsidized by the government. In order for a pricing system for water to come into practice as policy, it must usually be endorsed by the public and cleared by both ruling and opposition politicians. In this way, water policy and strategy can often be handicapped by politicking.

A water pricing system also has implications for the right to water access. Given

the huge economic disparities between people in Asia, a price structure must be based on economic parity. Some national constitutions could argue that this equates to discrimination, and that universal human rights cannot be protected in a discriminate manner. When the need to protect the profit margin for the private sector involved in the distribution of water is considered, the cost structuring becomes even more complex.

The Present and Future of Asia's Water Crisis: Searching for Solutions Beyond Borders

The range and complexity of problems generated by water scarcity and insecurity demand a comprehensive and integrated framework for addressing them. For practical reasons, this framework must transcend sectors and national boundaries in order to produce solutions that are viable in the long term.

The Likelihood of International Cooperation and Coordination around Water

With water as a severely limited resource – only 2.5% of the water that covers the globe can be consumed, and only 1.3% of it exists in a form we can access – the need for financing technology in recycling and efficient water usage is more urgent than ever. Since it is developed countries which have the capacity for this, multilateral cooperation is necessary for universalizing the benefits of available technology.

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As a precursor to that, countries that sign on to multilateral agreements have to prioritize and demonstrate a commitment to responsibility and accountability in the usage of shared resources. The countries that form the Mekong River Commission, for instance, worry about China's disproportionate control and influence over the shared water resource. A delegate from Bangladesh also pointed out how his country's water supply is inextricably linked to decisions made in India, since Bangladesh's water supply is mostly controlled by dams in India. The international system and the countries which make up the system must therefore prove their ability and commitment to uphold effective governance and enforce the law.

A delegate from Singapore, however, questioned the Asia Pacific region's capacity for making advances in this way, especially given that there does not appear to be a prevailing sense of crisis felt in the region. Most discussions concerning common challenges and issues have also lacked a regional dimension,

despite being replicated in countries across the region. At the same time, even if science articulates a logical unilateral direction for the policies and decisions that are necessary for sustainability, policy makers must grapple with their own social and political costs of implementing water management policies, the benefits of which might take a far longer time to accrue and materialize.

In such a context, policy makers ought to involve communities more in making water related decisions, so as to bridge the gap between high level decisions and how they are interpreted on the ground. When people are better informed and educated about the implications of decisions, the solutions are likely to be more effectively and sustainably translated into action. Other delegates highlighted the retractions of findings made by the Intergovernmental Panel on Climate Change in 2007 due to inaccuracies in timeline. They emphasized the importance of intensifying scientific research to dispel controversy and reduce uncertainty for water resource planners, particularly over the next 20 to 30 years. Glacial melting, however, is a certainty even if its timeline is not, and the changes in sea level are happening only in one direction. The world does not have the luxury of hiding behind scientific disagreements to delay attending to this problem.

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Optimizing the Present to Prepare for the Future

An alternative viewpoint offered was that there is a tendency to focus too much of our resources and thinking on future crises rather than on solutions needed in the present. The crises we face in the present day will, if not mitigated, be exacerbated by climate change to produce compounded effects in the future. Several delegates then recommended identifying and acting immediately upon the "low hanging fruit" options, which would be amenable to most and simultaneously serve as steps towards long term solutions that need to start being put in place now. The McKinsey report's recommendations for addressing long term water scarcity, for instance, are at the same time a means to achieving greater cost efficiency under current conditions. They offer a series of win-win situations and would appeal even to those who lack the compulsion to act upon a perceived water crisis. As the solutions are ranked from lowest cost to highest cost, starting with the cheapest solutions in the short run would allow the final strategy to be the lowest cost strategy in sum for closing the shortfall between water demand and supply.

As a starting point now, delegates recommended an increased focus on conservation, which has not been getting the attention it deserves. Re-examining

water consumption and usage patterns, rainwater harvesting, and improving irrigation efficiencies were some conservation methods proposed.

Recycling is also a strategy that demands renewed focus and commitment in terms of establishing innovative structures. A delegate from the United States suggested that as urbanization needs make up a greater share of our water demand, recycling water used for sanitation into drinking water must also be made a priority. Yet this idea requires a great deal of marketing savvy and political strategy to be made palatable to the public. In San Diego, California, a campaign titled "From Toilet to Tap" was voted down by the public. Singapore, however, has been extremely successful in garnering broad acceptance of Newater – drinking water that has been triple purified from water used for sanitation or industrial purposes – and using it in the water supply for household and industrial consumption. A delegate from the ADB suggested that once water becomes scarce and valuable enough, as in the case of Singapore, people would start accommodating innovative and nontraditional breakthrough approaches as solutions.

Public-private partnerships were cited by several delegates as the viable path forward for integrating recycling effectively into societies. While private investments guarantee efficiency, investors would expect the public sector to provide them with a conducive environment that promotes confidence. A delegate from the private sector in Japan agreed that public-private partnerships are an ideal model for water management, since such a model makes use of a single infrastructure, and such partnerships could take the form of Independent Power Producer (IPP) schemes. By 2025, world water usage would amount to around 950 billion cubic metres, and Japanese private firms have already indicated interest in engaging in such investment models. To enable successful partnership, there needs to be central government endorsement and sovereign guarantees provided to investors and funders in every country. Policy structures must also be put in place to ensure regulated water use and tapping of water supplies.

