

6th Triennial
World Water Forum
“Time for Solutions”
March 12 – 17, 2012
Marseille, France



Report from
Washington State Senator Karen Fraser

PO Box 40422, Olympia, Washington 98504-0422 USA

Tel: 360-786-7642 Fax: 360-786-1323

Email: Karen.fraser@leg.wa.gov

Comments and conversation about this Report are cordially welcomed.

Important Documents:

www.worldwaterforum6.org

World Water Forum Website

www.cnrep.org

(Click on the LINK: “6th World Water Forum”)

Contains the report entitled:

“Water in the US American West: 150 Years of Adaptive Management,”

Prepared specifically for this Forum, by the
University of Montana’s “Center for Natural Resources and Environmental Policy”

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Special Thanks

Dr. Jerry Delli Priscoli

US Corps of Engineers

Member of World Water Forum Board of Governors

Professor Matt McKinney

Center for Natural Resources and Environmental Policy

University of Montana

Edgar Ruiz

Executive Director

Council of State Governments, Western Region

Kent Briggs

Former Executive Director

Council of State Governments, Western Region

Sasha Sutcliffe-Stephenson

Council of State Governments

Washington, DC

Senator Jim Peterson, Montana

Forum participant

Representative Craig Johnson, Alaska

Water and Environment Committee Chair

Council of State Governments – West

World Water Forum Board of Governors and Staff

Volunteers from around the world

Participants from around the world

Executive Summary

The World Water Forum meets every three years to discuss the “world water crisis” and approaches to “solving” it. The 6th Triennial World Water Forum met for 6 days in Marseille, France in March, 2012. It focused on “Solutions” to the world water crisis. It featured over 20,000 participants from throughout the world, over 400 panels and speakers, and numerous highly educational exhibits.

The world water crisis has both moral and economic dimensions.

The moral: billions of people lack access to healthy drinking water and adequate sanitation. This leads to much human misery: illness, early death, malnourishment, economic deprivation, poverty, despair, geographic displacement, perpetuation of discrimination against women and girls, political and military tensions, and more.

The economic: while poor economic conditions can lead to lack of water, so also lack of water can seriously hinder economic improvement.

The world water crisis is widespread and is exacerbated by two major factors:

- (1) Scientists report that the world’s total supply of fresh water never increases and has been a fixed quantity since time immemorial; and
- (2) The world’s population is growing rapidly, thus generating increasing demands for more uses of water.

Factors compounding the impacts of this crisis include:

Uneven distribution of both water and population around the world;
 Waste, inefficiency, and poor prioritization of uses;
 Tensions between adjacent nations which use a common water source;
 Rapid global urbanization;
 Discrimination against women and girls;
 Lack of comprehensive and balanced forethought in decision-making;
 Environmental degradation;
 Lack of financial resources and economic incentives;
 Climate variability and change; and, finally,
 Insufficient political will to adequately address this crisis.

Last year, the United Nations adopted a resolution declaring water and sanitation to be a “human right.” Through the UN’s Millennium Goals and other partnering efforts, much progress has been made in improving access to safe drinking water. However, unfortunately, progress on achieving sanitation goals lags far behind.

The World Water Forum, is addressing this crisis sequentially. The 5th Forum (2009) focused on “Problems” and developed the “*Istanbul Consensus*” document for governments and organizations to endorse (copy in Appendix); this year’s 6th Forum focused on “*Solutions.*” The next Forum (2015), in Korea, will focus on “*Achievements.*” The “Solutions” identified by this conference’s over 400 panels and speakers were forwarded to the Rio+20 Conference, held June 20-22, 2012 in Rio de Janeiro, Brazil.

Wide-ranging “solutions” discussed at the Forum included:

- Various “nuts and bolts” of good water management;
- Water basin planning as an essential;
- Reformulating international relations to make water and sanitation a higher priority;
- Strengthening UN water and sanitation priorities;
- New global economic models;
- New national and international security models;
- Improving rights and opportunities for women and girls; and
- Improving urbanization and human development strategies.

Above all, there was a consensus that more “political will” is needed at all levels.

This report is a summary of my own experiences at the Forum---listening to speakers, participating on panels, observing exhibits, and informally interacting with other participants from around the world. It identifies many of the problems and solutions I heard about that were offered by exceptionally knowledgeable speakers, with a wide variety of backgrounds, from throughout the world. It also summarizes US participation, which included a panel on “Water in the US American West” sponsored and organized by the US Corps of Engineers, on which I was privileged to be a participant. An excellent written report was prepared to accompany this panel, which was prepared with widespread, in-depth input from many public and private entities actively engaged in water policy.

My caveat for this report is that it is not and cannot be an all-inclusive representation of the Forum. With 6 days, over 400 panels, and over 20,000 participants, no one person could experience it all. Again, it is a report on my own participation and observations.

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Introduction

Purpose and theme of Forum ***“TIME FOR SOLUTIONS”***

The purpose of this year’s 6th triennial Forum was to provide an opportunity for people from throughout the world to share **solutions** to water problems, to promote partnerships, and to inspire one another to make progress in addressing the global water crisis for the benefit present and future generations.

The theme of “solutions” was ever-present, with each presenter and exhibit asked to focus on specific solutions. By conference end, at least 1500 were tallied, which should soon be listed on the Forum’s web site. They were also forwarded to the Rio+20 Conference, held in June, 2012, as a follow-up to the 1992 UN-sponsored “Rio Earth Summit,” officially named the UN Conference on Environment and Development.

Major reference documents

- Website for the 6th Triennial World Water Forum: www.worldwaterforum6.org
- Report on “Water in the US American West: 150 Years of Adaptive Management,” prepared under the leadership of the US Corps of Engineers specifically for this conference, can be found at www.cnrep.org (click on “6th World Water Forum”). This is the website of the Center for Natural Resources and Environmental Policy at the University of Montana, which played a key role in its preparation.
- Istanbul Consensus – adopted by the 5th triennial World Water Forum. Copy in Appendix 2.

Location and participation

The Forum was held in Marseille, France, an ancient port city on the Mediterranean Sea, with a fairly dry climate and a history of successful water projects. The conference site was spacious, with multiple buildings, and did not feel crowded.

