



The economic crisis

consequences for the
environment and the churches

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Council of Churches Netherlands
consultation group for societal questions

The economic crisis: did it really open our eyes?



Blinded by economic recovery: the golden calf revisited?



Do you still remember him?



Mr. Marc Ravalomana, former president of Madagascar (1986-2009)



Presidency watered down: goodbye Mr. Ravolomana



The president was forced to step down in March 2009, due to serious water scarcity problems in the
Republic of South-Korea

Bron: The Economist 23 mei 2009

Food security problems in South Korea

'...There are serious food security problems in South Korea related to water scarcity...'

'...Daewoo Logistics, a South Korean firm, negotiated with the president to lease about the half of Madagascar's arable land for corn production for a period of 99 years..'

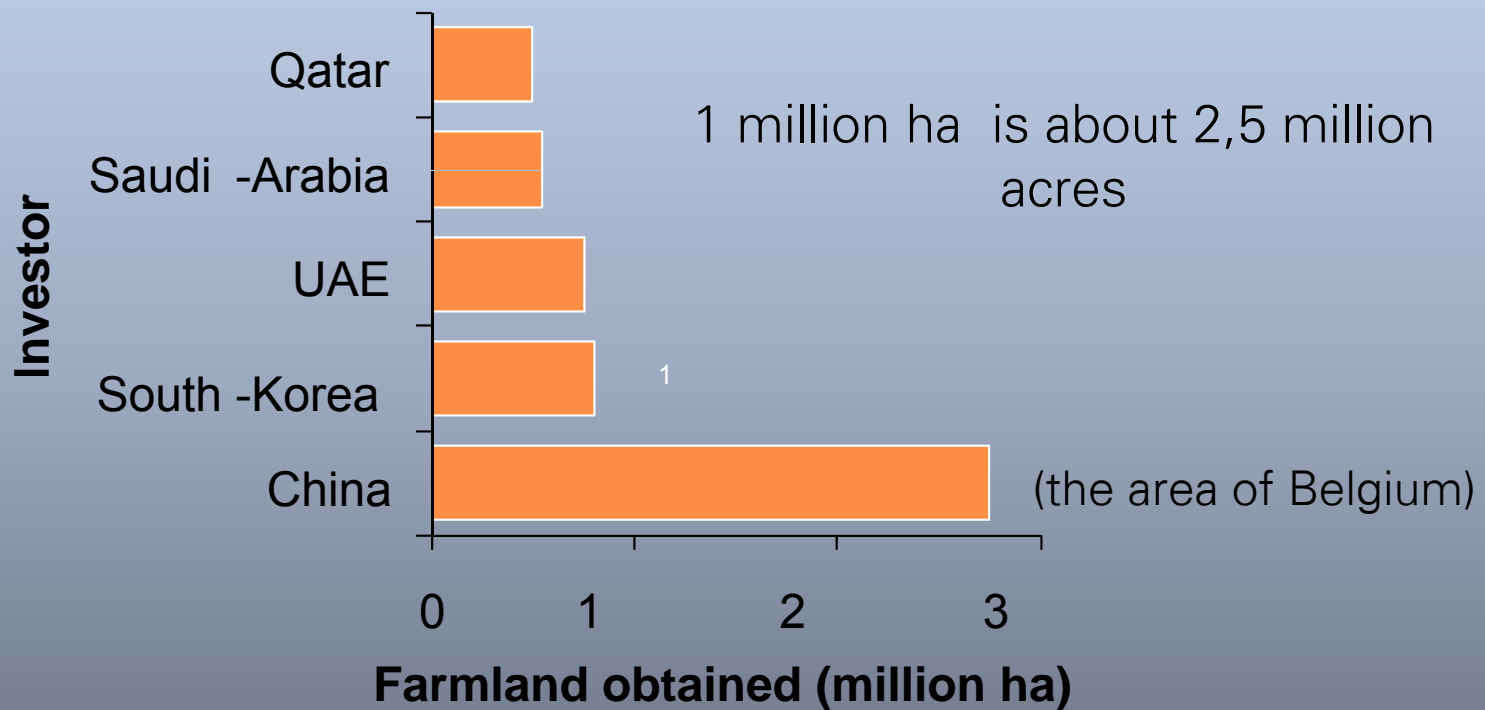
'...The anger of Madagascar's population has led to the abdication of the president ...'

'...One of the first decisions of the new leaders was to cancel the Daewoo-deal...'

Source: The Economist 23 May 2009

National water scarcity problems lead to outsourcing of food production abroad (land lease)

Buying farmland abroad (2006-2009)



Source: The Economist 23 May 2009, page 60



**Water scarcity:
a serious global
problem
eclipsed by
the economic
crisis**

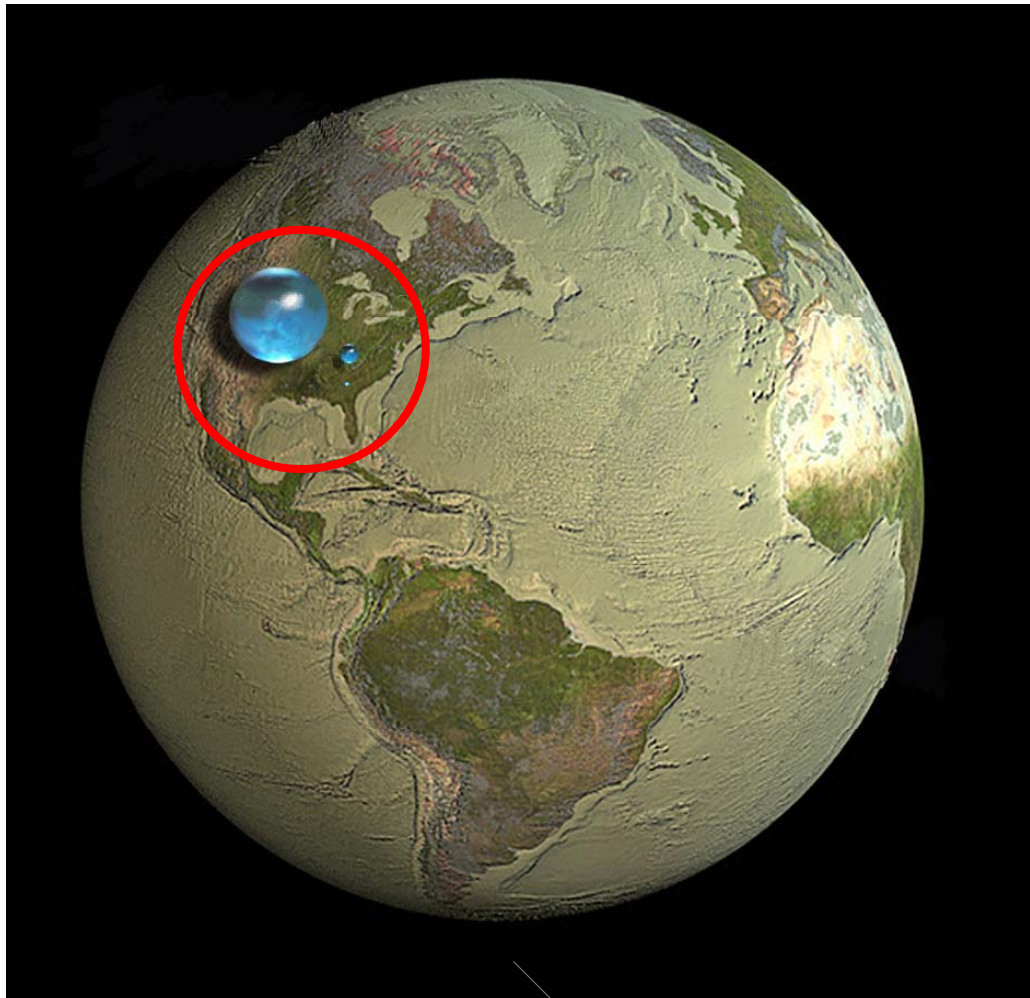
Overview of presentation

1. Introduction
2. Background on global water scarcity: facts and figures
3. Environmental factors
4. Use of water and the consequences of water scarcity
5. The relation between developed economies and water scarcity
6. The role of churches

Water on our planet seems abundantly present....