While private investments guarantee efficiency, investors would expect the public sector to provide them with a conducive environment that promotes confidence.

With the necessary coordination and integration of responses for more effective water governance and management, new and sustainable models can be established that would go some way towards alleviating the impact of Asia's looming water crisis.

The Asia Society Task Force Report, *Asia's Next Challenge: Securing the Region's Water Future*, is available online at **http://asiasociety.org/files/pdf/WaterSecurityReport.pdf**

SESSION V

Addressing the Challenges of Adaptation to Climate Change – A Focus on Migration

Around 200 to 300 million of the world's 6.9 billion people migrate every year, and the Asia-Pacific, as home to almost 60% percent of the global population, experiences migration as one of the greatest propellers of economic and demographic change in the region. Population movements have traditionally been motivated by predominantly economic, political, or social concerns. As these become intertwined with the pervasive, often permanent effects of climate change on different societies, the region and the world are in great need of mechanisms and structures for managing increasing flows of people who are driven to move by ever more complex reasons.

The challenge continues to grow in scale and urgency as we witness increasingly serious and irreversible impacts caused by each degree of temperature change, and as expanding geographical areas with the densest populations are scientifically identified as climate and multiple hazard hotspots. The ongoing pursuit of unsustainable economic development models by individual countries is also generating spillover effects on people and resources within and across national borders.

Despite present circumstances, delegates concurred that there is a dearth of data collection, analysis, and understanding of the nature and patterns of migration. Current global policy and legislative frameworks also make no special reference to climate induced movements of people. It has proven difficult to obtain consensus on setting uniform international principles, standards, and funding guidelines due to the politicization of issues concerning migrants, refugees, and the climate. Even though the session's panelists and a significant number of delegates had working affiliations with organizations committed to the study of the environment, people movement, and adaptive capacity in response to climate change, they also offered insights to how multiple disparate strands of related studies are ongoing without being integrated.

In bringing together and sharing perspectives and knowledge from different countries and disciplines, delegates acknowledged the need to take a far more holistic and integrative approach towards migration that looks equally at the full range of insecurities that drive it, including but not limited to economics, urbanization, power disparities, and forced displacement. They also emphasized

capacity building of global and national governance structures through shared information, resource pooling, increased networking, and people oriented agendas.

Understanding the Complexities of Migration: What We Know and What We Do Not

Different types of migration and the global context for migration

Migration can be divided broadly into temporary and permanent migration, with different implications for adaptation in each case. Temporary migration is often seasonal and driven by agricultural cycles, such as farmers who migrate during non-rainy seasons to suburban and urban areas to supplement their income. They then return home in the rainy season to grow a single crop for the year. Permanent migration is typically associated with forced dislocation due to involuntary circumstances, such as those related to irreversible climate change.

The Intergovernmental Panel on Climate Change anticipates that by the year 2080, 1.1 to 3.2 billion people in the world would experience water scarcity; 200-600 million people would suffer from hunger, and 2 to 7 million people a year would be forced to confront the effects of coastal flooding. From these numbers, it could be deduced that in the years to come, there would be millions of climate refugees crossing from the low lying delta of Bangladesh to India. Another related and central driving force of migration is decreases in agricultural crop production due to environmental changes, as in the case of Indonesia.

Such scenarios have given rise to a new category of migrants who might be termed environmental refugees – those who are forced to leave their traditional habitats permanently because of hazards (whether man-made or natural) that jeopardize their existence. The status or classification of a migrant, however, would depend on the political structure and philosophy of the recipient city or state. Climate migrants are sometimes referred to as refugees when their influx proves too overwhelming for recipient countries to deal with. At the same time, it is the term "refugees" that evokes strong protests at climate change negotiations, due to connotations of obligatory accommodation by the recipient country and the reality that sanitary, health, and education conditions for such "refugees" are often worse in the destination areas. The trend today is towards a growing securitization

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of migration issues. In the absence of a functional and consistent international legislative and human rights framework, it is easy for disputes between countries to be politicized and for decisions to be made out of fear or sentiment, to the detriment of vulnerable forced migrant communities.

Establishing a rights-based approach

Given the different drivers of migration and the severe time and capacity constraints many climate migrants face, we should understand migration not solely as an adaptation strategy, but as a manifestation and impact of climate induced stress that requires decisive, structured, and often rapid responses. For example, 40,000 people were instantly displaced when a recent cyclone hit Bangladesh, leaving no time or space for establishing adaptive processes. The fallout from this situation was exacerbated by the lack of government recognition of the number of people who had become migrants, and the trafficking and smuggling of the most vulnerable within displaced communities. Such compound scenarios demand that solutions, if they are to be effective and sustainable, address both the initial climate trigger of migration and the related the related social impact risks that accompany it.

