

SESSION SUMMARY REPORT: “Global Water Policies”

16 Nov 2006 Thursday 8:30am to 11:00am Room SR3

Prepared by Claudia Ringler (Convener)

Objective of the Session:

The session attempted to address three areas related to Global Water Policies:

1. Broadening of the concept of “Global Water Policies”
2. Linkages of CPWF and other water-related projects to and influences by Non-Water and Water Policies
3. Importance of this research area for the CPWF

Summary

Both water and particularly ‘non-water’ policies are important for water and food outcomes at a larger scale. Existing Challenge Program projects and other development effort link to global water and non-water policies or are impacted by them. The CPWF at this point has invested few resources in this area.

According to session participants important policy research needs to be focused on the following items:

- 1) Link between ecosystems and development and conflict research
- 2) Frameworks for water as a human need and as a part of the right to life
- 3) Water sharing and conflict research
- 4) Impact of policies on agricultural trade (virtual water and biofuels)
- 5) Policy Process research
- 6) Environmental water management (quantity and quality.. polluter pays)
- 7) Disaster mitigation policies
- 8) Impact of alternative water policies on poverty
- 9) Resilience of water-based ecosystems

Thus, important research areas are

- Research on climate change, uncertainty, and risk
- Research on policy processes, including frameworks for human rights, conflict resolution, water sharing, and determinants for their adoption; and
- Research on biofuels, trade impacts, and disasters

Structure of the Session:

The session started with a background presentation on the concept of “Global Water Policies”. This was followed by an application of the broadened concept to the Challenge Program on Water and Food (CPWF) based on the work of three teams. In the

following plenary, four abstracts were introduced that showed linkages of the CPWF and other water-related projects to the topic of Global Water and Non-Water Policies. A second round of working groups then elaborated on the importance of this research area for the CPWF. The session was facilitated by Prabu Naidu. The presentation is included as appendix II.

1. Broadening of the concept of “Global Water Policies”

Water policies were re-classified into four broad categories plus one category that overlaps water and non-water issues at a larger scale:

- 1) ‘Strictly/Truly global water policies’
- 2) ‘Global policies that include water’
- 3) ‘Non-water global policies that impact water’
- 4) ‘Water non-global policies that impact globally/ regionally/ basin scale’
- 5) ‘Non-water non-global policies that can impact water regionally/globally’

The objective was to extend the concept of Global Water Policies to

“Policies, within and outside the water sector that affect water and food outcomes at a larger scale.”

	GLOBAL	NON-GLOBAL
WATER	‘Truly’ Global Water Policies	Basin Management
NON-WATER	Trade, Climate, other Drivers	

- 1) **‘Strictly global water policies’**
 - Convention on the Law of the Non-navigational uses of international watercourses [& similar]
 - Human right to water
 - Global water meetings/organizations [WWC/GWP]
 - MDG Target 10 [access to drinking water & sanitation]...
- 2) **Global policies that include water’**
 - GATS [General Agreement on Trade and Services] -> opening up water services to competition from other member countries
 - GATT [General Agreement on Tariffs and Trade] -> exporting water and water-related trade sanctions/restrictions
 - Kyoto protocol [Climate change mitigation]...
 - Convention on Biological Diversity
 - Ramsar Convention...
- 3) **‘Non-water global policies that impact water’**
 - GATS [General Agreement on Trade and Services] -> opening up non-water services to competition from other member countries that impact water outcomes

- GATT [General Agreement on Tariffs and Trade] -> exporting water-consuming crops / trade liberalization
- Codex alimentarius - Food safety
- Investment trends [rainfed agriculture], urbanization rates, population changes
- Energy policies [biofuels]...
- Other MDGs

4) 'Water non-global policies that impact globally/ regionally/ basin scale'

- Water and sewage treatment plants
- Hydropower development
- Water pricing / cost recovery / water sector investments
- Irrigation management
- River basin management

5) 'Non-water non-global policies that can impact water regionally/globally'

- Agricultural input developments [pesticides, fertilizers]
- Crop varietal changes / changes in management practices that are up-scaled [Green Revolution]
- Trade and input and output price policies by the 3 largest food producers [or 4 if EU =1]

Based on the presentation workshop participants were asked to name additional important policies. The following suggestions were raised:

- Privatization of water
- The use of water as an economic good
- Virtual water exports
- The human right to water – legal right or theorized discourse
- BITS (Bilateral Investment Treaties) and international courts of arbitration
- European Water Directive
- The role of NGO movements

The first question for the three working groups was:

Which water and non-water policies are of importance for the Challenge Program on Water and Food?

Group 1:

G1 differentiated among sticky mottos, that can lead to movements, then to trend and finally to policies (both informal and official)

The water and non-water mottos/movements/trends/policies that they considered important include:

- Environmental flow regulations (movement)
- Drought preparedness plan (movement)

- Convention on desertification
- Integrated Water Resources Management (movement)
- Transboundary movement of toxic waste (trend)
- Helsinki Agreement on international rivers and lakes
- The Montevideo Protocol for the Americas (on water quality in river basins)
- The EU Water Framework Directive
- Donor policies on investment, for example, investment and development bank policies, including the World Commission on Dams, the doubling of investments for African irrigation, and existing cost recovery and pricing policies
- Making water everybody's business (motto)
- Water as an economic good
- More crop per drop
- WTO – water as a commodity falls under trade rules
- World Water Assessment Project (UNESCO)
- ICOLD (Int. Commission on Large Dams)

Group 2 listed the following as important water and non-water policies:

- Biofuel – Research on crops that can be grown on wasteland
- Restrictions on technology sharing for nuclear energy
- Basic free water access
- Global Freshwater convention
- Privatization of water services – what are the dangers?
- WTO Regime – water as a tradable commodity
- Lending policies of donors affecting water policy

2. Linkages of CPWF and other water-related projects to and influences by Non-Water and Water Policies

Four short concept notes on water-related research projects in benchmark basins were presented: Two from ongoing Challenge Program projects, one from a non-CP water-related project, and one proposal for research. All presenters could show linkages of their research activities to larger-scale water and non-water policies and impacts from larger-scale policies on their research. The session overview note and the four project abstracts are included as Appendix I.

The following linkages were identified in these four project descriptions:

Paul van Zwieten and Simon Bush, Wageningen:

Scaled interactions of flows and places in shrimp culture and fisheries in Vietnam and Indonesia: the approach of the RESCOPAR program

Increased shrimp production in Vietnam and Indonesia is the result of international demand, growing trade, and new technologies. This new set of linkages calls for scaled

interactions ranging from local to global institutions and policies. Inter-linkages between producers, markets, and consumers through international trade have undermined state regulation and control. 'Place-based' actors respond to the physical environment (informal networks or structured bureaucracies) whereas 'Flow-based' actors control the more globalized movements of commodities and information from a distance. The paper calls for international codes of conduct, stewardships, and their adaptation to local levels.