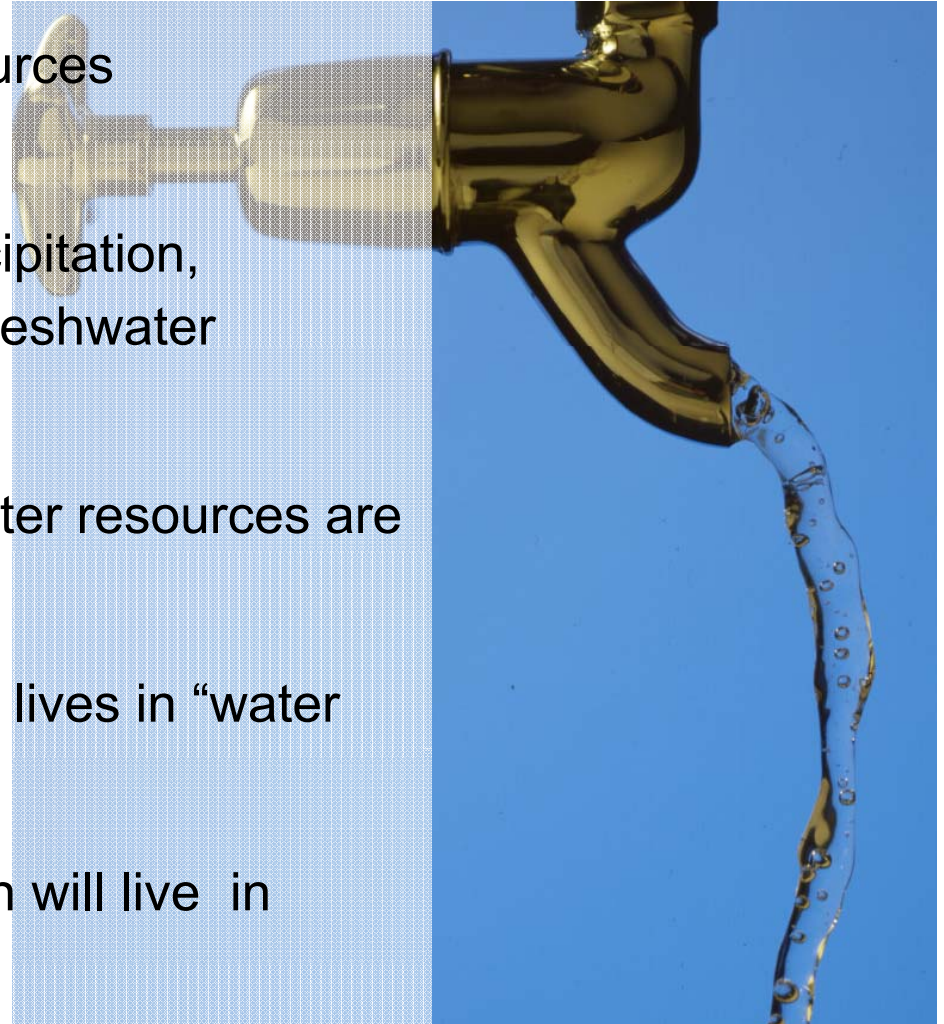
Just a tiny fraction of our planet consists of water



- **Water in and upon the earth**
- **Liquid freshwater**
- **Freshwater in rivers and lakes**

And...

- Only 1% of the global water resources are available as freshwater
- A very substantial amount of precipitation, needed to replenish our natural freshwater resources, is not utilized
- For 1.000 million people, freshwater resources are not accessible
- One third of the global population lives in “water stressed” areas
- In 2025 two third of the population will live in “water stressed” areas



Alarming trends

- **The increasing world population**

More water needed for a fast growing global population

- **Fast urbanisation**

Strongly expanding global cities put excessive claims on available water resources

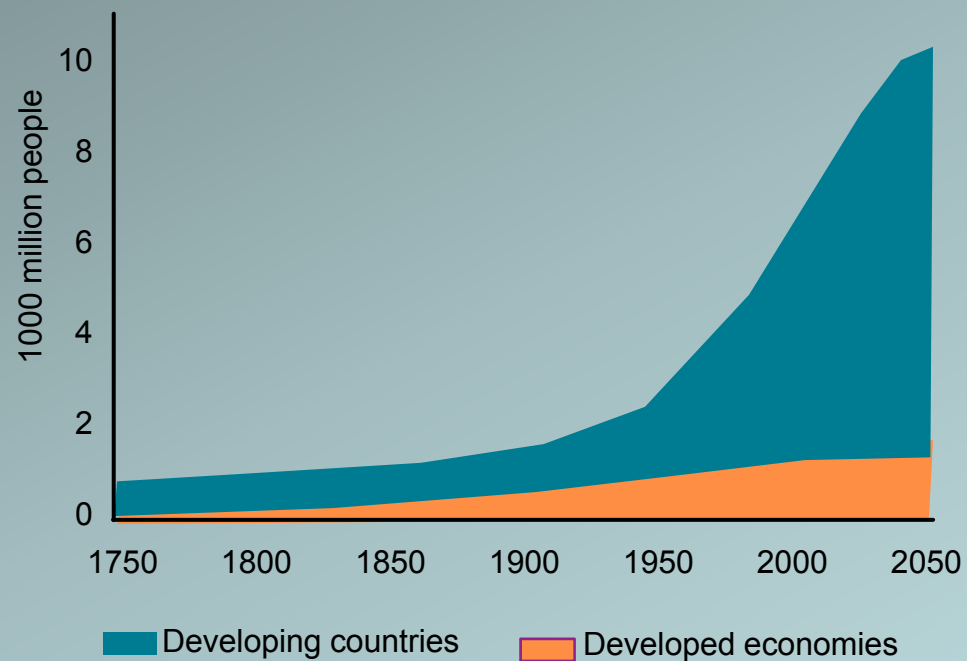
- **Changing consumer patterns**

Changing consumer behaviour in developing economies will increase water demand

- **Excessive use and waste of freshwater**



A growing world population



Source: United Nations Population Division and Population Reference Bureau, 1993

Alarming trends

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Superslurpers: the fast emerging megacities

Already 50% of the global population lives in big cities ; in 2050 this will be 70%.

The population in the big cities increases daily by 170.000 inhabitants.