The experiences of other countries reveal how the boundaries between different categories of migrants are often blurred, creating both logistical and legislative challenges in shaping appropriate responses to particular instances of migration. The result is almost always a compromise on the rights of the affected people. In Sri Lanka, a flood that struck the country in the days just prior to the conference had left 80,000 displaced. They were part of a much larger group within the country that had been displaced by either environmental disasters, conflict, or both. China's experience with the construction of hydropower facilities such as the 3 Gorges Dam illustrates how a single policy decision can simultaneously be interpreted as a necessary government response to the needs of environmental migration and also as a trigger for dislocating a separate set of people who were conceived of as strategic economic migrants. On one hand, the dam had been constructed out of the need to supply water to migrants who were seeking relief from sudden and severe droughts in Southern China. On the other hand, the construction of the dam also had the intersecting economic motivation of generating cheap energy, and its construction necessitated the mandatory relocation of more than a million residents who populated the affected area. The Chinese government has planned the construction of eleven more dams, according to a delegate from China, who also commented on how the upstream location of some of these dams would inadvertently impact countries in South and Southeast

Asia who were located downstream from the dams.

These examples illustrate the importance of adopting a rights-based approach, a people-centric model, and a transparent policy and legislative framework towards the often complex nature of migration and the triggers of migration. A delegate from Bangladesh spoke of how he is advocating for a focus on climate change and its implications for the protection of the rights of climate induced migrants at the upcoming Global Forum on Migration. In the case of China, for instance, the benefit of having under its jurisdiction the source of an international body of water must be accompanied by responsible actions, and the outlining of clear and transparent policies and consequences to ensure that China's development is not pursued to the detriment of other countries. Similarly, while using dams to address natural disasters might be a well intentioned effort, a sustainable decision on where to locate such dams must take into account the implications for the rights of individuals.

Regardless of whether regional or international legislation and agreements lay the foundation for effectively addressing the issue of the rights of climate migrants, the system that is established must support and address the priorities of displaced persons, and should also facilitate and enable greater mobility of people.

The Limits of Adaptation and Adaptive Capacities

Migration scenarios call for international adaptation strategies built upon increasing awareness, training, and land rules. As a number of delegates emphasized, people who are displaced need to be accommodated and supported by policies and funding for infrastructure, urban planning and restructuring, and capacity development. Temporary migration that happens at specific times each year can and should be planned for in advance in order to manage the influx or surge of people to the recipient area. Funding can also be used to expand temporary employment opportunities in the recipient region for migrants. Alternatively, to minimize the social and family dislocation that happens even with temporary migration, a delegate from India suggested that others could learn from an Indian government scheme that creates temporary employment opportunities during the non-rainy season that allows those in the affected agricultural community to maintain their livelihood without migration.

...people who are displaced need to be accommodated and supported by policies and funding for infrastructure, urban planning and restructuring, and capacity development.

Permanent migration, however, will constitute the dominant demand on

resources as we are compelled to address the irreversible impact of climate change. Adaptive capacities remain ill equipped to deal with the implications of permanent migration due to lack of political and economic commitment; an absence of legislation; and insufficient integration and coordination of international knowledge, technology, and resources.

Most of Southeast Asia is vulnerable to multiple hazards, as delegates learned from a discussion on the region's adaptive capacity. All of Southeast Asia is at risk to varying extents, but the entire region faces risk above the minimal level. There are no plans yet for how to manage the populations of such regions. When sea levels have risen, adaptation plans alone will be ineffectual in addressing the problem. A delegate who works on adaption at the national level spoke of bottlenecks in parliament when trying to deal with climate change planning, even though his country's topography makes it extremely vulnerable to now rapidly rising sea levels. The challenge is compounded by people's reluctance to evacuate from land areas that they have historically been rooted to. Similar concerns on governance capacities were raised by a delegate from Singapore, who expressed pessimism at the preparedness of governments in Asia to deal with migrant issues. Historically, no political action has ever been taken in the absence of an immediately looming threat. Even the red flag of climate change not be a strong enough compulsion for such inertia to be overcome.

Finding Opportunities in Crisis: Beyond Adaptation to Sustainable Long Term Solutions

It is critical to maximize the funding and resources to be directed towards migration, and a number of delegates suggested that the accuracy of terms and categories can be overlooked in a bid to secure political and financial commitment to migration. Presenting climate change induced migration as an adaptation strategy, for instance, would allow adaptation funds to be accessed to finance the necessary structural and policy responses to the challenges of migration. Establishing a comprehensive framework for addressing migration would go a long way towards bolstering preparedness for the large scale population movements that are anticipated as the effects of climate change make themselves increasingly felt.

At the same time, we must also move forward with building governance and structural capacities, community resilience, and intellectual capital for addressing climate change and facilitating long term adaptation. A delegate working on national and international adaptation shared his recommendations for "adaptation networking" as a means of progressively exchanging, accessing, integrating, and

organizing all available knowledge and data at the local, regional, and international levels. He also articulated urgent action items for implementation under international cooperation, including vulnerability assessments, prioritization of actions, financial needs assessments, capacity building and response strategies, and integration of adaptation actions into sectoral and national planning, as well as devising other ways to enable climate resilient development and reduce vulnerability of all parties. There needs to be more interaction and resource sharing between developed and developing countries. At the national level, knowledge networking creates more effective linkages and feedback loops among the decision making authorities, the scientific community, and the local community to bring technical expertise, specialized knowledge, and local concerns into decision making. This strengthens the capacity for long term and pre-emptive decision making, enhances scientific findings with local knowledge, and establishes processes to ensure that facts and information are not misinterpreted due to bureaucratic processes.