There were over 20,000 participants registered, over 400 discussion panels and speakers, including many high level “ministerial” panels, and hundreds of exhibits. There was also a simultaneous, parallel conference for youth.

A wide variety of people came from all parts of the world, including: public officials at all levels of government, water agency professionals, non-governmental organizations, experts, researchers, citizens, and youth. Official languages were English and French, with other languages also translated.

Past and future Forums

The World Water Forum is a nongovernmental organization, with international representation on its governing board, including the US Corps of Engineers. It sponsors an international Forum on water issues triennially, in varying locations. Countries compete to host the conference. Prior host countries clearly continue to take pride in their leadership roles and remain actively engaged in subsequent Forums.

The “Big Picture” Realities of The World Water Crisis

Summarized from multiple Forum discussions

Water is life---it is fundamental to humanity. Water both *gives* life and *takes* life (the latter through pollution, scarcity, drought, flooding, etc.). Water is necessary not only for the basics of life but also for a satisfying life.

Billions of people, especially the poor, suffer due to shortages of water and lack of access to healthy water, experiencing: illness, shortened lives, death, impoverishment, displacement, prolongation of social discrimination, slums, decline of natural resources, international conflict, and more. Continuing rapid population growth will result in billions more people experiencing this suffering in the future.

Worse than the safe drinking water crisis, **billions more people lack adequate sanitation**. This is now a greater problem than water supply.

Women and girls disproportionately suffer from lack of water. Many are subject to violence and lack of educational and economic opportunity due to excessive demands on their time to secure water.

The quantity of fresh water in the world is not growing, and has been a fixed amount since the beginning of time. Therefore, the quantity of water does not increase as the world's population rapidly increases and creates more demands for more uses of more water.

Lack of access to healthy water results from many factors: naturally arid areas; pollution; excessive surface water diversions and excessive groundwater extraction; wasteful practices; and poverty. Balancing competing water needs is becoming more complex and challenging as needs increase for domestic use, massive urbanization, economic production, and healthy environments.

Climate variability is resulting in increased variability in water supply. Thus, water supply is becoming more difficult to predict.

Many countries are financially unable to undertake large projects to provide clean water and sanitation.

Solutions to these realities must be found, shared, and implemented for the sake of humanity, and the planet.

Increased political will is a must. Water doesn't contaminate itself. Nothing is inevitable. We have the ability to make progress happen if we choose to do so.

Unfortunately, some people prefer “pillaging” and domineering to sharing, one speaker noted.

Some “Big Picture” Solutions

Proposed by some featured speakers, summarized on next few pages

Mr. Francois Fillon, Prime Minister, France

*Proposes a New Industrial Revolution and
creation of a World Environmental Organization*

Mr. Hwang-sik Kim, Prime Minister, Republic of Korea.

Proposes a Blue-Green Agenda and a Blue-Gold Growth Agenda

Mr. Ban Ki-Moon, Secretary General, United Nations

Reports that partnerships are working

Mr. Mikhail Gorbachev, President, Green Cross International

(Former President of the USSR)

Proposes a new economic model

**Ms. Irina Bokova, Executive Director
UNESCO**

Discusses the “silent revolution” of the global water crisis,

Proposes a new model of development, and

Encourages women to be leaders in sustainability

Mr. Joan Clos, Habitat Program, United Nations

Proposes a new approach to urbanization

Mr. Francois Fillon, Prime Minister of France



A **World Environmental Organization** should be created, to be comparable to the World Trade Organization, to improve our ability to address global environmental priorities.

We are in the process of moving to a **“New Industrial Revolution.”** We are moving:

FROM an economic development model based on “efficiencies” that destroy the environment;

TO an economic development model that preserves and sustains the environment while also achieving development.

He envisions the following components in a “new industrial revolution”:

- a) Seeking to preserve the planet and populations.
- b) Developing, together, a new model for development.
- c) Recognizing that *each* government has a responsibility, and not just a few dominate.
- d) Believing in the power of technological progress.
- e) Believing in local governments and citizens.
- f) Sharing resources.
- g) Having lifestyles based on responsibility.
- h) Looking long term.

Our current compass does not point us in the right direction. It does not pay attention to pollution or social development.

We are at a crossroads in the history of humanity with the concept of sustainable development on our agenda.

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## **Mr. Hwang-sik Kim Prime Minister, Republic of Korea.**



The economic downturn can be overcome more quickly if we approach it with a “blue-green agenda” (addressing water and environment together with development). The “growth engine” is “blue-gold”.

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Mr. Ban Ki-Moon
Secretary-General, United Nations



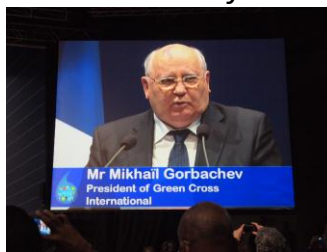
Last week, the world met the UN target of lowering the number of people without access to safe drinking water. Therefore, partnerships are working.

This 6th World Water Forum is part of the momentum in preparing for Rio+20.

The UN system is an essential partner in the quest for water for all. We must accelerate progress.

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**Mr. Mikhail Gorbachev**  
**President, Green Cross**  
*Former President of the USSR.*



Water must move to the center of international issues, with the active help of civil society, because we cannot count on international politics to achieve this.

Water and air are irreplaceable. Water is essential for life. For example, when we look for life on other planets, we look for traces of water.

We can no longer allow too much consumption of water.

In poor countries, many people die of polluted water. The World Health Organization (WHO) estimates that 80% of infectious diseases are linked to contaminated water.

To counter these problems, we need to understand the reasons why they occur, which include: population growth and overpopulation of the planet; agricultural policies; energy production policies.

We need an environmental consensus regarding development, because 70% of ecological systems are damaged.

The current economic model is not necessarily the best one. It has led to one crisis after another, so we cannot count on this model to lead us to sustainable solutions. We need to transition to **a new economic model**, which would consist of a *combination of free markets with development that is socially responsible and ecologically minded*.

The contemporary economy is damaging the environment, due to its focus on profits over standards of living. The amount of money spent on arms is mind-boggling.