Source: Olivier Molenkamp, 2009 La Paz

Alarming trends

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More water needed for a fast growing global population

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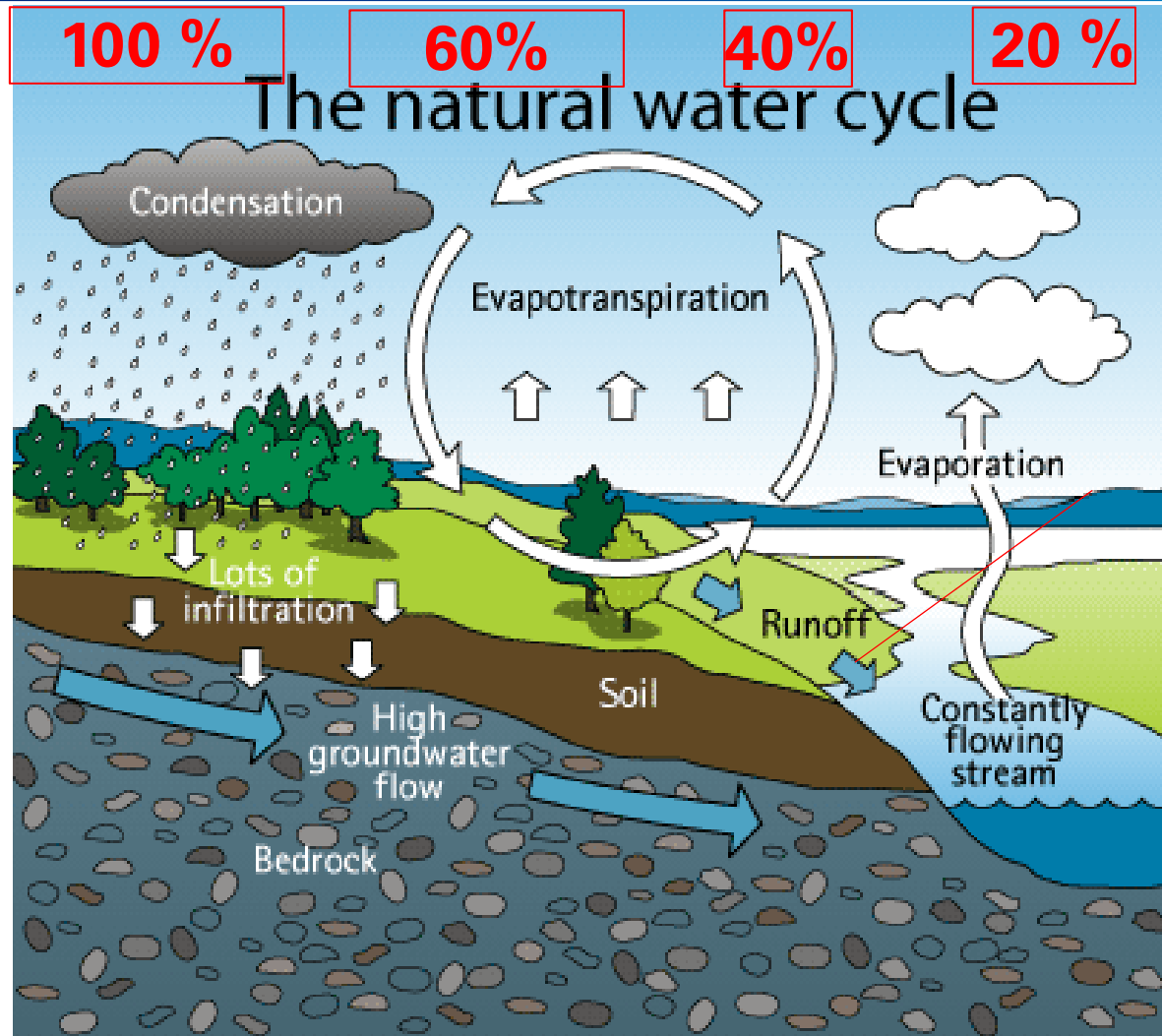
- **Changing consumer patterns**

Changing living standards and consumer behaviour in developing economies will increase water demand