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Identifying and creating opportunities within the framework of addressing challenges builds community resilience and also provides a constructive way forward, and out of the unsustainable order and structure we have precariously attempted to maintain over the past years. As a delegate from the United States pointed out, insecurity is a significant and compelling driver of movement, and putting security and sustainability back into the cities and structures we design will go some way towards mitigating the spillover effects from climate change we anticipate in the years to come.

Building Bridges – Reports from Breakout Sessions

With a comprehensive picture of the stakes involved in climate change impact on the Asia-Pacific region, delegates divided into groups that focused separately on food, water, and adaptation to propose a list of action steps that can best be taken by Williamsburg participants, individual countries, and the international community to address the full range of challenges explored. Delegates shared their recommendations in a series of 10 minute presentations at the conference.

Food Security

As home to some of the largest and most densely populated countries in the world, as well as 65% of the world's hungry people, the Asia-Pacific region is both the epicenter of the global food insecurity challenge and a key actor in addressing it. Nevertheless, many Asian countries are lagging behind on progress towards the first Millennium Development Goal of eradicating extreme hunger and poverty. Delegates in the breakout session for food security emphasized the need for a multi-level and multi-layered approach to the problem due to the cross-cutting nature of the pertinent issues of rights, sustainability, and institutions at all levels. They also highlighted that food security spans across the three major sectors of crops and agriculture, fisheries, and animal husbandry. The last two are often overlooked in food security discussions, but they need to be integrated back into dialogues for a more effective interpretation of the challenges to food security.

International Agenda

At the international level, it is critical to get the sustainability of food security back on the agenda and at the same time obtain a visible endorsement of and commitment to agriculture. Apart from international fora, regional fora are also an important platform to target in order to boost South-South cooperation. Efforts should be made to push for freer trade at World Trade Organization negotiations.

Creativity and persistence in interpreting and presenting the challenges are also needed to secure substantial increases in international funding for agriculture. One recommendation was to push for agriculture to be included in United Nations funding under the Collaborative Programme on Reducing Emissions from

Deforestation and Forest Degradation in Developing Countries (UN-REDD). Current allocations of food security funding also have less of a focus on Southeast Asia and Latin America, and more funds need to be sourced for these regions.

International commitments to enhancing human capacity and financing research and development of appropriate technologies will go a long way towards food security efforts. Enhancing human capacity should form the foundation of any development effort for agriculture, and there is a need to link international and national agricultural research centers to coordinate and share efforts at cultivating new climate- and disaster-proof crop varieties, such as submergence and salinity tolerant strains of rice.

A mixture of adaptation and mitigation approaches are the way forward for national strategies aimed at food security.

National Agenda

A mixture of adaptation and mitigation approaches are the way forward for national strategies aimed at food security. Delegates highlighted the continued relevance of the concept of Nationally Appropriate Mitigation Actions (NAMA), which was first used in the roadmap that came out of the United Nations Climate Change Conference in Bali in 2007 and also constituted part of the Copenhagen Accord issued after the 2009 conference. NAMA refers to national policies and actions that countries commit to for the objective of reducing greenhouse gas emissions. It factors in differentiated responsibilities and capacities on the basis of equity, and also emphasizes financial assistance from developed to developing countries aimed at reducing emissions. As part of the adaptation strategy, investment in national agricultural research should also be boosted.

In the socioeconomic context, there should be a focus on progressive food access policy in terms of greater availability of safe and nutritious food. Such a policy entails resolving international issues concerning borders and trade regimes, a medium and longer term approach to poverty alleviation (for instance, incentivizing rice producers), and short term safety nets for vulnerable populations.

Williamsburg Agenda

In the era of climate change, a rights-based approach to food is the sustainable strategy for the long term. Delegates also urged the keeping of food security issues on the radar of decision makers and stakeholders in the long run, beyond limited advocacy in the short run. Beginning in late September this year, the report by the Asia Society Task Force on Food Security will be launched, followed by a presentation to the International Red Cross in Hanoi in November. In the

longer term, delegates have both individual and collective capacity (through the report) for involvement and continued dialogue in international and regional fora, and engagement with the G20, Asia-Pacific Economic Cooperation (APEC), Association of Southeast Asian Nations (ASEAN), and South Asian Association for Regional Cooperation (SAARC).

Water Security

International Agenda

Delegates found it challenging to come up with new ways for proceeding with international cooperation on this issue, short of coming up with an international price for water. They focused instead on the need for countries to come to a consensus on the following issues: recognition of rivers and other shared resources in relation to each country's needs (for countries that have not already signed on to a treaty or agreement) and getting a dialogue on the water crisis issue started even if the sense of a crisis does not yet seem strong enough in the region.

National Agenda

At the national level, delegates identified more practical recommendations devoted to increasing efficiency and resilience of national systems. While all countries are committed to increasing water efficiency, there are variances in the policies of different countries, which could prove increasingly critical given anticipated water stresses and the presence of seasonal and chronic shortages.