We also need **new national security models**, which reject “*domination-style*” and “*confrontational-style*” thinking.

Consumption cannot be the only reason for economic life. The economic system should also promote health, education, social solidarity, and prevent/reduce/eliminate poverty.

We need practical approaches to implementing the UN Resolution recognizing that access to safe drinking water is a “human right.”

We support the UN Convention on Non-navigable uses of Water. Our organization sponsors pilot projects using the basin approach to managing water.

Green Cross focuses on environment, security, and elimination of poverty.

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Ms. Irina Bokova
Executive Director, UNESCO



We need a **new model of development**, *one that is sustainable for all*.

Nothing can be achieved without water, such as agriculture, food, food security, energy production. Water is the point of departure of sustainable development, and we are far from this.

We need new institutions to decide water allocation. UN can provide a forum for dialogue.

New UN Report says there is a “**silent revolution**” going on.

Overdrafts will be multiplied by three.

Growth of use will outpace supply, because of population growth.

Multiplication of droughts and floods increases uncertainty and risk.

Women are the number one leaders for sustainability.

One billion individuals have no access to drinking water. 2.4 million people have no access to sanitation---most are women. Women should be supported and trained to better manage water. Supporting women is the best investment to improve the health and living conditions of a group.

40% of the world population is dependent on transboundary water. We must be sure it does not lead to conflict.

Over 80% of used water is not collected or treated. Need better wastewater management solutions. Need better data.

Last year, the UN declared water and sanitation to be a human right. Our new Report is a road map to move forward.

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Mr. Joan Clos
UN Habitat Program



We need to **change the model of urban organization.**

At present, we use a “business model”, whereby we plan and build each type of urban need separately, such as housing, commercial, industrial, transportation, etc. This kind of city- building is not sustainable, and will not be good in the future, especially due to the price of energy. The future will require a new commitment to alternative ways.

The **new paradigm** calls for:

- Development of “**national urban policies.**” The problem is that most countries have policies for components of urban areas, such as housing, transportation, infrastructure, etc. However, few have national urban policies that interrelate and integrate the various components. Central governments should have an integrated model.
- Coordination between central, regional, and local governments. Cities alone cannot cope with the demand for infrastructure investment.
- Provision of general financial support for cities, not just for individual components of cities.

- Expansion of urban planning on a large scale. Since urban populations will double, why not plan for it? For example, could plan for: “energy corridors” other than under streets; in-fill strategies; transportation strategies that reduce the amount of roads and parking needed. Urban planning has now disappeared, yet cities are growing. We have eliminated the capacity to plan for growth.

Cities are a place for people and a source of 80% of the world’s wealth. Thus, they need: governance that allows people to live together; public spaces; sustainable financial sources.

US Participation in the Forum

The **US Corps of Engineers** is a member of the governing board of the Forum. US agencies participating in the Forum included: Corps of Engineers; US Geological Survey; Department of Interior; Bureau of Reclamation; and others. Agencies participated in numerous panels and discussions, including high level ministerial meetings, and sponsored informative exhibits in the Exhibit Hall.

Very importantly, they sponsored and organized a major panel on water in the American West, entitled, **“Water in the US American West: 150 Years of Adaptive Management,”** and published a written report to accompany it. The panel was well attended, stimulated interesting discussion, and was well received. I served as a panelist and as one of the “reviewers” of the draft written report.

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Water policy factors of major concern to the US government include: climate change (changing rainfall, hurricane patterns); growing groundwater and river extractions resulting from pressures of population and economic growth; pollution; political tensions regarding boundaries.

Access to water is one of the great moral challenges of our time. It includes economic, health, and security challenges. The US embraces the concept of human rights to water.

President Obama has asked federal agencies to focus on these issues on a comprehensive basis. The US spends foreign aid money for water and sanitation projects.

Key principles for the US:

- An inclusive, transparent and democratic approach---not one size fits all.
- Inclusion of women, GLBT communities, and the disabled.
- Partnerships.
- Applying the latest science and technology to assist other countries.

In **US international policy**, water tends to be categorized as a “soft” issue. But there is nothing “soft” about children dying from disease and girls attending schools without safe toilets to use. Women and girls often walk 5-6 kilometers to get water for their households and risk sexual and other types of violence in the process. Conflicts arise between countries because of water.

“Water in the American West: 150 Years of Adaptive Strategies”

A panel and written report sponsored by the US Corps of Engineers

At the request of Forum organizers, the Corps of Engineers organized this panel and published an accompanying report.

I was pleased that the Corps made it a priority to incorporate into the panel presentation state government roles and perspectives regarding water in the West. They partnered with the Council of State Governments-Western Region, the University of Montana, the Western States Water Council, and others to achieve this. The result was a well-prepared, well-attended panel and an excellent written report entitled, “Water in the U.S. American West: 150 Years of Adaptive Strategies.”

The panel was organized and chaired by the Dr. Jerry Delli Priscoli, of the US Corps of Engineers. Other panelists included representatives from the US Bureau of Reclamation, US Department of Interior, a tribal representative, a representative of The Nature Conservancy, a representative of the US-Mexico Border Commission, and two state Senators (Senator Jim Peterson, from Montana, and myself, from Washington).

The excellent 46-page written report was developed by the US Army Corps of Engineers Civil Works Directorate through the “Consensus Building Institute” and involved very broad collaboration. The research and writing was coordinated by the University of Montana’s Center for Natural Resources and Environmental Policy, headed by Professor Matt McKinney. It is available online at www.cnrep.org. On this web page, click on “6th World Water Forum”.

“Water in the American West” panel

The panel presentation began with an overview of the history of water in the American West. This included a description of the “westward expansion” of the 1800s, and the transformation of the West through the construction of major water projects. The panel described the outstanding successes of these major projects for flood control, power generation, and water supply. The panel also summarized: the Prior Appropriation Doctrine method for allocating water rights; problems created for many tribes by these projects; successful cooperation across state and international boundaries; and contemporary efforts to mitigate many unplanned-for environmental and tribal impacts of these projects. Specific examples of successful strategies were outlined, including: the Montana Compact Commission, the US-Mexico Border Commission, and the Columbia River Treaty.