- **Excessive use and waste of freshwater**



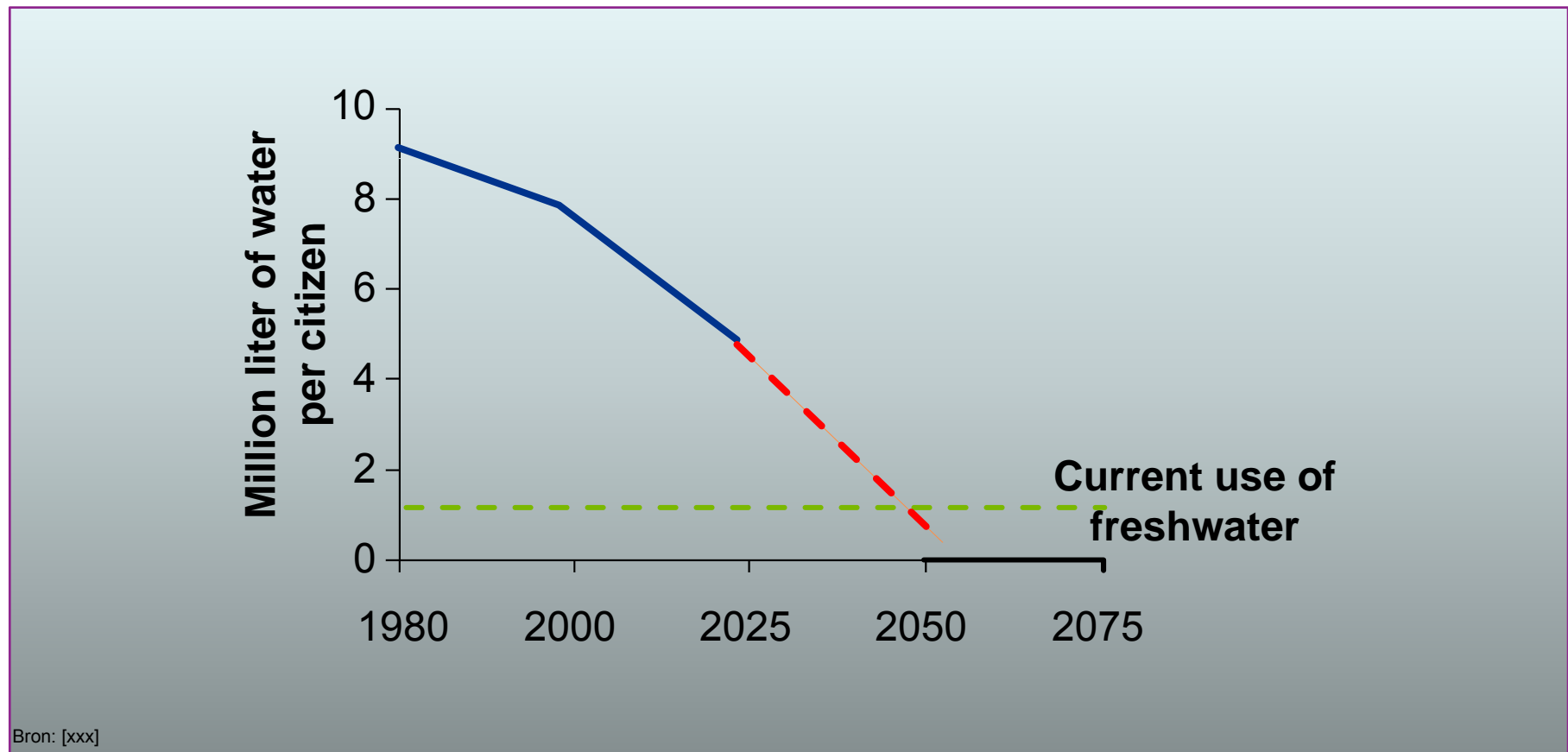
The water cycle



Available
freshwater
for
human use

Shrinking amount of global available freshwater

Average availability of water per global citizen



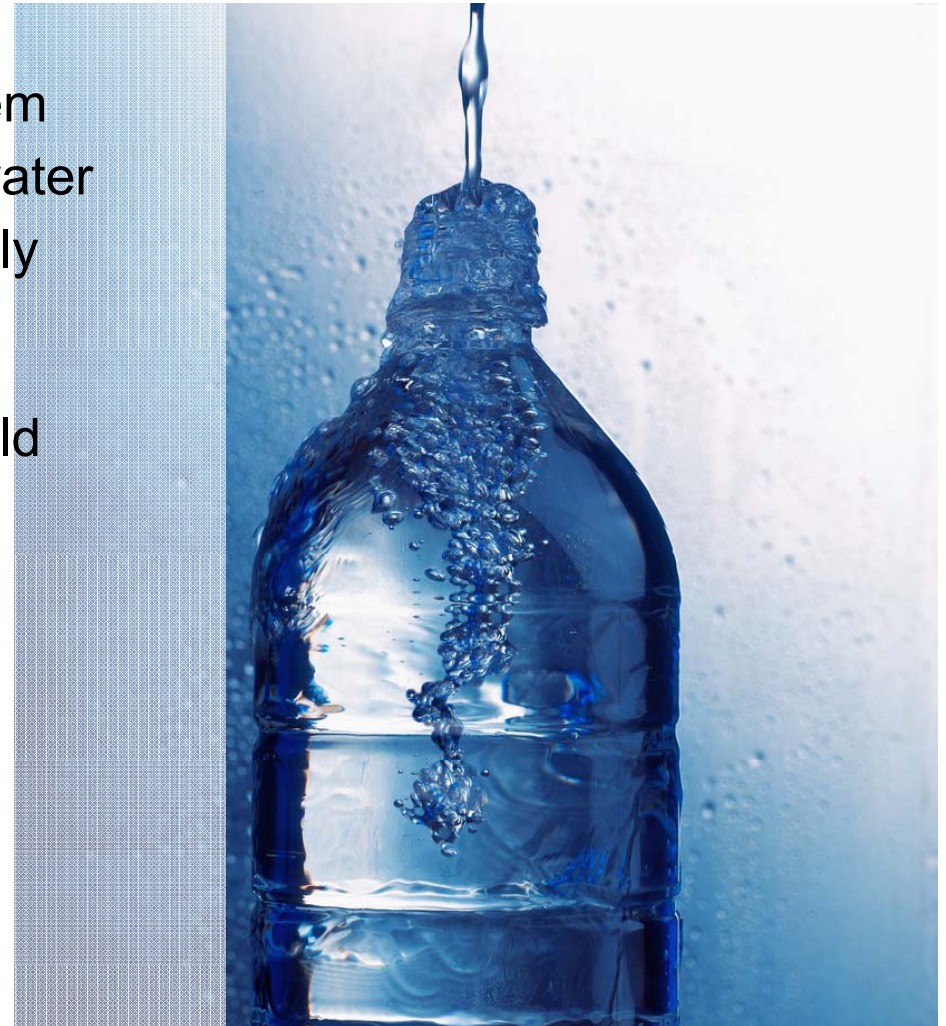
At first sight the problem does not seem to be urgent....

There would not be an urgent problem if all available and renewable freshwater resources could be distributed equally among the world population

In that case every global citizen would have:

5 million liter of freshwater annually at his / her's disposal

But.....



But...

- Precipitation, the main natural supply of freshwater, is geographically unevenly distributed
- 2/3 of the global population lives in areas receiving only 1/4 of the global precipitation (**physical water scarcity**)
- The amount of precipitation is subject to seasonal conditions and may show extreme patterns (drought and flooding)
- Collection and storage of freshwater in wet seasons is economically not feasible in many places (**economic water scarcity**)



Waterstorage (India)



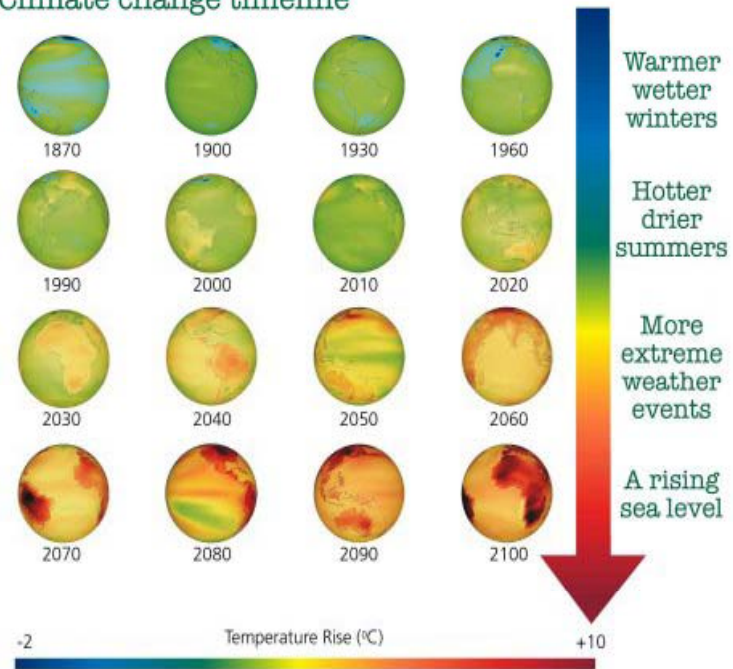
And there are environmental threats...

- Climate change (drought and flooding)
- Global freshwater supplies are deteriorated by climate change: melting glaciers
- Deforestation impacts freshwater supply



Climate change

Climate change timeline



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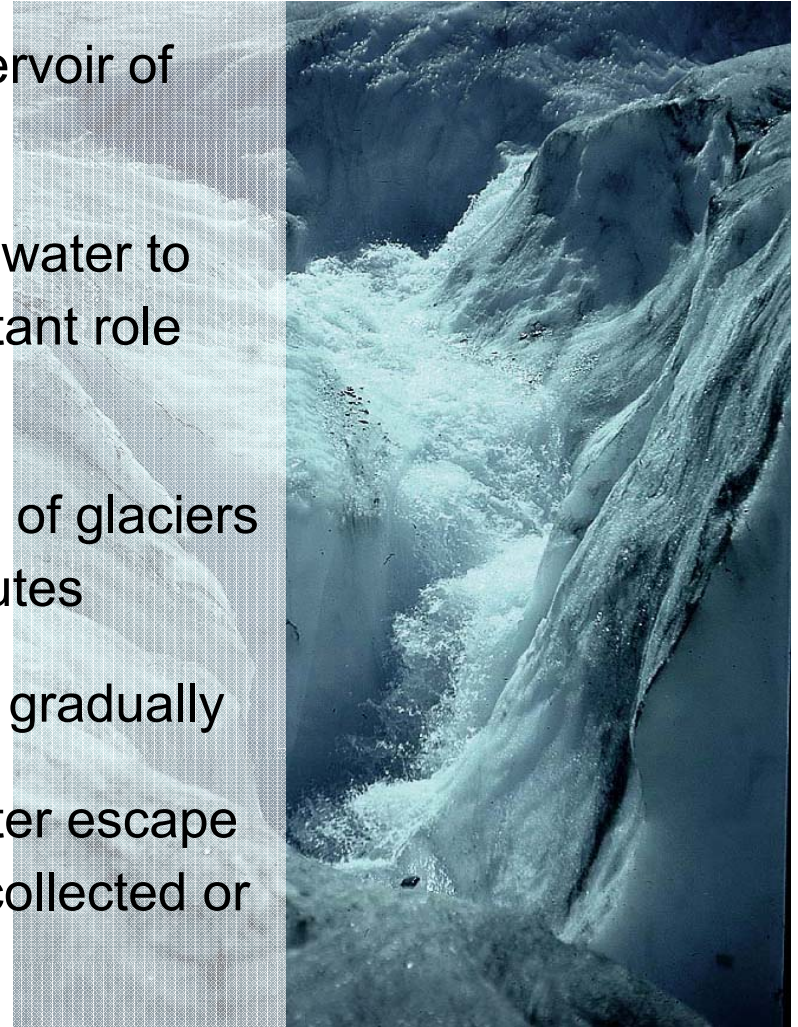
Glaciers are affected by climate change globally...