Dorothy Nakimbugwe, Makerere University:

An overview of national, regional and international policies affecting use of wastewater for agricultural food production and their implications for the Lake Victoria and River Nile Basins

Injudicious use of subsidies leads to declining water quality levels. If water quality is becomes too degraded, the need for increased food imports from abroad increases. A lack of international regulations can lead to injudicious use of wastewater and thus to food safety concerns, which can translate into declining food exports.

In order to ameliorate poor water quality situations in many poor countries, debt relief payments should be converted into investment funds made available for sanitation and water treatment to reduce the adverse impacts from wastewater.

Finally, non-water institutions are important for water outcomes. For example, a lack of land tenure can lead to poor land management, including increased land erosion, which, in turn, can contribute to declining water quality levels.

Paul Block, University of Colorado

Investment in Ethiopia's Future: The Role of Irrigation versus Roads

The paper investigates changes in investment outcomes following the integration of climate variability into an existing multimarket sector model. Results show that investments in irrigation lead to increased agricultural GDP and reduce poverty levels, whereas increased road investments lead to higher non-agricultural GDP, and small increases in agricultural GDP. Combined investments yield the largest impact. The results show that water and non-water policies need to be implemented together to allow for optimal investment decisions. In addition to roads and irrigation, other factors affecting development in Indonesia, including the role of food aid, and development bank investment strategies need to be considered as well.

Glwadys Gbetibouo, Temesgen Tadesse Deressa, and Claudia Ringler:

Climate Change Perceptions and Adaptation Strategies in Rural Africa

The paper shows that while there is significant awareness of climate change, only about half of the farmers actually implement measures to adapt to long-term changes in temperature and precipitation. Awareness of climate change, but little adaptation. Adaptation to reduced rainfall and higher temperature include water and non-water strategies. The main farm-level barriers to adaptation are lack of credit [Limpopo basin,

South Africa] and lack of information [Nile basin, Ethiopia]. There is therefore a need to combine water and non-water policies to support farmers to adapt to climate change.

3. Importance of this research area for the CPWF

The convener presented a few slides showing the potential importance of this research area for the CP.

Relevance of the topic was apparent during the Forum Field trips in Lao PDR. For example, Field Trip 1 to a peri-urban irrigation system showed urban encroachment on land, water, and labor resources, but also the desire for increased diversification in irrigation, and for exports of foods produced, and related potential food safety concerns. Another field trip to a hydropower site included information on export of energy, which is a major foreign currency exchange earner for Lao PDR.

Other indicators that this area is of importance for the CPWF include:

- Very rapid increases in the global fisheries trade—and a very rapid increase in the share of fish produced through aquaculture--as a result of large increases in demand, trade liberalization, and the availability of new technologies, including cold storage
- Almost half of the global surface area is shared with international river basins
- Maybe 20% of global cereal trade related to water scarcity
- Full trade liberalization increases prices for rice, sugar, and milk [‘rice pudding’], which will concomitantly result in a decline in water use

The following questions for discussion were posed for the second round:

- 1 Which policies matter most and why? (Order Ranking)
- 2 What kind of research do we need for these policies – that would have a favorable impact on poverty?
- 3 If you have US\$50m – which research would you allocate the funds to in the second phase of CPWF? Why?

Group 1 decided that the following policies matter most:

- 10) Impact of policies on agricultural trade (virtual water and biofuels)
- 11) Impact of policies on energy
- 12) Environmental water management (quantity and quality.. polluter pays)
- 13) Disaster mitigation policies
- 14) Impact of alternative water policies on poverty
- 15) Water convention?

They would spend the research money (US\$50 million) to prioritize among these priorities first instead of spending the money on any particular research area.

Group 2 defined the following as key policies for future CPWF research:

- 1) Resilience of water-based ecosystems—funding level: US\$7.9 million

Research areas:

- i. Water capacity of ecosystems

2) Policy Process research (hard/soft policy implementation—funding level: US\$15 million)

Research areas:

- i. Relative impact of non-water binding policies versus (non-binding) water policies
- ii. Linkages between governments, civil society, and research
- iii. Role of multistakeholder platforms in implementing policy
- iv. Role of civil society in international agreements, such as the Kyoto protocol
- v. Is it possible to have policies without politicians?
- vi. Conflict management and peace research

3) Link between ecosystems policies and development and conflict research—funding level: US\$27 million

Research areas:

- i. Scenario analysis of global change effects (to raise awareness and influence policies)
- ii. Water imports and exports and impacts on food security
- iii. Linkage between current policies and climate change outcomes and longer-term policies – evaluation of synergies
- iv. Policies that react to uncertainty and risk
- v. Trade policies

Group 3 decided that the following policies mattered most:

1) Water as a human need and as a part of the right to life (US\$20 million)

Research areas:

- i. Whose obligation/responsibility
- ii. What happens if there are violations?
- iii. What is the remedy?
- iv. Definition of the basic water need, how much and for what purposes?
- v. Should it form part of a new global convention?

2) Water and conflict (US\$20 million)

Research areas:

- i. Research issues: What are existing policies (Dublin, Rio, Helsinki, UN Water Convention, etc., decisions of international courts)
- ii. Transboundary conflicts –lower vs. upper riparians
- iii. Intersectoral conflicts

3) Biofuel as a threat to food security (US\$10 million)

In a final session additional points were brought forward by session participants:

- The Blue Revolution will be outside of freshwater.
- Should there be a Global Water Convention? And a guarantee for basic water needs?
- It is important to show tradeoffs among alternative water uses and to integrate conflicting goals.

- One participant stated that there are no policies that do not also relate to water
- Donor policies are important for water outcomes
- We need to go beyond declarations and move towards enforcement.
- Not much has been done in this area by the CPWF.
- Risk and conflict, and disaster assessments are important.

In a final question participants were asked if water policies or non-water policies are more important for water and food security. Fourteen people stated that non-water policies are more important for water outcomes, 6 voted that water policies are more important and 3 remained undecided.

APPENDIX I

- A. Global Water Policies- How do they affect Water and Food Security? – by *Claudia Ringler*
- B. An overview of national, regional and international policies affecting use of wastewater for agricultural food production and their implications for the Lake Victoria and River Nile Basins, by *Dorothy Nakimbugwe*
- C. Scaled interactions of flows and places in shrimp culture and fisheries in Vietnam and Indonesia: the approach of the RESCOPAR program, by *Simon Bush and Paul van Zwieten, Wageningen (presented by Roel Bosma)*.
- D. Investment in Ethiopia's Future: The Role of Irrigation versus Roads, by *Paul Block (presented by Claudia Ringler)*
- E. Climate Change Perceptions and Adaptation Strategies in Rural Africa, by *Glwadys Gbetibouo, Temesgen Tadesse Deressa, and Claudia Ringler (presented by Claudia Ringler)*

SESSION 18 - GLOBAL WATER POLICIES – HOW DO THEY AFFECT WATER AND FOOD SECURITY?