A multi-stakeholder approach is also important for balancing the needs and rights of multiple segments of society, as well as the rights of different states in one country.

A comprehensive approach to water must be taken, with countries and cities looking at the whole picture in terms of rainfall and how water is controlled, stored, recycled, disposed, and sanitized. Many countries have different resources and funding models, but have yet to integrate individual strategies into a comprehensive one.

A multi-stakeholder approach is also important for balancing the needs and rights of multiple segments of society, as well as the rights of different states in one country. The role of the market could figure as prominently as the role of the public sector, and its potential should be tapped into.

Williamsburg Agenda

At the individual level, delegates recommended engaging in advocacy and working on the sharing of comparative lessons. The Williamsburg Conference could bring together multiple stakeholders in dialogue and other critical constituents, such as different consumers and demanders of water.

Migration and Adaptation

International Agenda

The international community must come to a consensus on climate change, articulating the challenge the world must collectively address in terms of consequences and changing circumstances that demand our attention and resolution. There needs to be vulnerability assessments done on areas that face more hazards, and the information collected should be processed, shared, and acted upon in a coordinated manner. In identifying the aspects of climate change impact that lend themselves to international cooperation, delegates brought up food security (as declared by the G8 last year), public health, and diseases. They highlighted that issues such as social dislocation and human trafficking can have both national and international dimensions, and how countries choose to classify an issue can affect the effectiveness of solutions. Consensus needs to be established as to which aspects of the issue should be classified as international before cooperation can move forward.

...many nations lack coherent plans for adaption and plans that deal with longer term trends.

The potential for a global funding framework for adaptation also exists, but has not been utilized by multilateral institutions. There are between US$40 million and US$70 million worth of funds to be accessed, and the international community has to come together to decide on mechanisms for distributing and allocating them.

National Agenda

At the national level, there are scenarios that policy makers can and need to start planning for, including the impact of domestic migration and of rising sea levels. Scenario planning is necessary to provide enough lead time for adequate responses to be designed. As sea levels rise, for instance, incidents happen that create discontinuities and disruptive triggers. How would, for instance, states work with local communities to carry out reintegration for those dislocated by rising sea levels? Mechanisms for appropriate sector responses from either the military

or civil leadership need to be put in place, as do strategies for relief work, and the different usage and dissemination of information. To date, many nations lack coherent plans for adaptation and plans that deal with longer term trends.

Williamsburg Agenda

The delegates suggested that going forward, conference agendas should go beyond broad scenario outlines to facilitate dialogue that addresses more specifically defined concerns, such as a one to two degree rise in temperature. Ideas must be sharpened so that people understand the needs for action.

Food, Water, and People

From the series of discussions, a number of overlapping themes were identified:

- the role of markets, based on knowledge of how the majority of contemporary food security issues could be resolved with properly functioning markets;
- developing a multi-stakeholder approach from top-down to bottom-up that systematically acquires and includes people's voices;
- identifying and plugging gaps in knowledge and conversation;
- correctly categorizing the levels of problems and identifying the people responsible; and
- greater capacity for scenario planning and modeling for climate change.

Within such a context, however, delegates also identified opportunities to be harnessed. A delegate from the United States suggested that if melting glaciers are an inevitable reality, people should begin conceptualizing ways now of capturing freshwater from the glaciers to be used in agriculture. Ways of thinking across sectors for resource development should be encouraged.

Climate change should also be seen as an opportunity to rethink development, instead of being conceived of solely as a threat.

Climate change should also be seen as an opportunity to rethink development, instead of being conceived of solely as a threat articulated with the vocabulary of fear. A delegate from India suggested reorienting human societies away from fossil fuel driven development, and devoting attention jointly to the energy-climate interface in the years to come, instead of approaching them individually.

SESSION VIII

Advancing a Human Security Agenda

After comprehensive conference sessions devoted to addressing food and water security, as well as adaptation and migration, conference delegates focused on the security of people that lies at the intersection of these challenges. The upholding of human security must therefore be regarded as the critical bottom line driving the work and agenda of national and global governance.

A significant part of the session discussion attempted to reconcile, integrate, or even substitute the concept of human security for traditional notions of national security, in a bid to establish a more conducive framework for enabling and realizing the transformative scenario that the world needs in order for lasting and sustainable solutions. Yet there was consensus too, that the ongoing transition to what some now term the "new" or "post-American" world order poses entirely new structural and conceptual challenges of its own. These challenges might not only diminish the paramountcy of human security and human rights on global governance agendas, but could indeed push the world further along the path towards an ultimately divisive and debilitating protectionist scenario. These challenges are compounded by the economic and political instability that continue to unsettle key stakeholders within the Asia-Pacific region, and a recent track record of non-functional attempts at international cooperation, as seen at the last two climate conferences in Copenhagen and Kyoto.

... the basics we can work towards are establishing accountability at multiple levels for human actions...

In practical terms, however, delegates broadly agreed that there is much that can and should be done to work towards the desired outcomes of the transformative scenario, even absent an overarching global accord regarding human security or regional architecture that possesses the full mandate to act upon common problems.