Source: Himalaya,
David Breashears

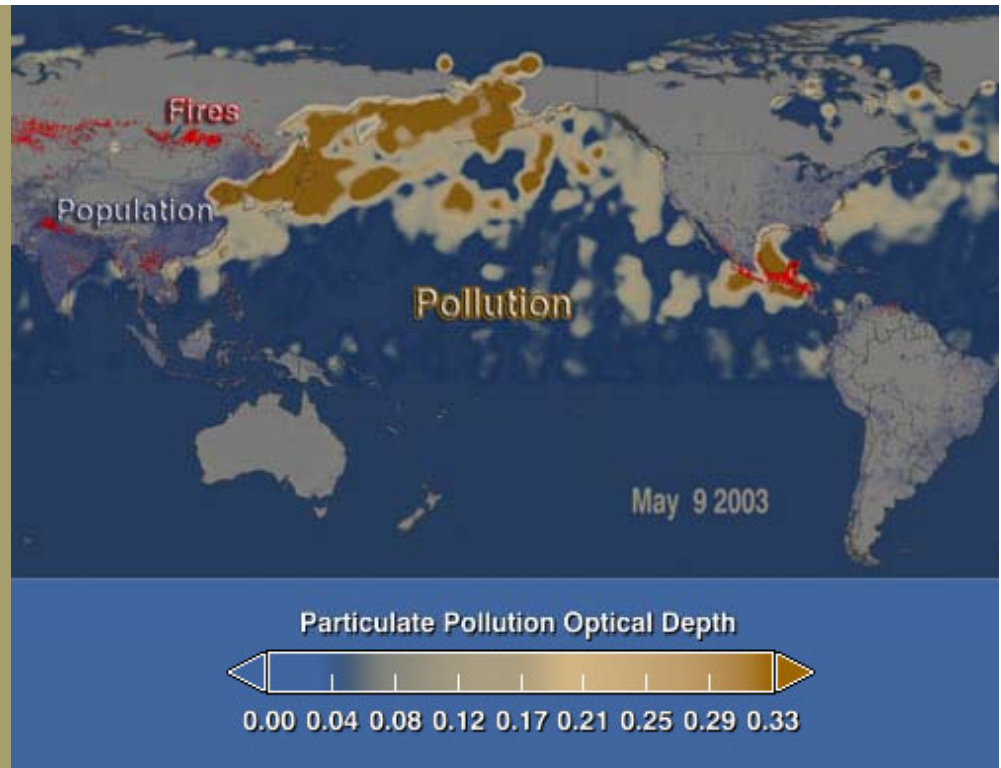
...With dramatic consequences for freshwater resources...

- Glaciers constitute a huge frozen reservoir of freshwater (buffer function)
- By supplying a constant flow of melting water to rivers and lakes, glaciers play an important role in sustaining the freshwater resources
- Global warming accelerates the melting of glaciers in a much higher rate than nature restitutes
- The buffer function of glaciers subsides gradually
- Huge amounts of precious melting water escape to the seas and oceans without being collected or used properly

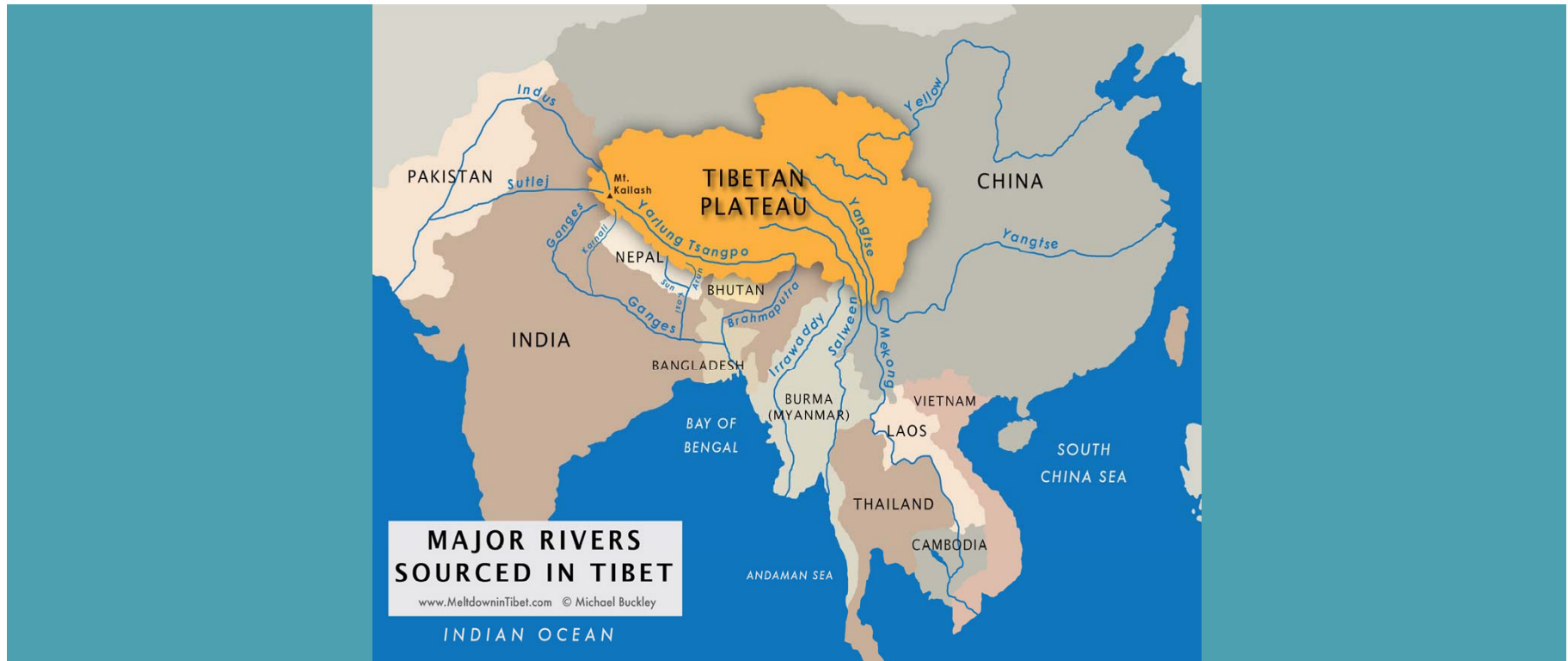


Asian Brown Clouds

Particulates in polluted air (traffic, forest fires) absorb heat and accelerate melting