Renewed Interest in the Phenomenon “Global Water Policies”

The Millennium Development Goals (MDGs) have rekindled the interest in global water policies – Target 10 of the MDGs requests to “*Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation*” and Goal 1 on *Eradicating extreme poverty and hunger* indirectly relates to the need for increased water availability for food production. Other health and environmental MDGs also require better water management policies and increased investments in the sector.

However, despite the increased exchange of goods and services and rapidly growing international financial flows, there is insufficient investment in both water supply and irrigation development to reduce hunger, and ensure productive livelihoods for all. This is due, in part, to the fact that water is a hidden and under priced element, which impedes or misdirects investment and innovation. Estimates show that the water sector is in need of US\$180 billion annually during 2000-2025, particularly for wastewater treatment, followed by irrigation. Implementation will require concerted efforts from many funding sources.

Good governance and a separation of political processes from management of the water sector are crucial elements for water supply development to succeed.

Increased information and evidence on the potentially devastating impacts of climate change on the poor and rural areas has also renewed interest in global water (and climate) policies. Climate change will significantly impact upon water availability and food security, and in several ways. With the number of extreme events—both droughts and floods—increasing over time, rainfed production, particularly in Sub-Saharan Africa, will fail more often compared to the recent past. This will pose an increasing burden on irrigated agriculture to secure future food supplies and calls for a new review of the roles of both small and large dams for food security. Autonomous adaptations will not be sufficient to maintain current water and food security levels, and certainly not to ensure water and food for all.

Virtual water, water embedded in (agricultural) commodities, has been named as a potential global water policy tool—with the suggestion that water-scarce countries import agricultural commodities and thus water, while water-abundant countries would export water in the form of food or other commodities. However, while virtual water trade is a useful indicator, it is not a driver of food (or other) trade, and should not because of broader issues of comparative advantage in trade across all inputs and resources. Globally, about 20 percent of total cereal trade

is estimated to be related to water scarcity. Thus, water scarcity currently plays a modest role in trade patterns—but the trends are pointing to an increased reliance on virtual water and real food imports by water- and land-scarce countries

A fourth area where ‘global water policies’ might play a role stems from the recent increases in energy prices globally, and in the resulting demand for biofuels. While energy prices can have direct adverse impacts on some of the world’s largest bread bowls like the Indo-Gangetic Plains, Northern China, and the western United States, due to their growing reliance on groundwater extraction for food production, the competition of bioenergy crops with other crops for both land and water resources could further strain water and food security in poor countries. As these trends are global phenomena, global water policies might be called upon to address the potentially adverse impacts on poor food consumers and producers.

The Complexity Surrounding Water Policies

Water policies are implemented at different scales, ranging from the local level to the district, national, and regional levels up to the global level. Moreover, water policies can also be implemented at the basin boundary or sub-catchment level, which tends to dissect various administrative scales. Furthermore, some water policies follow customary use rights, generally those on a small scale, while others are based on statutory laws and regulations. Thus multiple legal and normative frameworks coexist, and the dynamics between statutory and customary water policies are fluid and in constant motion.

As a further complexity, in many countries, including both developed and those in development, water policies are developed and implemented by different agencies or ministries, including those focusing on the environment, agriculture, public health, construction, energy, fisheries, and water proper. In addition to fragmentation across agencies, the source itself is often fragmented across different agencies with surface water sources managed separately and by agencies that differ from groundwater sources (an example would be Vietnam). Similarly, coastal waters are also seldom integrated with fresh or marine water resource management.

While most statutory-based water policies are generated at the national level, increased decentralization processes have moved the actual implementation and applications to lower levels of authority, in particular, the province or district level—providing both new opportunities and new challenges (f.ex. in Indonesia).

At the same time, some water and related policies have moved up to higher levels, such as global climate policy,

which is being discussed by the United Nations Framework Convention on Climate Change (UNFCCC) and assessed by international working groups, such as the Intergovernmental Panel on Climate Change (IPCC). Framework water legislation, such as the right to drinking water or principles regarding the non-navigational uses of international watercourses are also debated in a global/international arena. The simple fact that 261 international river basins are distributed over 5 continents and that 45% of the land surface (excluding Antarctica) is included in international river basins makes a clear case for the need to go beyond national-level policies to properly manage water resources. International aquifers are even more complex to share given that their properties are seldom known.

Equally (or even more?) important, policies outside the water sector can directly affect water (and food outcomes)—again at different scales. Such policies include macroeconomic and trade policies, and input and output price support policies (subsidies), as well as investment strategies for roads, agricultural research, and even the livestock sector (an example for the latter case would be Ethiopia and Sudan). A recent CPWF sponsored workshop on the Impact of Globalization and Trade on Water and Food Security found that forces outside of the water sector will lead to more changes in water management over the next 20 years than occurred in the past 2000 years. Experts showed that bilateral, regional, and international trade and investment arrangements impact significantly on developing country water availability and uses. Among international agreements, the WTO, particularly the GATS and the liberalization of trade in environmental goods, were shown to stand out in terms of potential impact on developing-country water and food security. Experts showed moreover that the impact on water availability and food production occurs mostly through non-water sector liberalization, for example, through foreign direct investment agreements in the industrial or agricultural sectors.

Countries around the world are increasingly affected by globalization, as the exchange of goods and services between countries becomes more prevalent. Trade liberalization can help in poverty reduction through reduced trade barriers such as tariffs and quotas, output price protection and input subsidies, privatization of agricultural marketing and trade, and increased reliance on markets rather than planning and the public sector. There are significant links between globalization, water and agricultural trade. Trade liberalization leads to direct shifts to food production—and thus water use—towards those countries with better comparative advantage, and would also result in increased international food prices, in particular for milk, rice, and sugarcane, commodities that consume significant amounts of water. In addition to general trade liberalization, changes in specific trade agreements will have significant impacts on patterns of agricultural production and therefore on water use. For example, the end of the Multi Fiber Agreement (MFA) has been suggested to lead to further concentration of cotton

production and processing in China, resulting in additional water usage for this crop in this already highly water-scarce country.

As a result of new technologies and freer trade, global trade in fisheries products has shown the fastest growth among all water-related trades in terms of value. This phenomenon brings about a whole new global debate on food safety standards—whereas water safety standards that are equally important for nutritional outcomes are left aside.