Some interesting questions were asked by audience participants:

Are Western Water Law principles too rigid, and therefore impede the flexibility needed to adapt to changing times?

Does the state-based structure of Western Water Law principles constitute a problem when a water basin is shared by one or more states?

The Americas Dialogue

Panelists from North, Central, and South America

USA, Mexico, Honduras, Brazil, Ecuador

(Senator Karen Fraser served as a panelist from the American West)



Common themes among panelists:

Water is fundamental to all aspects of life, particularly health and a sustainable, growing economy. Water should be a “human right” and central to global policies. Pleased that the World Water Forum results will be presented at Rio+20.

Problems identified:

Illegal dumping of solid waste (especially in Latin America).
 Insufficient wastewater treatment (especially in Latin America). One speaker said that while 55% of wastewater is collected, only 30% is treated. Another said that only 9% is treated, while the goal is to treat 70%.
 Need financing, good data, political will, training, intergovernmental cooperation, decentralization, and citizen involvement.
 Environmental deterioration.

Solutions identified:

Empowerment of citizens, local governments, executive agencies.
 Funding.
 Accountability of elected officials and public agencies to the citizenry through reports, etc.
 Decentralization of project responsibility to local governments
 Training for local officials.
 “Concessions” to international governments and companies.
 Public private partnerships.
 Better environmental protection laws, and environmental improvement projects
 Improve intergovernmental communication.
 Get water to rural areas.
 Ecuador has a \$1 billion loan from China in exchange for oil rights.
 Brazil has concession contracts re oil, and will use oil profits for education, science, technology, and elimination of poverty.

SPECIFIC PROBLEMS AND SOLUTIONS IDENTIFIED BY SPEAKERS AT THE FORUM

THE GLOBAL WATER CRISIS IS THE OVERARCHING PROBLEM

Problem: Billions of people currently have an insufficient quantity and quality of fresh water and lack adequate sanitation, while rapid population and economic growth continue to greatly increase demand for water, in spite of the global supply remaining constant, resulting in tragedies for people, environment, and economies.

Solutions: Must be found, shared, and implemented for the sake of humanity, and the planet. Human needs and the environment need to be better taken into account in economic models and strategies.

Need better tools for: conservation, efficiency, waste prevention, technology, technical assistance, governance, watershed basin planning; stewardship, international solidarity and cooperation, international assistance, improved water management, financing, reducing poverty, obtaining good data, and information sharing.

Water links all issues: health, hygiene, human rights, economy, quality of life, environment, agriculture, war and peace.

Priority international strategies:

Making water a top priority in international relations and the United Nations.
Redoubling efforts to achieve the UN Millennium Goals for water and sanitation.

SPECIFIC PROBLEMS AND SOLUTIONS DISCUSSED

PROBLEM: Lack of access to healthy water and adequate sanitation by billions of people.

This occurs particularly in arid areas. Projections are that millions more will face this in the future. Many children and adults die of polluted drinking water. Many statistics were given by various speakers: 2.5 billion people lack access to healthy water; 800 million lack safe drinking water; 2.6 billion people don't have adequate sanitation; 900 million don't have enough water for their needs, especially Africa. 40% of the world population faces scarcity of water. 4,000 kids a day die from polluted water. 90% of wastewater is put into oceans---a disaster in slow motion.

SOLUTIONS:

- The UN is an essential partner in the quest for water for all. Last week, the world met the UN target of lowering the number of people without access to safe drinking water, ahead of the

2015 deadline. This demonstrates that partnerships are working. (Mr. Ban Ki-Moon, Secretary-General of the UN)

- Support UN Resolution declaring access to water to be a human right.
- Make access to water and sanitation a top priority at the UN's Rio+20 conference.
- Implement the UN Millennium Goals of achieving universal access to healthy water for all by 2030 and also sanitation for all.
- Wealthier countries should provide aid to poorer countries.
In France, cities are currently authorized to spend local funds on water projects in other countries with, as an act of "solidarity."
- Focus on transferrable technologies.
- Increase incentives for Ph.D. candidates, researchers and professors to improve transfer of technology and newer scientific findings to practical uses by communities.
- Conserve water.
- Protect supply by reducing and preventing water pollution.
- Reduce/prevent water diversions and excess groundwater pumping which harms communities and the environment.
- Work toward a "new industrial revolution" that preserves and sustains the environment while also achieving development.

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PROBLEM: Rapid world population growth increasing demand for water uses.

This puts a big strain on water supplies because the quantity of fresh water in the world does not also grow, but remains constant throughout time. In some regions, the fresh water supply is shrinking due to pollution, waste, and diversions.

By 2050, the demand for water use will increase by 55%. By that time, 40% of the world population will live in basins experiencing water stress. (OECD) The demand will be for 40% more water than the world can supply. (UN)

SOLUTIONS:

- Make water a top priority nationally and internationally.
- Make water a top global priority at the Rio+20 conference this year.
- Be smarter about water use in every way: conservation, efficiency, reduce/eliminate waste, better prioritize uses.
- Reduce/prevent water pollution---which, in effect, reduces supply.
- Reduce/prevent water diversions and excess groundwater pumping which harms communities and the environment.

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PROBLEM: Women and girls are particularly at personal risk due to lack of access to water.

In many arid areas, women and girls are discriminated against, and it becomes their job to walk miles each day to obtain and carry water home for domestic uses. In the process, many face risks of personal violence from predatory males, and other dangers. Many girls miss school because of the large amount of time devoted daily to this task.

Because many schools in impoverished areas have no sanitation privacy, many girls won't go to school. The majority of people who lack adequate sanitation are women and girls. The International Monetary Fund is now including consideration of impacts on women and girls in their funding decisions.

SOLUTIONS:

- Improve water supply and sanitation in villages and at schools.
- Widely implement the many new "low tech" technologies for pumping, moving, and storing water.
(Some great examples were demonstrated.)
- Increase transporting water by pipe, to reduce need for people to carry water.
- Increase women's leadership on water and sustainability. (UNESCO) because women are the number one leaders on sustainability.
- Best investment is to support and train women to better manage water.
- In Gjurat, they train women to manage irrigation water.