In this interim, the basics we can work towards are establishing accountability at multiple levels for human actions, as well as a commitment to anticipating, understanding, and acknowledging the complex consequences of problems that international cooperation is meant to address. This helps in identifying, listing, and assessing the challenges that are most ripe and conducive for collaboration at

this time. Such collaborative initiatives have the capacity to set the Asia Pacific community on its way towards the outcomes envisioned by a transformative scenario.

Determining the Future of the Asia-Pacific Region: Protectionist or Transformative?

During polling conducted at the beginning of the conference session, the majority of delegates expressed a belief that climate change was caused by human activity, and the majority also believed a protectionist scenario to be more likely than a transformative one. Three possible responses were identified under the protectionist scenario: doing nothing, adaptation, or prevention. The third response, prevention, introduces the option of geo-engineering the environment, or human interference with the climate in a bid to reduce the human and economic costs of a protectionist scenario.

The Present and Future of Global Leadership and Governance

Commenting on the history of global governance, a delegate observed that the post-World War II order has seen Americans paying for everything, even when it is several degrees removed from immediate American interests. One resounding example, particularly for delegates at this year's conference, is the American-led funding of the International Rice Research Institute. Such leadership will not be recreated in the different world order we are moving towards, wherein there is agreement on what the problem is, but no agreement as to who needs to be responsible for what. This reality has led to the present situation of "binding agreements" having no binding consequences or enforcement rules, as demonstrated by the signatories to the Kyoto Protocol.

...in the different world order we are moving towards, there is agreement on what the problem is, but no agreement as to who needs to be responsible for what.

To this observation, it was highlighted that the *Pax Americana* legacy includes its own share of costly human driven actions, the consequences of which today's world and future generations are expected to continue struggling with. A delegate from Sri Lanka remarked on what she perceived as the universally acknowledged decline of the American shaped world order to suggest that Americans are among many in the world who are complaining and questioning the features of the Pax Americana. What is popularly overlooked now, however, is the positive and constructive legacy of the system of multi-governmental and international organizations that has been

set up. It has also been convenient to berate international institutions like the United Nations for being weak, without admitting that it is individual member nations of the U.N. who must bear the responsibility for its failings. The failure of the 1997 Kyoto Accord is bound to the decisions of individual member countries, such as Australia's late participation in 2008, and the continued nonparticipation of the United States, China, and India. A delegate from China who was present at the failed World Trade Organization negotiations in Doha from 2005 to 2006 observed that we are transitioning to a world where international discussions are no longer dominated by one or a few big countries, but this is also a world where smaller countries find themselves without a concrete source of international leadership to turn to.

It is precisely within such a context of power realities that leadership matters more than ever. A delegate from the United States posited that contrary to popular perception that the postwar order has failed, it has actually been the most successful in history, only to suffer at this moment as a result of having pushed up against its limitations and leadership capacity. Over the last two decades, the system has been burdened by free-riding countries which benefit from membership in the international system and attend meetings, but do not commit to maintaining the system or making it work. At this time of transition, we continue to be disadvantaged by the absence of a mechanism to resolve this problem.

Over the last two decades, the system has been burdened by free-riding countries which benefit from membership in the international system but do not commit to maintaining the system or making it work.

Domestic Governance and Constraints

Failures in international cooperation can often be indicative of failings in the governance of individual countries. Governments have self-interests which do not always align with or represent the needs and interests of their people. A delegate cited the experience of her own country to illustrate how human rights and human security are easily undermined when they are made subordinate to an overriding national agenda for economic development and national security. Similarly, China's concept of selective development means that the government prioritizes addressing problems that pose the most severe threats to their leadership – often those that precipitate immediate civic discontent – rather than tackling challenges that pose long term threats to the country, such as climate change. At times when economic development is pursued at the expense of tremendous human costs, the international community has not often found themselves equipped or willing to respond.

Domestically, public opinion can also constrain efforts at more responsible

international action by individual governments. A delegate from Australia explained his country's reticence towards climate change in recent years to be the result of an increase in the number of climate change skeptics nationally, with the shift in public opinion directly reflected in leadership transitions and changes in policy. A delegate from China observed that many states fail to take action not because they are unwilling to, but because of a number of barriers, such as a perceived lack of clarity on how much each state should do and how much each would benefit. Even if states are not unwilling to contribute to the benefit of others, they need to justify such decisions to their domestic constituents. Such perspectives offer an insight to the psyche of the international community as a whole, which has demonstrated reluctance to act on any issue until the severity becomes immediate.

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How to Get from Where We Are to Where We Need to Be: Paradigms for the Future

Governance of Human Capacities and Accountability for Human Actions

Most delegates agreed that individual governments employ their own reasoning and philosophical judgments, which cannot be easily influenced or changed. The perception of paramount national sovereignty in a protectionist scenario will make the effectiveness of external and international pressures on individual states particularly limited. Pressure can be redirected, however, to push for catalyzing elements like the right to information or separation of powers within a state that will enable citizens to make informed decisions.