Finally, agricultural research into drought, salinity, and heat tolerance may do more to solve water scarcity problems than water policy does. The continued application of conventional breeding and the recent developments in non-conventional breeding offer considerable potential for improving cereal yield growth in both irrigated and rainfed environments. Crop research targeted to rainfed areas should be accompanied by increased investment in rural infrastructure and policies to close the gap between potential yields in rainfed areas and the actual yields achieved by farmers. Important policies include higher priority for rainfed areas in agricultural extension services and access to markets, credit, and input supplies.

Water Policy Questions that this Session Attempts to Address:

As a result of the issues raised and debates described above and the submission of a series of abstracts for this session, the following policy questions have been suggested for debate

- 1) What are examples of water policies that have impacts on water and food outside the basin/country where they are employed?
- 2) What are examples of truly global water policies [intended to impact water and thus food at a regional or global scale];
- 3) What are policies outside the water sector that affect water and food outcomes at a larger scale?
- 4) What are potential positive and negative consequences of all three types of water and related policies?

For further information, please contact

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Further readings:

- Upcoming book titled “The Impact of Globalization on Water and Food Security” sponsored by the CPWF.

- <http://theme5.waterforfood.org>

SESSION 18 - GLOBAL WATER POLICIES

An overview of national, regional and international policies affecting use of wastewater for agricultural food production and their implications for the Lake Victoria and River Nile Basins

Background

Wastewater (including from industrial food processing) is a major source of contaminants that are eventually discharged into water bodies. If judiciously used, wastewater reuse for agricultural production can: 1) combine water and nutrient recycling; 2) reduce environmental impacts such as pollution of water bodies; 3) may result in increased productivity of fisheries and; 4) can increase crop yields thus contributing to improved food security and household incomes.

In general, wastewater is increasingly being used for agriculture in both developing and industrialized countries due to increasing food demand of growing, more affluent populations; a growing recognition of the resource value of wastewater and the nutrients it contains at a time that nutrient availability is limited, in particular in Sub-Saharan Africa; and growing concerns about health and environmental effects of improper waste disposal, particularly given the United Nations Millennium Development Goals “to eliminate extreme poverty and hunger and “to ensure environmental sustainability” (WHO, 2006).

Predictions that cities will use 150 percent more water by 2025 imply that more wastewater will be generated while less freshwater will be available for agriculture. Therefore in the future, use of wastewater may not be a choice for many farmers, but instead might become a necessity (Molden and Fraiture, 2004). Although use of wastewater for agriculture has been demonstrated to positively contribute to food security, use of untreated wastewater comes with serious risks to human health and to the environment, which can however, be minimized while maximizing the benefits (Scott et al 2004; Molden and Fraiture, 2004).

In order to achieve this balance, use of wastewater requires careful planning, more complex management practices and highly stringent monitoring procedures. This in turn requires supportive national and international policies as well as a local institutional frameworks and regulations governing the use of wastewater for agricultural production.

The state of water management in the Lake Victoria and Nile River basins

Water governance at the basin level is seldom streamlined—and is instead often characterized by fragmented or conflicting institutional and decision-making structures. Water management in African countries is generally based on a water code but related laws and policies are generally scattered over many national policies and pieces of legislation, some of which need to be revised to address the emerging issues in the sector like private sector participation and decentralization. While countries in the Lake Victoria and Nile River basins have policies, plans, regulations and institutions governing water use for domestic, industrial, and agricultural purposes, no such provisions exist for the utilization of wastewater for agriculture (UNEP, 2006)! The incidence of wastewater use in Africa is only documented for countries outside the Nile basin: Tunisia, South Africa, Zimbabwe and Burkina Faso (UNEP, 2006).

This is the result of both limited wastewater use in the Lake Victoria and Nile basins and a lack of studies in this area in these basin countries. Reasons for limited wastewater reuse include 1) socio-cultural reasons such as religious and cultural beliefs; 2) lack of awareness of the resource value of wastewater; 3) relatively abundant land availability combined with little irrigation and thus less creation and pressure to reuse wastewater. Irrigation is practised on only 6% of the total cultivated area of Africa, a rate much lower than those of other regions: 38% in Asia, 27% in the Caribbean, and 12% in Latin America (AQUASTAT survey, 2005).

Recent changes affecting the Nile basin, including trade liberalization and increased market competition; shifts in government policies towards the modernization of agriculture; growing urban populations and resulting increases in land pressure; growing water shortages make it necessary to consider utilizing wastewater for improved agricultural productivity.

National, basin-wide and international policies in the wastewater reuse area that impact water and food outcomes

Examples of policies that have impacts on water and food outside the basin/country where they are employed are:

Provision of water and/or agricultural subsidies, distorted incentives and poor water cost recovery in the basin can negatively impact the poor, could reduce water quality in the basin, and could adversely affect basin-level food production, and thus could lead to requirements of additional food (and thus also virtual water) imports.

Similarly, lack of wastewater regulations in the basin could lead to injudicious use of wastewater in the basin, which could reduce farm exports, particularly of fresh produce to areas outside the basin or country.

On the other hand, debt relief for the poorest nations allows resources to be channelled into much needed social programs and poverty reduction measures. Indebted countries however, have to meet a series of predetermined conditions in order to qualify for debt relief, for example, structural adjustment programmes. These may result in job and income losses. Due to the linkage between trade and water, macroeconomic and trade policies can either promote sustainable and equitable water resource use, including wastewater use, or contribute to environmental degradation, depending on the economic activities promoted. Policies that support large-scale agriculture involve increased use of fertilizers and animal manure, resulting in increased food production, but may accelerate eutrophication, if fertilizers end up in water bodies. Finally, while globalization opens up market potential, developed-country agricultural trade policies that protect their own farmers impose significant costs on developing-country agriculture and make it impossible for the (unsubsidized) developing countries to compete in globalized markets.

Examples of policies outside the water sector that affect water and food security:

Poor housing and planning and development policies, including unsustainable reclamation of wetlands, exacerbate the degradation of water resources, especially in urban areas. Location of manufacturing and processing industries in urban centres and cities promotes rural-to-urban migration, higher urban water demand and thus increased wastewater generation. In addition, land management policies, practices, and incentives, such as land tenure systems influence water productivity.

While economy-wide political effects such as economic liberalization can induce improvements in environmental regulation and enforcement and increase the stock of knowledge, innovations, and capital to meet these standards they could also have negative effects if companies respond by shifting manufacturing to countries with weak environmental regulation, or if countries weaken regulations to attract business (Jansen 2001; Logsdon and Husted 2000).