Glaciers are vital for freshwater supply in large areas

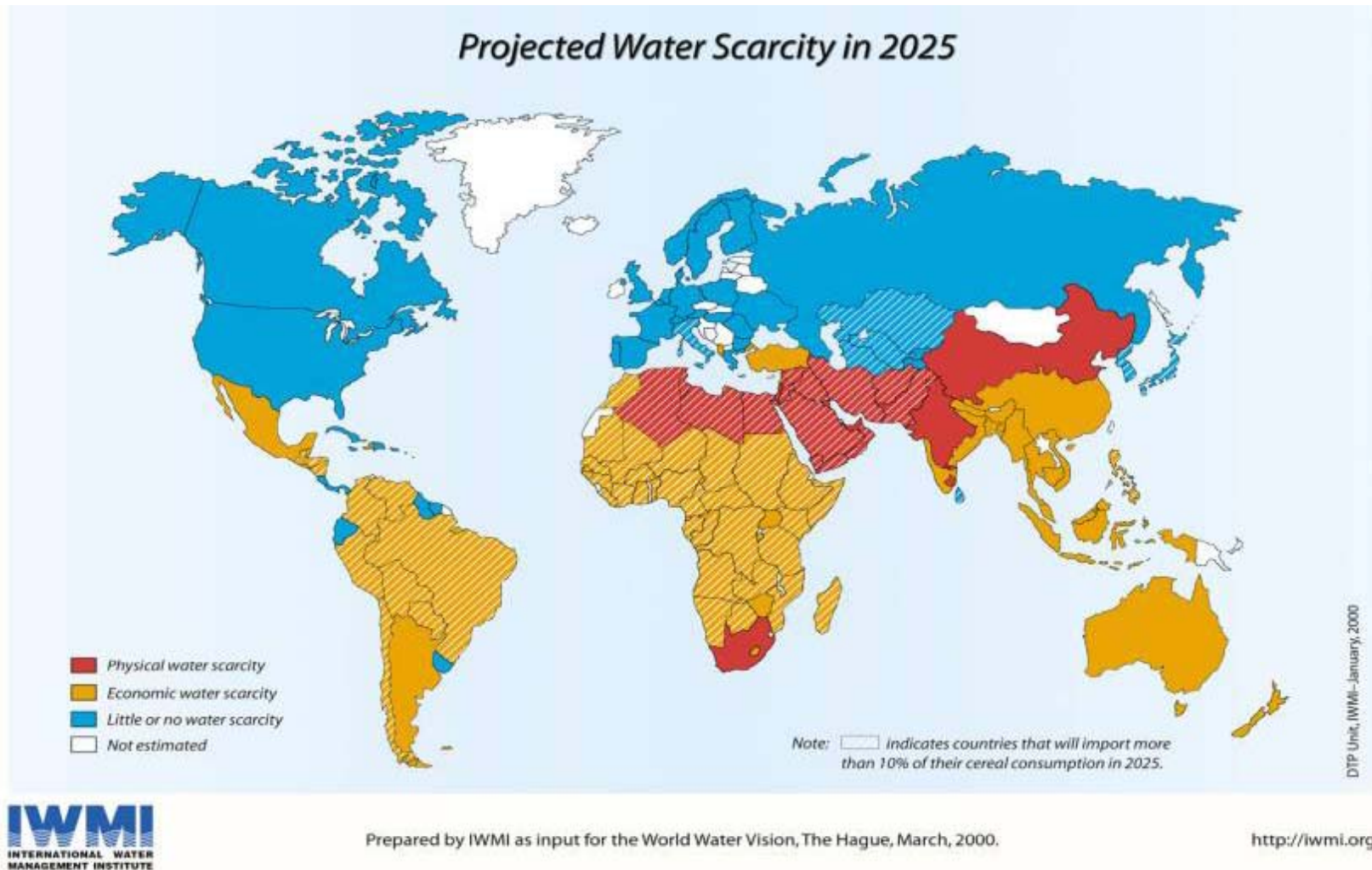


Deforestation takes its toll

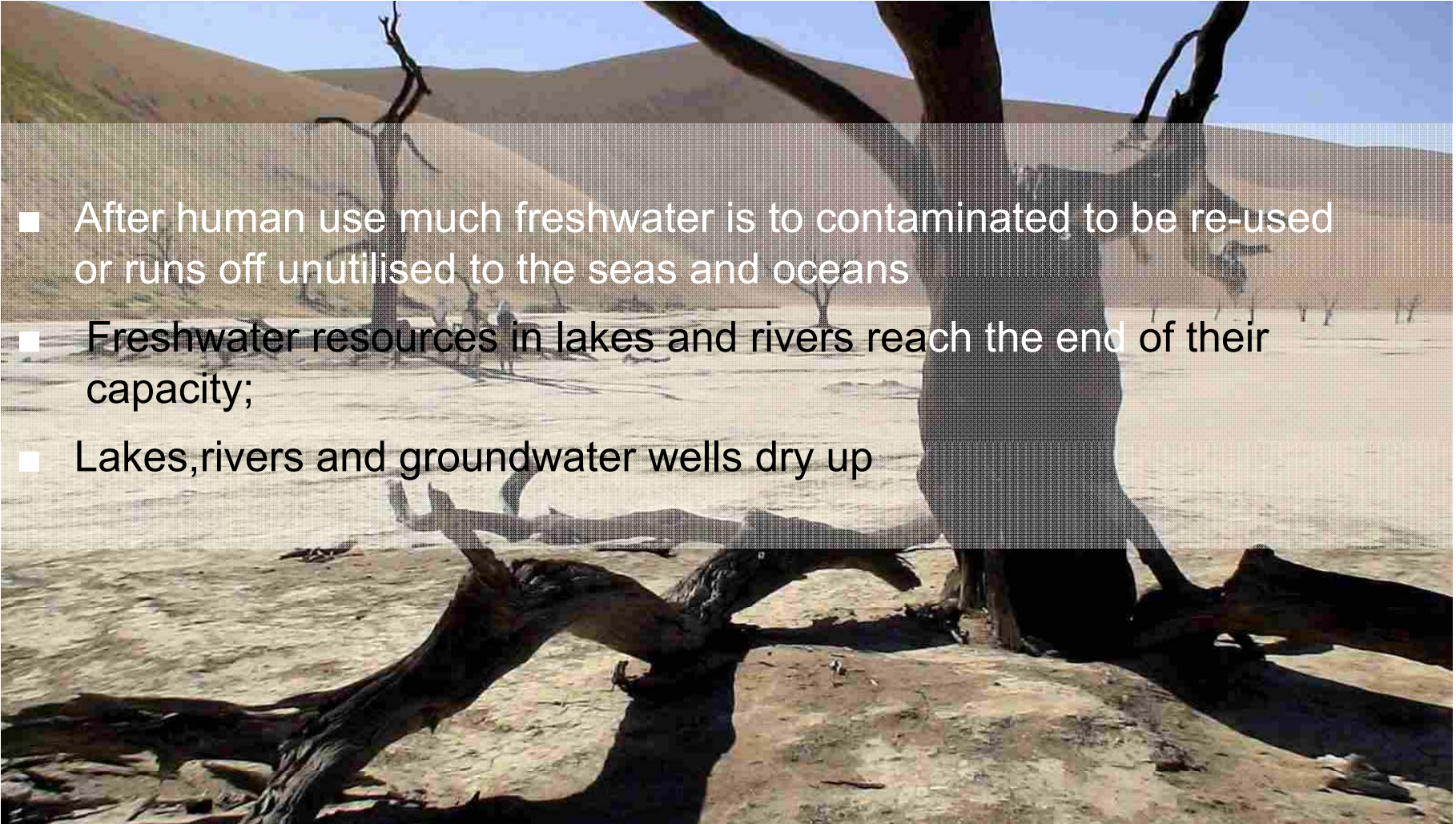
- Regional disturbances of precipitation patterns (loss of precipitation catching capacity)
- Decrease of evotranspiration
- Loss of soil water catching capacity



Water scarcity projection



Excessive human use of freshwater resources: consequences

- 
- After human use much freshwater is too contaminated to be re-used or runs off unutilised to the seas and oceans
 - Freshwater resources in lakes and rivers reach the end of their capacity;
 - Lakes, rivers and groundwater wells dry up

For many a desperate situation



Weining county, Guizhou province, in March 2012

Running out of water...