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PROBLEM: Rapid urbanization accompanying rapid population growth.

The UN Habitat Program representative stated that 50% of the world population now lives in cities. In 50 years, this will be 75%. We will double the urban population for the first time in world history.

The current "business model" of urban development, developing each aspect of a city separately, is not sustainable due to growing costs of energy.

Infrastructure needs and associated financial needs are huge.

In the 21st Century, rapid urbanization is occurring because of cheap energy, industrialization, and manufacturing. In the 20th Century, urbanization occurred because of cheap energy and water supply. Unsafe, unsanitary large slums with little or no water, can be a humanitarian and economic catastrophe. Urban planning is disappearing. We have eliminated the capacity to plan for growth. Too much land devoted to streets and parking. Utility corridors are under streets and should be elsewhere.

SOLUTIONS:

- Change the model of urban organization to one where:
 - There is coordination between central, regional, and local governments.
 - Cities get assistance with the demand for infrastructure investment.
 - National governments establish "national urban policies" that interrelate and integrate individual components such as housing, infrastructure, etc.
 - Urban planning is strengthened or reinstated.
 - Urban areas receive assistance from national and state/provincial governments.
 - Governance is improved.
 - (UN Habitat Program)
- Create an "urban risk committee" (City of Marseilles).

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PROBLEM: Environmental deterioration due to bad water policy.

Excessive extraction in order to use excessive water.

About 10% of water comes from overdrafts. (Chairman of Nestle Corp.)

Ecological needs are often unseen.

Huge Lake Chad has reduced in size substantially.

Solutions:

- Not all water should be for development.
- Recognize that water is natural capital.
- Incorporate nature as a silent, unseen solution: forests for water storage; coral reefs for buffers; wetlands for effluent treatment; trees for cooling streams.
- Recognize that natural resources can complement engineering, save money, avoid costly mistakes, and reduce mistakes. Example: New York City avoided a \$6 million expense by being able to defer a filtration plant using wetlands.
- Be sure “the environment is at the table.”
- Create a World Environmental Organization, just as we have a World Trade Organization.
- Global governance for water and the environment.
- At the Rio+20 Conference:
 - Make sustainable water supply a top priority.
 - Actively consider the “solutions” offered at this Forum.
- Don’t let water be the “poor cousin” of international relations.
- Make fresh water resources the center of Sustainable Development policies.
- Be sure water is managed for energy, food, peace, security, and reducing risk of droughts and floods.

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PROBLEM: Climate variability/climate change---the new reality.

This is increasing the variability of water supplies with consequent negative impacts on people and the environment. Patterns of rainfall, drought, flooding, and hurricanes are changing.

Reduced water supply leads to economic decline, human stress, population dispersal, and international tensions. Natural disasters, such as floods, are getting more severe and are very expensive.

Data on this is scarce or inadequate.

SOLUTIONS:

- Adapt water policies to climate changes. This includes: governance improvements, infrastructure investment, protection of ecological resources, education and training, strengthening systems management.
- Include financing for “water security” for some countries as part of climate negotiations.
- More action on climate and water.
- More aid to others.
- Find ways to finance costly efforts to adapt as climate change affects water.

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PROBLEM: Insufficient information sharing about developments in science and technology.

SOLUTIONS:

- More sharing, to improve people's lives.
- Higher education and research should give higher priority to technology transfer.
- There should be PhD degrees in Technology Transfer.

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PROBLEM: Improve water governance to better balance competing water needs.

Competition is becoming more complex and challenging. There are too many piecemeal solutions.

SOLUTIONS:

- While water is a local need, solutions have to be at the basin level. There are 154 major water basins in the world.
- New institutions to decide on water allocation. UN can provide a discussion forum.
- Global governance for water and the environment.
- Share water and other natural resources like common property.
- Public agencies, rather than market forces, should control water.
- Improved intergovernmental cooperation---between countries and between all levels of governments within a country.
- Improve governance structures and processes.
- Better engage citizens in water policy affecting them, including women, GLBT communities, and the disabled. Better enable citizens to speak out about their needs.
- Increase women's leadership.
- Planning for "upstream" projects, such as dams and diversions, should take into account "downstream" impacts.
- Planning for large water projects should address potential negative human and environmental impacts.
- Planning grants to poorer countries from wealthier countries.
- Involve Mexico in US watershed planning.
- Harmonize growth with water. Assure "quality" growth. Don't use all water for "development." Assure adequate water for economic and social security, dignified lives, food, ecological security, preserving biodiversity for future generations, and energy generation.
- Consume less and manage better.
- Sign and implement the Istanbul Consensus from the 2009 World Water Forum.

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PROBLEM: Transboundary cooperation.

40% of world population lives in transboundary water basins.

Major international conflict can arise from perceived inequities due to lack of cooperating and sharing.

Example: Darfur conflict occurred during a period of water shortages.

SOLUTIONS:

- Assure equitable access to water in transboundary basins. There are 154 major water basins in the world.
- More countries should join and implement a global convention that deals with 200+ water states that cross 100 country borders. This year, there should be enough signatures to achieve implementation.
- Numerous cross-border negotiations which are taking place: Uzbekistan and Tajikistan; Sudan and South Sudan; and more.
- Conversations are beginning in many regions: Aral Sea; Zambezi River; Nile River.
- US-Mexico Treaty regarding the Rio Grande River.

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PROBLEM: Waste of water.

In some cities, 70% of water distributed is lost through leakage. Lack of conservation in urban areas.

SOLUTIONS:

- Invest in new or repaired water transmission systems.
- Define standards for water use.
- Reduce use by 20% by 2020. (France is using less water with more population.)
- “Reasonable and rational” agriculture.
- Increase use of energy sources that do not use water.
Example: Morocco’s goal is 40% solar energy.
- Creative planning and infrastructure. Example: Morocco overcame scarcity using: underground channels, dams, and reservoirs, treated waste water for irrigation and industrial use, aquifer recharge, and using basin agencies to manage water.

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PROBLEM: Water used in energy generation.

Shell Oil Corp representative stated that energy companies are using more water than water companies, and that it is becoming harder to get water.

There is a lack of overview of where world energy companies are putting a strain on water.