Examples of truly global water policies intended to impact water and thus food security at a regional or global scale include:

- Adoption of the Millennium Development Goals with time-bound targets, particularly improving access to clean water and sanitation.
- The policy of “virtual water trade” which proposes that countries lacking water resources ought to import staple foods from water abundant countries, thus saving their scarce water resources for higher value uses
- The application of the principles of Integrated Water Resource Management, promoting the coordinated development and management of water, land and related resources;
- Reconciling cost recovery and affordability by international aid agencies and development banks
- Charging for discharge of industrial effluent for instance based on the ‘polluter pays’ principle
- A shared water management approach involving public-private partnerships that allows for sharing of skills and resources.

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SESSION 18 - GLOBAL WATER POLICIES

Scaled interactions of flows and places in shrimp culture and fisheries in Vietnam and Indonesia: the approach of the RESCOPAR program

Background

Shrimp culture contributes significantly to the loss of Southeast Asian mangroves and increasingly also to freshwater resources. Productivity of shrimp-ponds over time declines as a result of acidification, pollution, salinisation, and infectious diseases, forcing farmers to abandon ponds within 5-15 years and to open new culture areas. These areas are increasingly found further inland where essentially salt is transported from the coast into freshwater areas to conduct low-salinity shrimp culture.

Marine productive function is also affected: mangrove clearance results in a reduction of habitat complexity and the biodiversity and abundance of associated fauna, with cascading effects to higher trophic levels, ultimately affecting capture fisheries in near shore seas. These changes in coastal ecosystems are induced by a multitude of livelihood decisions by farmers and fishers on resource exploitation driven by their abilities to access local resources, trade networks and information flows controlled by a series of local, state and global institutions.

The shift in individual and collective decision making, or governance, has meant that local arrangements to maintain coastal habitats and production systems need to be understood in a wider, often global, context. As shrimp production feeds into international trade flows – the value of shrimp exports from Southeast Asia being higher than any other fishery or agricultural commodity – the effectiveness of local management continues to be undermined, as fishers and farmers are further removed from access to information and decision making. The challenge is to reconcile global and local responsibilities, governance processes and subsequent policies to ensure effective management of coastal ecosystems.

RESCOPAR Program

The RESCOPAR program focuses on the scaled interaction between the ecological, social and political dynamics underlying processes of change and possible threats to the resilience of mangrove forested coastal ecosystems. It will concentrate on the interactions and feedback effects between decision-making processes at different socio-

political and spatial levels and how these affect the use, management, and conservation of living aquatic resources.

Research focuses on:

- (1) interactions between the coastal marine/mangrove ecosystem and fisheries with shrimp culture practices;
- (2) factors determining disease outbreak and managing decisions affecting disease incidence in shrimp culture (focus on WSSV disease);
- (3) decision-making by local actors trying to sustain their fish-based livelihoods in these areas; and
- (4) governance processes understood as all regulatory and commercial processes impacting upon local livelihoods and ecosystem management at various socio-political and spatial levels.

Starting early 2007 research activities in four multidisciplinary themes are carried out by 9 PhD students and several MSc students, supervised by 9 Wageningen University Chairs. Supervision in Vietnam and Indonesia will be done by scholars from academic institutions (Can Tho, Mulawarman and Bogor Agricultural Universities as well as LIPI), a multilateral organisation (Network of Aquaculture Centres Asia (NACA) and an NGO (WWF-Indonesia). Program cohesion will be guaranteed by a series of workshops, coordination meetings and an international advisory board to ensure that researchers and supervisors do not depart from a common set of questions and concerns.

Challenges from scaled interactions ranging from local to global institutions and policies

The complexity of the problems facing fisheries and aquaculture requires a new way of thinking that addresses the interaction of actors at local and global scales. To understand the social dimensions of resource exploitation, we must gradually place individual decisions within a wider context of state, market, cultural, and social relations. As shrimp farmers base their livelihood decisions on optimizing the productivity of a pond, including acquiring the necessary inputs, fishers base their decisions over production on their ability to acquire specific fishing gears and gain access to fishing grounds. As both increasingly produce for global

markets, their decisions respond to information from other actors. These include the state, other producers, communities, traders, processors and consumers. Recognizing the inter-linkages between producers and the other actors through trade means production decisions can be understood as a function of the restrictions placed on flows of information and commodities.

State regulation and control has been undermined by the internationalisation of trade flows through borders. Producers are therefore increasingly situated within a complex web of local arrangements, state regulation and global rules and regulations. A heuristic division can be made between 'place-based' actors, who respond to the physical environment, operating either through informal networks or structured bureaucracies, and 'flow-based' actors, who control globalised movements of commodities and information from a distance. Within the state, place-based actors collectively determine state laws, rules and regulations, while at local scales they determine the norms, rules and expectations that determine access to resources. Flow-based actors formulate international codes of conduct (e.g. FAO), and market-based governance systems linking consumers, and producers (e.g. Marine Stewardship Council), both of which have increasing influence over local production. Integrating different spatial and temporal scales in terms of ecological and sociological studies is imperative to understand where these scaled networks and institutions intersect, what influence they have over livelihood decisions and how they contribute to a comprehensive and successful approach to coastal zone management.

Global governance arrangements have the distinct benefit of bringing in a wider group of actors into decision making, helping to set a clear direction for sustainable and equitable production. Codes of conduct provide 'soft' forms of governance by setting general guidelines through which states and private sector can follow towards cleaner and socially equitable production. However, without political support to adapt these principles to local conditions they remain ineffective. In comparison market-based forms of governance actively include actors within trade networks, using market demand as a vehicle to encourage producers to improve environmental or social performance. These raise awareness of the need for responsible management along the food chains regardless of where these products come from. Market-based approaches

have grown in popularity in recent years, but have also increasingly attracted criticism.

Given the local complexities of local and state institutions, policies and governance mechanisms formulated at the global level face a range of threats or limitations:

1. Market-based governance mechanisms require transparent flows of commodities and information in order to link producers and consumers. While certification and labelling have been successful in industrialised chains, there remain severe limitations in developing countries where information is embedded within complex informal societal and trade networks.

2. While producers who can access these global commodity chains may be encouraged to improve both their social and environmental performance, those who remain outside these chains may be further excluded from both income sources and pressure to improve performance.

It is necessary to systematically reflect on the local social and political conditions in which production is conducted to understand the impact of global governance mechanisms, and resulting policies.

To comprehend both the social and environmental factors of degradation of coastal resources the RESCOPAR program will analyse the position, problem definitions and decision-making of various stakeholders, from local to global scales, vis-à-vis observed coastal ecosystem dynamics. Driving forces behind current trends in coastal mangrove ecosystems will be identified that undermine the resilience of both the ecosystem and the livelihoods of the local actors utilising it. With that, more realistic recommendations can be made on existing and potential governance arrangements that promote and re-enforce resilience.