Yan river, Shaanxi Province (China)

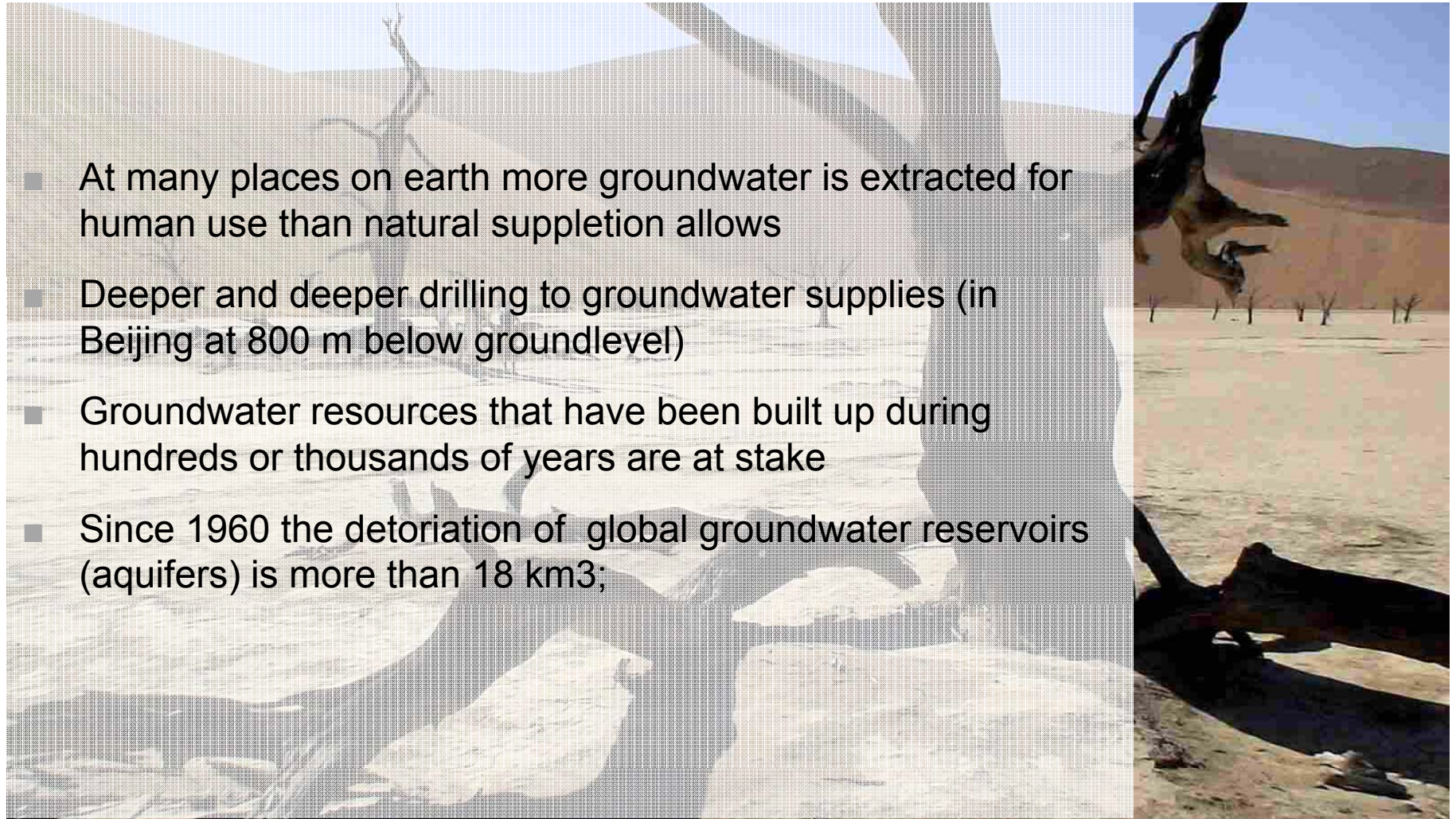


Drilling to aquifers (groundwater): the ultimate solution?



Exhaustion of precious groundwater resources

- At many places on earth more groundwater is extracted for human use than natural suppletion allows
- Deeper and deeper drilling to groundwater supplies (in Beijing at 800 m below groundlevel)
- Groundwater resources that have been built up during hundreds or thousands of years are at stake
- Since 1960 the deterioration of global groundwater reservoirs (aquifers) is more than 18 km³;



Groundwater resources are not unlimited...



Even a giant faces limits to growth...China...

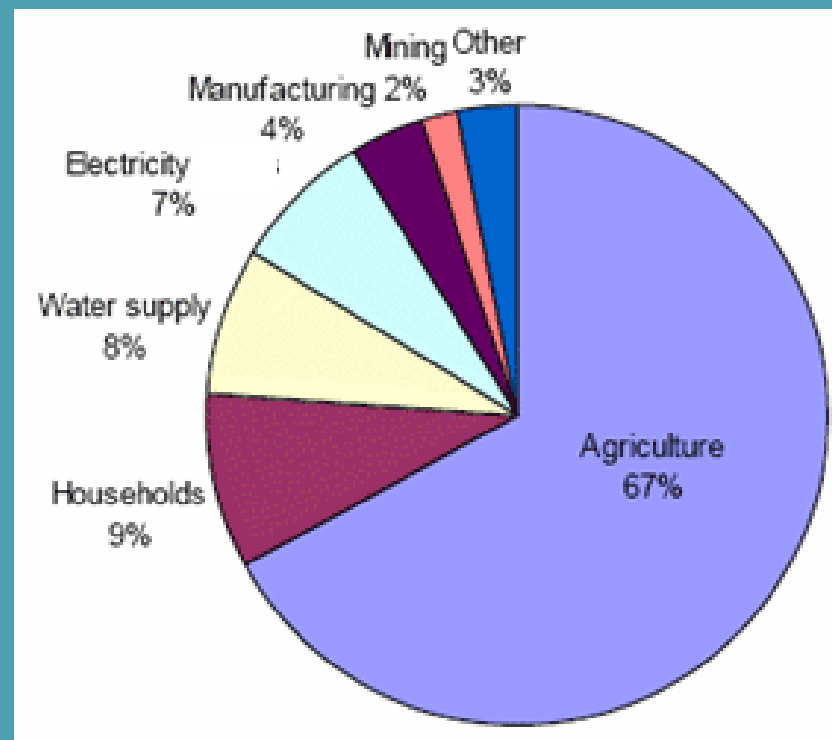


Groundwater depletion the last 50 years globally is 50 times the volume of the The IJsselmeer, a former inner sea