Fresh water consumption in energy production will increase, as growing populations require more energy generation.

OECD reported that fossil fuel subsidies are greater than agricultural subsidies.

Solutions (all from Shell Oil Corp):

- Shell has developed methods of measurement of amounts of water needed to generate energy from various types of sources, such as biomass, coal, gas, etc. which will allow comparison of energy sources in terms of how much water each uses. An article in *Science Journal* says that this method now can be used in biomass models.
- Replacing coal with gas reduces waCO2 and conserving water. Nuclear power requires water, yet reduces CO2.

- The energy industry is becoming more efficient.
- In Brazil, they recycle 90% of sugar cane used for biofuel.
- Need “impartial” partnerships.

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PROBLEM: Need to increase wastewater reuse.

80% of used water is not collected or treated.

SOLUTIONS:

- New management systems.
- Bring together universities and others to develop new membrane filtering systems that will improve the reuse of waste water.

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PROBLEM: Financing water and sanitation infrastructure.

Impoverished countries and communities often cannot afford needed infrastructure.

Public officials often give low priority to sanitation needs because they find this subject distasteful.

Solutions:

- Improved financial strategies.
- Long term financial planning.
- Private sector investment to fund infrastructure, such as using pension funds.
- Public-private partnerships.
- HFC and World Bank are working on financing solutions.

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PROBLEM: Good data on which to base decisions.

Most data systems are not capturing environmental values. This leads to over-allocation of water at the cost of the environment. In the end, if you don't spend money up-front on the environment, you spend more money later, in investing in improving the environment.

Data is often scarce, inadequate, or not coordinated. Example: for a region, it's desirable to correlate several categories of data: rainfall, groundwater, and river fluctuations. Often there is only rainfall data.

SOLUTIONS:

- Strengthen surface water and groundwater data.
- Increase coordination and correlation between categories of related data.
- Increase sharing of data.
- Make data free, reliable, and accessible.
- Establish a “world standard” in data sharing. The Rio+20 Conference should address this.
- More broadly sharing information about developments in science and technology.
- Increase data on environmental economics.
- Improve methods by which cost-benefit analyses take into account nonmonetary impacts.

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PROBLEM: Lack of citizen preparation for risks of levee failure

Most people who are at risk either don't know it, or minimize the degree of the risk. Consequently, they do not prepare.

Engineering assumptions about "degree of risk" of levee failure and flooding need improvement.

Flood insurance pricing needs to be better correlated with risk.

SOLUTIONS:

- Educate people who are at risk to take precautionary actions, and to purchase flood insurance.
- Educate people to understand information about risks, including what a "100 year flood" means.
- Be creative in promoting public awareness about flood risks, such as placing local historical markers showing high water levels of floods.
- Congress is considering changing the pricing structure of flood insurance to reflect degrees of risk.
- Establish mechanisms by which property buyers can know whether a property is in a risk area.

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PROBLEM: "Water grabbing"

This is similar to the old concept of "land grabbing." It is the growing practice of large corporations convincing impoverished governments to allow them to use large quantities of water, often associated with the process of buying large areas of land, for international corporate farming. This can result in devastating economic and human impacts on downstream activities and on local water supplies. Impoverishment of local people is often a sad result when leaders of poor countries prioritize "investment" over the needs of local people. This hurts the local economy, especially farmers and herders. Aquaculture (growing prawns and shrimp) can also be associated with a "water grab."

A featured speaker was Fred Pearce, journalist and author of a book, The Land Grabbers: The New Fight Over Who Owns the Earth. He is writing a new, similar book about water "grabs."

Panelists gave examples of areas where such problems are occurring: Upper Nile Basin, Inner Niger River Delta (a large flood plain surrounded by the Sahara Desert), Lake Victoria, Tana River in Kenya.

Panelists stated their opinions about problems with the Prior Appropriation Doctrine: no ecological rights; water rights are independent of land rights, so that a "water grab" could be independent of a "land grab."

Panelists also stated their opinions about problems with the Riparian Doctrine: water rights are tied to land and proportional to the amount of land one owns, and thus can result in too much water being taken.

Large marine areas can be taken for aquaculture.

Impoverished governments are focused on "investment" and lose sight of local needs.

Lack of enforcement of laws to protect local people.

SOLUTIONS:

- Before decisions are made, analyze local, regional, and downstream impacts.

- Secure water supplies for local/ regional needs, including for domestic and hygiene uses.
- Stimulate proactive local community and citizen involvement in policy decisions and land use planning.
- Lobby government decision-makers
- Monitor water supply
- Create smart legal frameworks for water decisions that will work well in negotiations with “westerners.”
- Develop good water data and environmental economics.
- Assure environmental needs are met.
- Enshrine traditional land rights.
- Engage in smart, participatory land use planning
- Adopt minimum in-stream flows.
- For dam projects, require cost-benefit analyses AND analyses of nonmonetary impacts.
- Implement a “water democracy” whereby people get a temporary right to use water, which would optimize use of water.

CONFERENCE ENDING CEREMONY

Award for Water and Sanitation Improvements

A monetary prize was awarded by the Kyoto, Japan Chapter of Soroptimist International, which is an international women's service club, with chapters in 124 nations and a global membership of 89,000. It was awarded to the Katosi Women's Development Trust in the Lake Victoria region of Uganda. This Trust has been very creative and successful, since 1996, in empowering women to engage in local water and sanitation issues, to lobby public officials, and to educate the public. The Soroptimist Club awarded them a grant of three million yen. See photo below.



Handover of Responsibility from France to Korea for the 2015 Forum

A ceremony was held handing over the Forum's flag from France to Korea, who will be the host country in 2015. The theme will be "Time for Achievements."

APPENDIX

“ISTANBUL WATER CONSENSUS”

FROM THE 5th World Water Forum

For Local and Regional Authorities

As Mayors and local/regional elected representatives from different parts of the world, meeting in Istanbul in March 2009, we participate in this **ISTANBUL WATER CONSENSUS** to develop water management strategies in the face of global changes.