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SESSION 18 - GLOBAL WATER POLICIES

Investment in Ethiopia's Future: The Role of Irrigation versus Roads

Background

Ethiopia is at a critical crossroads with a large and increasing population, a depressed national economy, and insufficient agricultural production. A study was implemented to assess how investment in and management of water resources, together with related policy reforms, may mitigate the negative effects of hydrologic variability on the performance of the Ethiopian economy. Given Ethiopia's high dependency on rainfall for agricultural production and weak linkages between domestic prices at the regional level and world markets, hydrologic variability has potentially serious impacts on both agriculture and the whole economy. Moreover, with high transportation costs and poor access conditions to distant markets, the local impact of hydrologic variability cannot always be buffered or ameliorated through market links to other regions. There can be significant "threshold" effects whereby prices have to rise above critical values before inducing trade with other regions or fall below a certain level to get access to world markets.

Research Methodology

An agro-economic model for Ethiopia, developed by the International Food Policy Research Institute (IFPRI) (Diao et al., 2005), was modified to account for the impact climate variability on food and water outcomes. Based on this modelling framework, alternative investments in road construction and irrigation are analyzed in comparison to a baseline scenario over a 12-year time horizon.

The irrigation investment focuses on providing timely and sufficient water to crops and is of direct relevance to water and food security in the basin—but could result in changing hydrologic regimes in downstream countries. The roads investment crosses over between the agricultural and non-agricultural sectors, providing a conduit for the flow of both types of products to viable markets. Both types of investment are tied to hydrologic variability: the failure of crops during drought conditions, and

the failure of crops and the impassability of roads during flooding conditions.

The base strategy is considered a "business as usual" strategy, and predicts future conditions if current practices remain unchanged, with no additional infrastructure investments or major policy changes. Its parameters stay within the confines of historical growth rates.

The irrigation strategy is similar to the base run framework, with the addition of implementing the Irrigation Development Program of the Water Sector Development Plan, developed by the Ethiopian Ministry of Water Resources. Approximately 200,000 hectares of crop area are currently being irrigated in Ethiopia, accounting for just over 2% of all cropland. The new program details the addition of 274,000 hectares of irrigated cropland within a 15-year planning horizon, more than doubling the current investment. According to the Agricultural Sample Survey data of 1997 and 2000, the yield gap between irrigation and rainfed crop production is 40%, i.e., on average, irrigation can increase cereal yield up to 40%. However, given the current low share of irrigation in the country, it is unrealistic to expect that investment in irrigation alone can generate significant overall agricultural growth in the short term.

The road development goals are to improve road conditions, reduce transportation costs, and increase farmers' accessibility to major markets. The Ethiopian road density is reportedly below the all-African average, and results in 70% of all farmers being more than one-half day's walk away from a paved road (MoFED, 2002). The average grain price gap is estimated to be about 30-70% across regions, and domestic marketing costs often account for more than 50% of fertilizer prices paid by farmers. These all significantly reduce farmers' profitability from increased production. To analyze the road strategy, marketing margins between producers and consumers and between surplus and deficit regions are gradually lowered over the 12 years of the

investment analysis period, and the productivity of the service sector is similarly gradually increased. Thus, under this scenario, market prices across zones will converge due to improved transportation and market conditions, and by 2015 the price gap between surplus and deficit areas will be 70 percent below baseline levels. Moreover, by 2015 the productivity in the service sector will be 20 percent higher than the baseline level, which is equivalent to an annual growth rate of 1.5 percent.

Results

Although both investments create positive economic boosts, strategies focusing on direct investments in increased irrigation slightly outperform investments in roads, producing an average GDP growth rate of 0.95% versus 0.75% over the baseline scenario, along with lower associated poverty and malnutrition rates.

The following table displays the base case and investment results for the mean value of nine alternative climate scenarios.

Table 1: Economic Indicators for Alternative Scenarios

	Base strategy	Irrigation	Roads	Irrigation+ Roads
GDP growth rate	1.78	2.73	2.53	3.43
Ag GDP growth rate	1.47	3.13	1.64	3.29
Non-Ag GDP growth rate	2.17	2.14	3.61	3.59
Poverty rate in 2003 (%)	41.55	41.55	41.55	41.55
Poverty rate by 2015 (%)	54.77	50.5	51.71	47.74

The alternative investment strategies have better outcomes as compared to the base strategy for all economic indicators shown in the Table 1. While the irrigation investment scenario boosts agricultural GDP growth, roads investment enhances non-agricultural GDP, and has a small impact on agricultural GDP growth as well. Combined investments in both roads and irrigation result in the highest GDP and poverty impacts.

If investment costs are included in the analysis, then the irrigation investment strategy fares better than road investments. Moreover, the combination investment including only 5,000 km of roads fared almost equally well as the irrigation investment scenario alone. The analysis has shown that a combination of agricultural and supporting infrastructure investments, here roads, can increase agricultural GDP while reducing poverty in Ethiopia. Thus policies in the water sector need to be addressed together with policies outside the water sector, and international policies affecting Ethiopia, such as FDI, food aid, and development bank

investment strategies need to be considered when developing strategies for enhanced water and food security in the country.

Future research could focus on identifying the optimal road construction distance to complement the irrigation project, providing the best overall benefit-cost ratio, as well as expanding investments to other agricultural and complementary sectors, such as the provision of enhanced agricultural inputs (seeds and fertilizers), and investments in improved education and health services.

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See also Impacts of Considering Climate Variability on Investment Decisions in Ethiopia
Paul J. Block, Kenneth Strzepek, Mark Rosegrant, and Xinshen Diao, May 2006
<http://www.ifpri.org/divs/eptd/dp/eptdp150.asp>

SESSION 18 - GLOBAL WATER POLICIES

Climate Change Perceptions and Adaptation Strategies in Rural Africa

Background

Over the coming decades, global change will affect food and water security and the livelihoods of poor farmers, herders, and fishermen and women in significant, but also highly uncertain ways. Furthermore, change is occurring simultaneously on many fronts: climate; extreme weather events; trade regimes; consumer preferences; biological, communication, and information technologies; human health, and even regional conflicts.

Long-term changes in climate will disproportionately affect regions in tropical zones, countries where a majority of the population is employed in agriculture, where rainfed agriculture is the predominant agricultural production method, and poor countries with few financial resources to counter the adverse impacts of climate change. Thus, poor farmers and livestock herders in Sub-Saharan Africa will likely bear the brunt of adverse impacts from climate change.