The recipe for greater success in collaboration, as a delegate from China recommended, hinges upon a commitment to comprehensively address costs and benefits, including the recognition and acceptance that benefits will not accrue uniformly to everyone. Countries must also adopt a long term view instead of basing decisions on short term effectiveness. Delegates cautioned against taking peace for granted, with many anticipating increased and fiercer competition over resources as more states pursue their individual agendas for national development. A delegate from China spoke of how in the last 30 years, China has adopted the Western model of development. China is eager to catch up with the industrialized countries of the West, and many Chinese aspire to live as Americans do. If all 1.3 billion Chinese people were to live like middle class Americans, however, the planet would implode. The challenge facing developing countries in the present day is to

modify their economic development models to be more sustainable over the long term. Coordinated and cooperative international efforts would therefore become ever more necessary to ensure that we do not collectively unleash undesirable outcomes in the process of pursuing development.

Even if peace and stability within a number of countries in the region have not been secured to provide a foundation for long term sustainable and strategic policy making or to provide an environment conducive to collective action, the future that awaits us continues to be shaped – even in the absence of consensual collective action – by a broader, day to day dynamic of multiple decisions taken by governments and individuals at all levels. The consequences of these ongoing decisions make it inevitable that the world of the future will be different from that of today, and our discussions for collective action must take place with the full understanding of this broader, underlying dynamic. Educating the public about such implications and channeling their potential for action will be an important way of facilitating their contribution towards the solution rather than the problem.

The Transition to a New World Order: Building Upon a Legacy

Even as we straddle a transitive divide between two seemingly different world orders, marked by a major shift in economic and geopolitical influence from Europe and the Atlantic to the Asia-Pacific region, delegates appreciated the regional institutions that currently exist and their contributions to stability and peace building.

A delegate expressed hope and optimism at the legacy of peace and prosperity in the Asia-Pacific that has been created by the U.S. leadership role in the world for over half a century. He emphasized, however, that in a future beset with the common challenges of climate change, nuclearization, and global terrorism, the cooperation of all stakeholders, rather than the leadership of one nation, will be necessary for preserving the legacy of peace and prosperity.

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Major countries within the Asia-Pacific region, as a delegate from Australia affirmed, are also looking to play a larger role in shaping the global agenda. Australia, for instance, is keen on a new regional architecture revolving around the six major regional players – the United States, China, Japan, Russia, India, Australia, and the Association of Southeast Asian Nations (ASEAN) – through which it aims to address the lack of full government mandate

and commitment faced by the current proliferation of regional institutions to comprehensively and effectively address the region's political and security issues.

Cultivating International Trust and Cooperation for Mutual Benefit

International relations, however, continue to be dominated by more traditional security arrangements and concerns. Just as traditional national security arrangements and concerns were predicated upon fear, the current perceived drift towards a protectionist scenario is also driven by fear. As a delegate from India observed, fear can motivate actions that might undermine human security, even if the original intention was to protect it. The concept of nature and its preservation, for instance, has been steadily superseded by the idea of climate and climate control, which could ultimately culminate in a world in which geo-engineering becomes an imposition rather than a choice.

When individual countries are isolated, efforts to strengthen domestic institutions in hopes of generating homegrown solutions will also be limited.

For the same reason, the language of securitization proposed by some people as a means of more effectively articulating the implications of climate change and putting it at the forefront of government agendas in the form of national security interests could prove counterproductive to a transformative scenario. A delegate from Singapore explained that when the vocabulary of securitization is introduced, the dialogue changes and people tend to approach common challenges from the perspective of self-contained national interests rather than with a collaborative attitude. In such cases, people or governments seek to use money and resources for control rather than collaboration. Potential market-based solutions to climate change, such as a carbon trading market, carbon taxation, or a fair pricing scheme for fossil fuels, will be undermined within such a protectionist scenario.

In retaining the traditional language of national security and its connotations, we also risk undermining human security and human rights on the international agenda as countries become more inclined to limited international engagement and begin drawing firm lines demarcating "domestic" issues over which they claim paramount sovereignty. One delegate reflected upon her country's experience to demonstrate that there is very little the international community can do to protect human security and human rights within individual countries in such circumstances, and this reality will be perpetuated or exacerbated in a protectionist scenario. When individual countries are isolated, efforts to strengthen domestic institutions in hopes of generating homegrown solutions will also be limited.

Successful institution building and the establishment of constructive and progressive relations among nations would depend upon a much longer process of building trust among nations. A delegate from China cited the Sino-U.S. Strategic and Economic Dialogue as an example of contemporary trust building efforts, which integrate economic deliberations with political ones to provide a stabilizing element in the midst of logical distrust. As a delegate from the Philippines offered, the transformative scenario we aspire to is also a philosophical approach rooted in the principle of trust. To move towards that, we must change the context and language with which we operate and create different incentives for doing things, driven by hope instead of fear. Although investments in science and the enhancement of market conditions are critical components of a transformative scenario, even more important will be the premium placed on leadership and governance, and on individuals who have the responsibility for actions and decisions with mass impact.

Where We Stand Today

A significant number of delegates nevertheless expressed optimism and confidence in our ability to realize a transformative scenario. Even if there is a contemporary trend towards protectionism, the search for more effective and sustainable adaptive approaches will eventually move us towards a transformative scenario. A delegate from Australia called upon his colleagues not to look upon climate change as a sudden rupture in our history, but to acknowledge it as one of many manifestations of the human capacity for effecting large scale change through their actions, whether positive or negative. Just as human actions were responsible for environmental pollution and degradation, humans have also been responsible for many of history's most critical progressive movements for social change and justice that have always emerged in response to human created crises.