On the occasion of the Fourth World Water Forum in Mexico, the *Local Government Declaration on Water* of 21 March 2006 expressed the awareness and responsibility of local and regional leaders concerning water and sanitation and called on national governments for a more effective partnership.

We build on previous commitments and express our readiness to take leadership in advancing integrated water management approaches to ‘bridge divides for water’ and strengthen the resilience of our cities and regions to cope with rising external pressures and contribute to our overall sustainable development.

PART I – Local and Regional Governments’ Declaration and Call for Action

With this Consensus, we acknowledge that:

- ☞ Access to good quality water and sanitation is a basic right for all human beings and plays an essential role in life and livelihoods, the preservation of the health of the population and the fight against poverty¹;
 - ☞ Water is a public good and should therefore be under strict public control, independently of whether the services are delegated to the private sector or not;
 - ☞ Sanitation is equally important as water supply and needs to be given due consideration on the political agenda of local, regional and national governments;
- ¹ We strongly support the initiative of the UN Human Rights Commission with regard to the right to water.
- 2
- ☞ The local level plays an increasingly important role in the provision of water and sanitation services;
 - ☞ Rapid global changes such as population growth, economic development, migration and urbanisation, with over half of the world population now living in cities, are placing new strains on water resources and infrastructure and on the systems that supply water and sanitation services to our citizens, businesses, industries, and institutions. These rapid global changes are adding difficulties for the achievement of the Millennium Development Goals (MDGs) on water supply and sanitation²;
 - ☞ Slums and informal settlements in and around cities are growing and poverty is increasingly an urban issue, requiring the linkage between access to water and sanitation and land tenure to be urgently addressed;
 - ☞ Climate change will impact every aspect of the water cycle affecting our citizens: water scarcity will become more exacerbated, extreme events, such as floods and droughts, will increase, the sea level will rise, temperatures will increase, groundwater recharge, rainfall patterns and stream flow regimes will change;
 - ☞ Water resources management, at the local and regional levels, can be a tool to adapt to global changes;
 - ☞ The nature, extent and dynamics of water problems show commonalities and

differences when comparing the situations in developing and developed countries. While insufficient or aging infrastructure is a challenge for both, financing, strengthening capacity and improving legal frameworks are core concerns particularly in developing countries;

☞ A new and consistent approach is needed to cope with the demand for water at local and regional levels and to assure mitigation and adaptation measures to face these global changes. Equitable, optimal and sustainable management of water resources and services demands an integrated approach, coordinated action and the sharing of responsibilities by the various tiers of government;

☞ Sanitation needs to be embedded in overall local and regional planning, linked to other sectors such as drainage, potable water supply, wastewater and solid waste management, carried out - where applicable - through decentralized approaches, and supported by public education and awareness-raising campaigns to improve domestic hygiene.

☞ Local and regional planning and design needs to be more water-sensitive;

² The United Nations Millennium Development Goals, which propose to reduce by half the proportion of people without sustainable access to safe drinking water and improved sanitation by 2015, are of direct concern to local governments.

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☞ The public utility/service operator plays a central role in the provision of water and sanitation services and the existing support mechanisms to improve their capacity and strengthen their operation are not sufficient;

☞ There are costs associated with the provision of quality water and sanitation services. However, access to water and sanitation in sufficient quantity, quality and continuity must be assured affordably and equitably in particular by adapting cost recovery for the poorest people;

☞ Water use in urban and rural areas is highly interdependent and local sustainable water management plays a crucial role in securing agricultural food production and the prevention of rural depopulation; local authorities must be aware of the importance of rural agriculture, which plays an important role in the provision of food to urban centers.

Further, in support of our pledge of action as Mayors and local/regional elected representatives, we call on our national governments and on international institutions to:

☞ Shift water security higher in national and international policy priorities, based on the principle that water resources must be allocated in a reasonable and equitable manner among all users to support inter-alia, social and health objectives, employment, economic activity, cultural and leisure development and healthy and pleasant environments;

☞ Speed up the implementation of commitments made on access to water and sanitation and the fight against poverty, particularly in developing countries, in order to achieve the objectives set out in the Johannesburg Plan of Implementation (JPOI) and the Millennium Development Goals (MDGs);

☞ Establish a dialogue to ensure that Local and Regional Authorities, through an effective transfer of competencies and means, have the legal authority, financial resources, institutional capacity and adequate human and technical skills to manage water supply and sanitation locally and regionally. Respecting the principle of subsidiarity, local governments, in consultation with all stakeholders, should have the option to choose between various management models;

☞ Involve Local and Regional Authorities in the definition and implementation of political strategies taken at the national and supra-national level for sustainable water management to improve access to water and sanitation and to prepare for climate change and other global changes, particularly in insular and coastal countries. These changes require new infrastructure projects to anticipate climate change-related effects into the design of water, sanitation, storm-water and other urban infrastructure;

☞ Develop innovative financing mechanisms and regulatory frameworks to facilitate access for local and regional governments to direct financing and increase financing for local water and sanitation infrastructure to address the needs of all people and especially the poor and for adaptation to global changes;

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☞ Include investment in the water sector in their debt reduction operations, such as exchange of debt against water and sanitation investment;

☞ Put highest attention to the understanding and forecasting of future climate, demographic and other developments affecting the water cycle and management systems at national and regional levels, share the knowledge gained with local governments and help interpret these developments for their relevance at local level;

☞ Establish effective mechanisms to involve Local and Regional Authorities in the watershed management process;

☞ Take into more coordinated consideration the impacts of sectoral policy choices on the hydrological cycle that affects rural and urban areas as well as ecosystems;

☞ Support the international cooperation of Local and Regional Authorities for working towards the MDG targets on water and sanitation, especially through funded partnerships between local and regional governments of developed and developing countries and by allowing – where possible - the allocation of part of the revenues raised from users of water and sanitation services for this purpose.

PART II – Local and Regional Authorities’ Commitments

Recognising the urgent need to develop effective strategies, cities and regions depend on appropriate legal, institutional and financial frameworks and availability of capacities, both technical and human. However, climate change, population growth, intensive urbanisation, rapid economic development and other pressures impact local water resources and systems faster than current political and social systems can respond to them.