Studies suggest that adaptation options play an important role in reducing vulnerability to climate change (Easterling et al. 1993; Rosenzweig and Parry 1994; Smith 1996; Mendelsohn 1998, Reilly and Schimmelpfennig 1999, Smit and Skinner, 2002). The degree to which an agricultural system is affected by climate change depends on its adaptive capacity. Hence adaptive capacity is the ability of a system to adjust to climate change (including climate variability and extremes) to minimize potential damages, to take advantage of opportunities, or to cope with the consequences (IPCC, 2001). Thus the adaptive capacity of a system or society describes its ability to modify its characteristics or behavior so as to cope better with changes brought about by external conditions including climate change.

Research on climate change-agriculture interactions has evolved from a “top down” approach to a “bottom-up” approach. The top-down approach focuses on the impacts of climate change scenarios, and identifies potential

adaptation practices to these scenarios. The bottom-up approach, on the other hand, focuses on the existing socio-economic environment and assesses the vulnerability of those affected by climate change. In this approach, adaptation strategies are processes involving several aspects including the socioeconomic and policy environments, producers’ perceptions, and elements of decision-making (Bryant et al. 2000; Wall and Smit 2005 and Belliveau *et al.* 2006).

This brief adopts the bottom-up approach to investigate adaptation to climate change at the farm level, including farmers’ perceptions regarding long-term climate change, and primary adaptation strategies and constraints to adaptation at the farm level. The results of this study are based on surveys carried out in the Nile River Basin in Ethiopia and the Limpopo River Basin in South Africa.

The surveys were conducted under the “Food and Water Security under Global Change: developing adaptive capacity with a focus on rural Africa” project, that is supported by the German Government and is associated with Theme 5 of the Challenge Program for Water and Food. The main objective of this project is to assess the effects of climate change on water and food security in rural Africa and to identify adaptation measures that reduce potentially adverse impacts.

Perception of Long-term Climate Change

The Limpopo basin in South Africa is a semi-arid region that experiences a high degree of climate variability as well as long-term changes in climate over the past few decades. More than 91% of survey respondents perceived an increase in temperature levels. Similarly about 90% of farmers testified that precipitation decreased in the past 20 years.

The Ethiopian survey was conducted in the Nile basin. Here, only 53% of farmers who responded to this question in the survey perceived an increase in temperature over the past 20 years. In

addition, 75% of respondents perceived long-term changes in rainfall – 61% of which felt that the number of rainy days had declined. To respond to these changes in climate over the last 20 years, farmers have resorted to different adaptation strategies to mitigate some of the negative impacts of climate change.

Adaptation Mechanisms at the Farm Level

About half of the farmers who observed long-term changes in rainfall patterns did not adjust their farming practices. Among those who did adjust, around 9% engaged in irrigation (both irrigating more and new schemes); 4% used different crops, and 3% shifted their planting dates to match the delay in rainfall.

Although the majority of farmers perceived increases in temperature in the Limpopo basin, only 42% of respondents made adjustments to their farming practices.

In Ethiopia, the most popular adaptation measures against decreased precipitation were soil conservation techniques (31%) and changing crop varieties (11%). Responses to long-term increases in temperature included afforestation and trees for shading, as well as changes in crops and crop varieties. The adaptation strategies that the farmers resort to are thus different for rainfall and temperature changes.

Adaptation to long-term changes in rainfall (%)		
	Limpopo	Nile
Nothing	49.2	42
Soil conservation		31.1
Changed crop or variety	4.4	11.1
Different planting dates	3	4.5
Irrigate more	6.5	
Water harvesting/Irrigation	2.7	5.8

Adaptation to long-term changes in temperature (%)		
	Limpopo	Nile
Nothing	57.6	56.8
Changed crop or variety	11.2	20
Change land area	3	
Irrigate more	3.3	
Trees for shading/Afforestation		13.3
Change planting date		2.4
Soil conservation		2.9

Constraints to Adaptation

Only 9% of farmers cited no barriers to adaptation in the Limpopo Basin. Lack of credit was the main factor inhibiting adaptation (41% of respondents).

Other obstacles included no access to water (18%), no property rights (10%), and lack of market access (4%). We find a very different picture in Ethiopia, where a majority of farmers cite lack of information and knowledge as the primary factor preventing them from adapting to long term changes in temperature and rainfall (20%). Like in South Africa, access to credit and money (20%) is also an impediment to adaptation.

Conclusion

While farmers in both basins are acutely aware of long-term changes in temperature and precipitation and the potential adverse impacts on food production and livelihoods, only about half the farmers in both Ethiopia and South Africa have adjusted their practices to account for the impacts of climate change.

The main barriers cited by respondents in South Africa and Ethiopia are lack of credit and lack of information respectively. Climate change adaptation strategies at the national level for agriculture and water may therefore include several components, including improving water storage, providing irrigation facilities, and improved crop varieties.

However, effective policy must also address market imperfections such as access to information, credit and markets in order to reach small-scale subsistence farmers.

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<http://www.ifpri.org/themes/globalchange/globalchange.htm>

APPENDIX II:

PRESENTATION

Welcome to Session 18

Global Water Policies

16 Nov'06 Thursday 8:30am to 11:00am Room SR3

Convenor: Dr. Claudia Ringler
International Food Policy Research Institute
(USA)

Facilitator: Mr. Prabu Naidu
(Singapore)

Why are we here?

- ❖ Water policies are highly diverse
- ❖ All CPWF and other water-related projects link to and are influenced by (non) Water Policies
- ❖ Importance of this area for the CPWF

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Agenda

- Arrivals & Introductions
 - Who's in the room?
 - Guiding Principles
 - Collective Wisdom and 'Global Water Policies Awareness Quotient'
- Overview & Setting the Stage
- Overview on 'Global Water Policies' – Does it matter?
- Discussion 1 – Examples that fit into the policies
- Team Formation
- Presentation of Abstracts
- Discussion 2 – Prioritisation, Research & Funding
- Large Group Sharing
- Closing Circle and Next Steps

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Who's in the Room

By Geographical Regions:

- ✓ Asia
- ✓ Europe
- ✓ Africa
- ✓ Latin America / Caribbean
- ✓ North America & Canada
- ✓ Middle East
- ✓ Pacific

By Roles in the Water Management:

- ✓ Government Personnel
- ✓ Managers of Basins / Irrigation Systems
- ✓ Scientists
- ✓ Bankers / Financial
- ✓ Administrators
- ✓ Project Mgt
- ✓ NGO reps
- ✓ Authors
- ✓ Water Users
- ✓ Others

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Guiding Principles

We all have an equal right to:

- ❖ Experience the unexpected
- ❖ Speak, no matter how unorthodox our views
- ❖ To be Heard
- ❖ To Participate
- ❖ Being Respected
- ❖ Have Fun

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Global Water Policy Quotient!