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We can, in fact, interpret the world as being in the beginning stages of a transformative scenario rather than the middle stages of a protectionist one. In less than 3 years, starting from 2007, the world has witnessed the Nobel Peace Prize being awarded to Al Gore and the United Nations' Intergovernmental Panel on Climate Change for their work in raising awareness about man-made climate change and catalyzing efforts to counter it. We have also witnessed the inauguration of an American president fully committed to international cooperation and

engagement, and also seen India and China move from being two of the most prominent naysayers against combating climate change to becoming the first among developing countries to initiate the transformation of their economies to adapt to the realities of climate change.

While the conference discussion centered upon the dichotomous paradigms of protectionist and transformative scenarios, several delegates observed that we are potentially witnessing the overlapping of both tendencies. There are some issues – such as food security – which we are prone to collaborating upon, and others we are prone to being protective over. The key to working towards the transformative scenario is to move into collaborative mode for key issue areas and to expand upon those.

SESSION IX

Open Space Exercise

During the Open Space Exercise, delegates were invited to consider their takeaways from the Conference and then to suggest topics they felt warranted more in-depth discussion. The topics that were nominated for discussion were:

1. How does one build a platform to encourage disruptive technologies?
2. Is there really a food crisis, and is there a thorough and accurate understanding of this among political elites? If not, why?
3. How do we channel individual decisions into results we want? How do we use markets to alter outcomes?
4. How do we balance access to resources?
5. What can we do to make the Williamsburg Conference more effective in reaching out to policy makers? How can we use the process to influence resource allocation decisions and to help fund ideas?
6. How do we foster international collaboration on food security?
7. What is the impact of population trends on developing the issues we have discussed?
8. Information Empowerment: How can we use information technology to empower the rural poor and to facilitate progressive rather than exploitative development through providing access to information? What roles do media and public opinion play in how we address climate change?
9. How do we make cross-border public-private partnerships work?
10. How do we protect the rights of migrants?
11. How do we strike a balance between the transformative and protectionist scenarios? How would we create new international mechanisms to combine both?

The topics were put to a vote, and delegates chose to discuss fostering international collaboration on food security, as a follow up to action plans that they had recommended in previous conference sessions.

Impediments to international collaboration on food security can be broadly classified into the categories of security, trade, and knowledge.

Advancing Beyond Traditional Security and Trade Concerns

Where security is concerned, countries continue to have an obsession with traditional military security and borders. Political instability can paralyze action and planning.

In terms of trade, the politics of domestic food security often translates into protectionist inclined trade policies, as do preoccupations with trade balances. There are also issues of corruption and inadequate distribution mechanisms. International collaboration depends on successful confidence building, as demonstrated in countries keeping their borders and trade open to each other. Delegates suggested that the international community create a reserve for guaranteeing food security at the international level rather than at the national level. Such a backup plan would allow member countries to act as a source of relief and stay open to each other in times of crisis, instead of encouraging inward looking approaches. It also harnesses market mechanisms and international efforts. As a delegate from the United States pointed out, such incentivizing mechanisms work better for confidence building than disincentivizing mechanisms.

...the politics of domestic food security often translates into protectionist inclined trade policies, as do preoccupations with trade balances.

Disseminating Knowledge and Information to Cultivate Shared Understanding

The borders between countries, however, are as much mental as they are physical. Collaboration can be hindered due to different understandings and perspectives between Americans and Asians on food security and poverty. There is no universally recognized definition of poverty, as a delegate from India pointed out. There are also different perceptions of the level of crisis. This could affect funding that would enable analysis and application of the knowledge that has been accumulating in databases located in Asia, such as the rice gene bank at the International Rice Research Institute (IRRI) in the Philippines. To more closely align the understanding of different countries, there could be mass outreach campaigns that reach people beyond those who attend conferences.

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The Future of Funding

As the world's largest repository of information on rice strains and genetics, IRRI needs to secure the funding that will allow it to tap into its information resources and translate knowledge into action for advancing food security. Besides looking

to governments, philanthropy can have a huge impact, as reflected in IRRI's founding and funding by the Rockefeller and Ford Foundations in the United States. Many civil society and agriculture related groups in the world continue to receive significant funding from American philanthropy, which is effectively government subsidized private philanthropy due to the American tax code. In Asian countries where some families are beginning to amass fortunes as massive as those of Rockefeller, Ford, and Carnegie in the United States, they have allocated funding mostly to small scale and localized projects like the funding of schools and hospitals. None of the potential philanthropists in China or India have demonstrated the global "philanthropic imagination" of their American counterparts.

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Delegates suggested engaging philanthropists more strategically, as philanthropists are inclined to see the concept of food security as a nebulous topic with no appealing entry points for them. Yet their funding can translate into something as simple but impactful as an endowed chair for a professor in the social sciences, or new equipment for agriculture. The private sector can also be engaged, and provided with information as to the strategic and cost effective market interventions they can make for agricultural and rural development.

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