Therefore, we, as Mayors and local/regional elected representatives, signing this **ISTANBUL WATER CONSENSUS** on behalf of our local/regional governments, express our clear political will to prepare for these challenges by undertaking now whatever is in our current scope of authority and capacities and pledge to do our utmost to contribute to improved water governance and steer our local policies and approaches towards increased sustainability in water management and hydraulic infrastructure development.

This commitment is taken with the expectation that national governments and international institutions will indeed recognise the indispensable role of local and regional governments in improving access and successful adaptation measures in the water sector and will initiate – in the near future - the political reforms that are required to make local and regional governments’ efforts technically and legally feasible, fundable and effective.

In order to fulfil our commitment, we will use our political mandate to apply an integrated and participatory approach to sustainable water and sanitation management and initiate the following actions in our city or region based on the Guidelines in the Annex³:

³ See options for Diagnosis, Targets and Measures in the “Guidelines” section.

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☞ An *assessment* of the internal and external pressures on the local water resources and their aquatic biodiversity in order to identify the main challenges on their conservation;

☞ An *inventory* of local and regional government policies, strategies and plans that need to be adapted to cope with global challenges threatening local water resources and systems in the medium- and long-term;

☞ The development of a *dialogue with all stakeholders at the local/regional level* in order to create a shared vision between principal actors, to define local priorities and plans of action in the water sector;

☞ The definition of *objectives and measurable targets* specific to our jurisdiction and reflecting the commitment made to **Istanbul Water Consensus** and the establishment

of a monitoring and reporting framework to increase accountability of our strategies and actions;

☞ The implementation of our action plans to achieve tangible improvements in our water and sanitation services and to increase local and regional resilience in the face of global changes.

We also pledge to report back and share the challenges and the progress of our cities in achieving the above actions at the occasion of the next World Water Forum in 2012.

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ANNEX: Guidelines for a Plan of Local and Regional Action

(To be tailored to the local context)

Diagnosis

Local and Regional Authorities should develop an assessment of those challenges, which are most likely to impact their water resources and water and sanitation services, including the following, as applicable:

- ☞ Undertake an assessment, in cooperation with stakeholders, of likely demographic landuse changes and economic trends and the resulting demands on water resources and compare them with the predicted availability of water resources;
- ☞ Determine the population lacking access to safe drinking water and sanitation;
- ☞ Determine the population most vulnerable to water-related health impacts;
- ☞ Carry out a study on water and sanitation infrastructural needs, including rehabilitation, and their appropriate financing;
- ☞ Identify barriers to integrated management including sectoral pressures;
- ☞ Assemble the best available climate forecasts applicable to the hydrological factors that impact the city/local authority – from water source to sea;
- ☞ Assess the city's capacity to deliver water and sanitation services under major scenarios of climate and global changes.
- ☞ Determine other climate-related risks, potential benefits and uncertainties with respect to water management;
- ☞ Conduct a vulnerability assessment for pollution and water-related disasters;
- ☞ Assess, strengthen and implement regulatory frameworks and enhance institutional capacity;
- ☞ Determine the needs for water to support social, economic (both agricultural and industrial), institutional and environmental needs.

Targets

Local and Regional Authorities should develop concrete and measurable targets that are tailored to their local circumstances, pursuant to their jurisdiction and on a fully voluntary basis.

Such targets could be, for example:

- ☞ Reduce the amount of physical water loss x % by year x.
 - ☞ Increase water supply for human needs x % by year x.
 - ☞ Increase water supply per capita to x liter per day by year x.
 - ☞ Save x % of per capita domestic water consumption by year x.
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- ☞ Achieve internationally recognized water quality standards by year x.
 - ☞ Achieve x % collection and x % treatment of sewage by year x.
 - ☞ Inspect x % of industrial wastewater outfalls every year.
 - ☞ Ensure appropriate amount of water for ecosystems needs by year x.
 - ☞ Reduce damages due to water-related disasters as % of national (and/or regional) GDP to less than 5% of GDP.

Measures

To realize targets such as the ones listed above, the following measures might be

considered:

- ⌘ State-of-the-art water, sanitation and storm water management techniques to respond to urbanization and to the uncertainty and variability associated with global changes, taking water supply in rural areas also into account;
 - ⌘ Adoption of measures regarding spatial planning in order to prevent and combat the impact of global changes on the flood risk at the river basin level and on sea rise level;
 - ⌘ Diversification of sources of water supply to provide more flexibility for an indeterminate future, for example, via new storage facilities, sustainable groundwater extraction, water conservation and recycled water or desalination;⁴
 - ⌘ Introduction of regulatory measures for public participation in the decision-making regarding water management and financing at local/basin/regional levels thus improving water governance;
 - ⌘ Investment in sustainable infrastructure;
 - ⌘ Reduction of negative water-related health impacts to the urban population;
 - ⌘ Protection of the natural environment, especially important aquatic habitats, against cumulative impacts of urban development and climate change;
 - ⌘ Restriction of land-use to protect water resources and dependent biodiversity;
 - ⌘ Cooperation with industry and the business sectors to optimize water efficiency and reuse in processes and products and to limit, manage and control pollution;
 - ⌘ Preference to water management solutions that are economical and efficient such as rainwater harvesting and the recycling of purified wastewater;
 - ⌘ Development and implementation of structural and non-structural risk management plans/measures to reduce damage by water-related disasters.
 - ⌘ Development and implementation of plans for flood control, drainage improvements, drought, disaster response and preparation for sea level rise;
 - ⌘ Development and implementation of plans for the redesign and re-engineering of infrastructure, as necessary, to withstand extreme events or to perform under changed circumstances;
 - ⌘ Involvement of women and young people in the supply, management and maintenance of water resources and in risk reduction;
- ⁴The following local and regional governments requested to keep the reference to inter-basin water transfers: Generalitat Valenciana, Comunidad Autónoma de la Región de Murcia (Spain), Inter Mediterranean Committee of the Conference of Peripheral Maritime Regions(CIM-CPMR)
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- ⌘ Utilization of innovative and locally-adapted technologies for increased efficiency and coverage of water and sanitation systems;
 - ⌘ Provision of incentives for the transfer of education, training and technology in order to assure sustainable water management and economic development.