How much do you know? Global Water Policy Quotient

- 4- I know quite a lot about this subject and can lead discussions
- 3- I have heard of it but unsure of the details
- 2- This is new for me and I want to learn
- 1- This is new for me but I will hang around
- 0- Oops! Wrong subject – I am out of here

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Overview & Setting the Stage

GLOBAL WATER POLICIES

What's that?

(Abstract)

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What could 'global water policies' mean?

- **'Strictly global water policies'**
 - Convention on the Law of the Non-navigational uses of international watercourses [& similar]
 - Human right to water
 - Global water meetings/organizations [WWC/GWP]
 - MDG Target 10 [access to drinking water & sanitation]...

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What could 'global water policies' mean?

'Global policies that include water'

- GATS [General Agreement on Trade and Services] - > opening up water services to competition from other member countries
- GATT [General Agreement on Tariffs and Trade] - > exporting water and water-related trade sanctions/restrictions
- Kyoto protocol [Climate change mitigation]...
- Convention on Biological Diversity
- Ramsar Convention...

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What could 'global water policies' mean?

'Non- water global policies that impact water'

- GATS [General Agreement on Trade and Services] - > opening up non- water services to competition from other member countries that impact water outcomes
- GATT [General Agreement on Tariffs and Trade] - > exporting water-consuming crops / trade liberalization
- Codex alimentarius - Food safety
- Investment trends [rainfed agriculture], urbanization rates, population changes
- Energy policies [biofuels]...
- Other MDGs

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What could 'global water policies' mean?

- **'Water non- global policies that impact globally/ regionally/ basin scale'**
 - Water and sewage treatment plants
 - Hydropower development
 - Water pricing / cost recovery / water sector investments
 - Irrigation management
 - River basin management

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What could 'global water policies' mean?

'Non- water non- global policies that can impact water regionally/globally'

- Agricultural input developments [pesticides, fertilizers]
- Crop varietal changes / changes in management practices that are up-scaled [Green Revolution]
- Trade and input and output price policies by the 3 largest food producers [or 4 if EU =1]

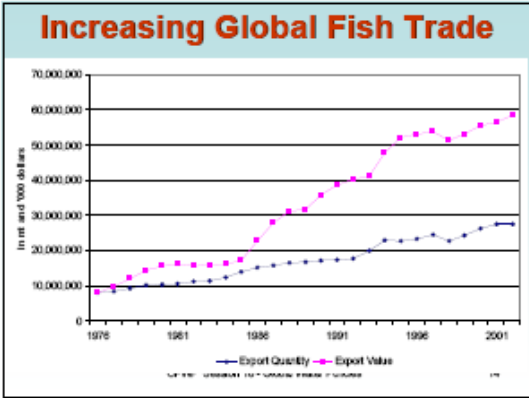
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Does it matter?

Relevance of Global Issues during forum field trips

- Urban encroachment on land, water, and labor resources
- Irrigation → diversification → exports and food safety concerns
- Hydropower development to export power

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Does it matter?

- Total of 261 International river basins are distributed over 5 continents and 45% of the land surface (excluding Antarctica) is included in international river basins
- Maybe 20% of global cereal trade related to water scarcity
- Full trade liberalization increases prices for rice, sugar, and milk [‘rice pudding’] → decline in water use

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

Categories of Policies

1. ‘Global’ / Water
2. ‘Global’ / Non- Water

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Global Water Policy Quotient!

Has your level of Awareness increased?

- 4- I know quite a lot about this subject and can lead discussions 
- 3- I have heard of it but unsure of the details 
- 2- This is new for me and I want to learn 
- 1- This is new for me but I will hang around 
- 0- Oops! Wrong subject – I am out of here 

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Your Stories on Global Water Policies

Share any other examples of ‘Global’ / Water OR ‘Global’ / non- water that affect water & food security?




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Team Formation

Form Four teams randomly

Identification of Team leader

Someone who appears confident and that you will trust..and at Level 4 or 3 of Global Water Policies Awareness



Get to Know Your Team Members (1 min each!)

- Name
- Where from (Country / Organisation)
- What do you do
- Global Water Policy Quotient!
- Level 4 or 3 or 2 or 1?



List examples of Policies

Q1) 'Global' / Water

Q2) 'Global' / Non- Water

Brainstorm examples of policies that fit into the above two categories, eg Bio- Fuel/Energy policy, etc

ABSTRACT

Paul van Zwieten and Simon Bush, Wageningen:

Scaled interactions of flows and places in shrimp culture and fisheries in Vietnam and Indonesia: the approach of the RESCOPAR program

Water Policy Nexus

Shrimp production → international trade flows → need for scaled interactions ranging from local to global institutions and policies

Inter-linkages between producers, markets & consumers through international trade → has undermined state regulation and control

'Place-based' actors respond to the physical environment (informal networks or structured bureaucracies) vs. 'Flow-based' actors (control globalised movements of commodities and information from a distance)

Need for codes of conduct, stewardships, and adaptation to local levels

ABSTRACT

Dorothy Nakimbugwe, Makerere University:

An overview of national, regional and international policies affecting **use of wastewater** for agricultural food production and their implications for the Lake Victoria and River Nile Basins

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Water Policy Nexus

Injudicious use of subsidies → declining WQ → need for more food imports
Lack of (int) regulations → injudicious use of wastewater → Food safety concerns → decline in exports
Debt relief → increased investment funds available for sanitation and treatment → fewer wastewater impacts
Lack of land tenure → poor land management → declining WQ

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ABSTRACT

Glwadys Gbetibouo, University of Pretoria and Temesgen Deressa, EDRI, Ethiopia:

Climate Change Perceptions and Adaptation Strategies in Rural Africa

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Water Policy Nexus

Awareness of climate change, but little adaptation
Adaptation to reduced rainfall and higher temperature include water and non-water strategies
Main farm-level barriers to adaptation are lack of credit [SA] and lack of information [ETH]
→ Need to combine water and non-water policies to support farmers to adapt to CC

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ABSTRACT

Paul Block, U. Colorado:

Investment in Ethiopia's Future:
The Role of Irrigation versus Roads

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Water Policy Nexus

→ investment in irrigation → higher AG GDP and lower poverty; investment in roads → higher non-AG GDP and some increase in AG GDP → combined investments yield largest impact
→ Water and non-water policies need to be implemented together; need to also include FDI, food aid, and development bank investment strategies

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Discussion Questions

3. Which policies matter most and why? (Order Ranking)
4. What kind of research do we need for these policies – that would have a favourable impact on poverty?
5. If you have US\$50m – which research would you allocate the funds to in the second phase of CPWF? Why?

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Generation of Ideas

Discuss as a team and generate ideas for the proposition of your choice

Write 'Actionable Objectives' or Clear Statements

- I nitial Ideas
- B reakthrough Ideas
- R eally Crazy Ideas

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