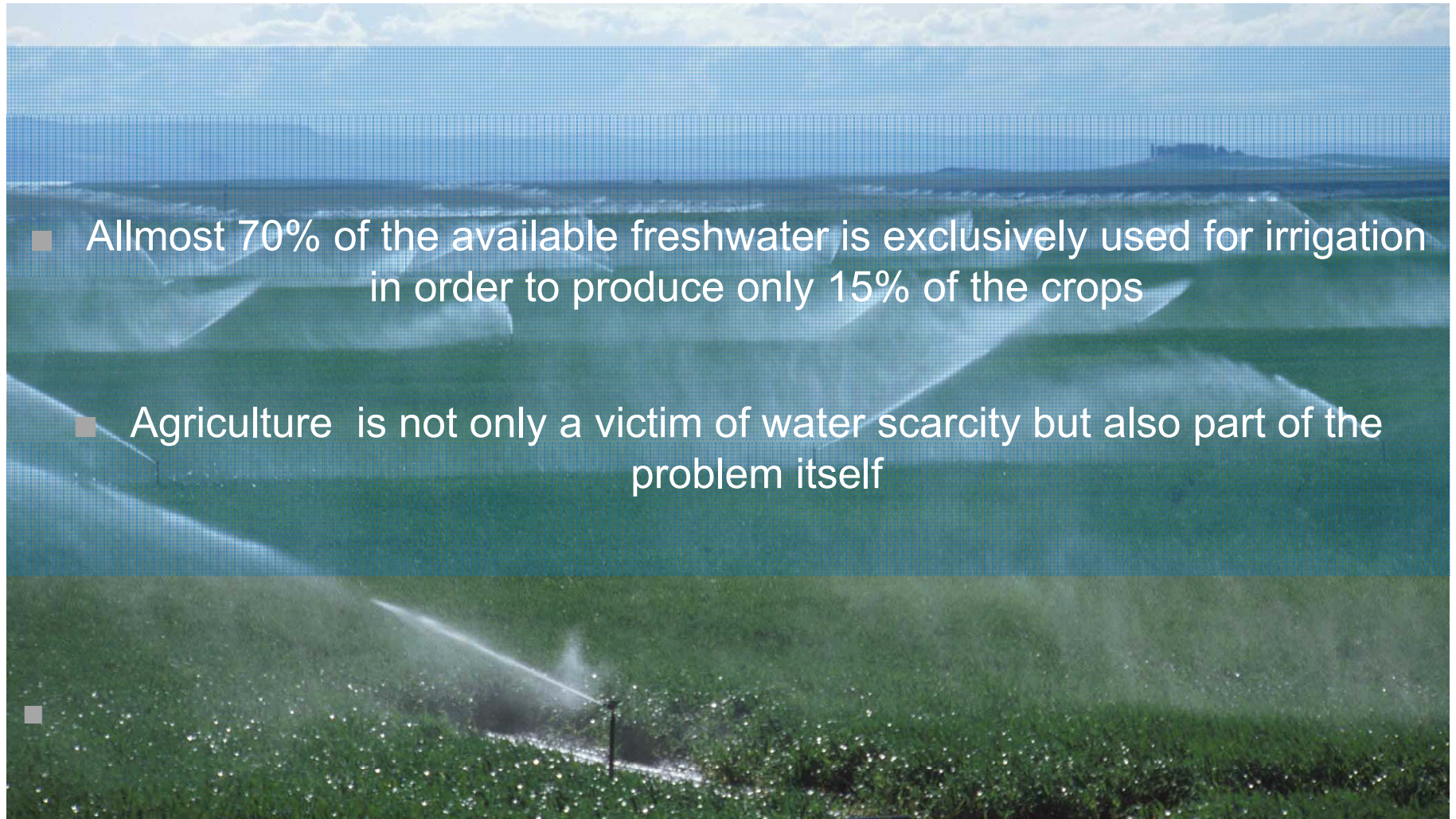


How is freshwater used?

Global use of freshwater



In agriculture most of the freshwater globally is used for irrigation

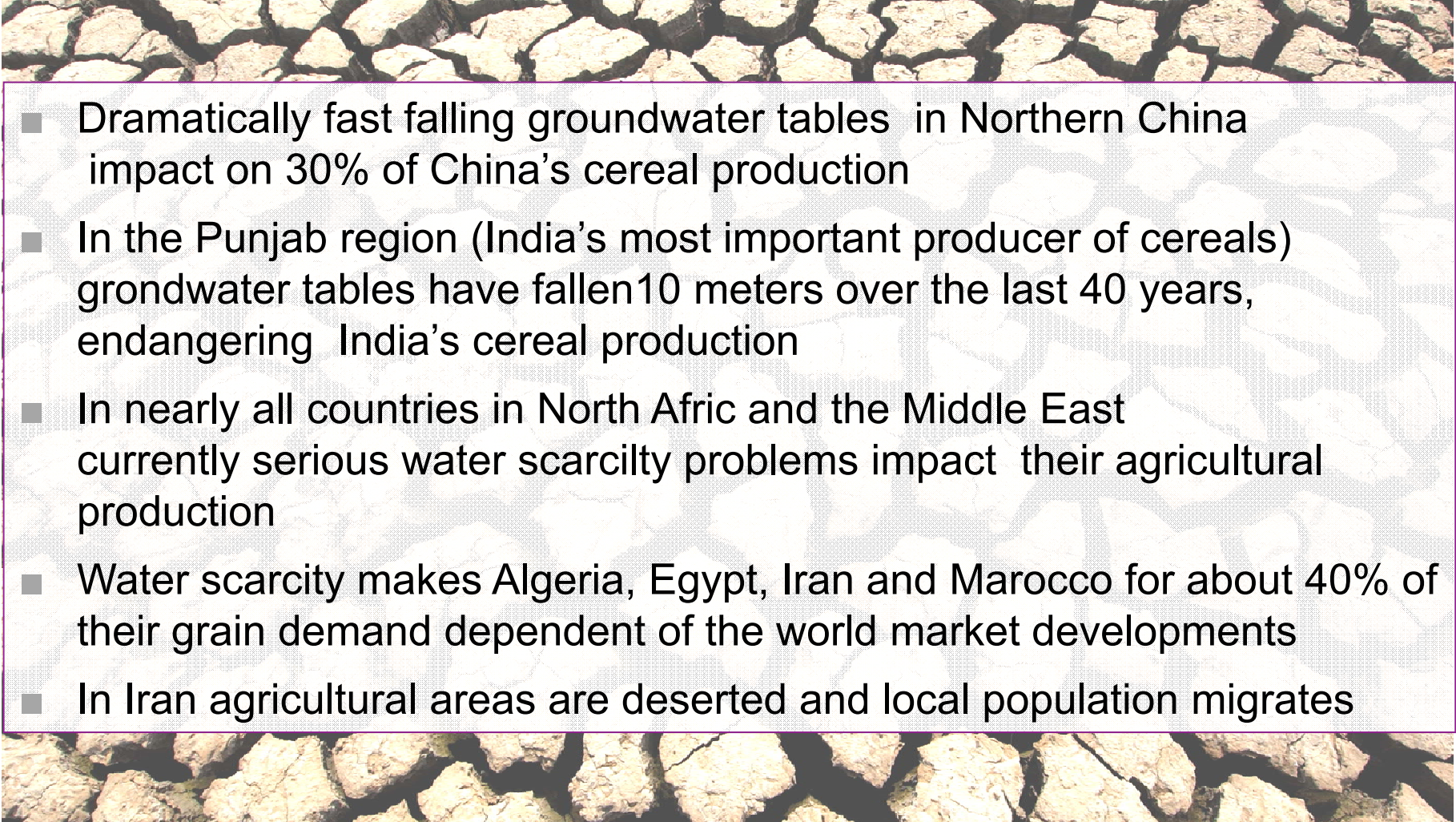


- Almost 70% of the available freshwater is exclusively used for irrigation in order to produce only 15% of the crops
- Agriculture is not only a victim of water scarcity but also part of the problem itself

Water scarcity has many consequences particularly for food security and its social impact



Impact of water scarcity on agriculture

- 
- Dramatically fast falling groundwater tables in Northern China impact on 30% of China's cereal production
 - In the Punjab region (India's most important producer of cereals) groundwater tables have fallen 10 meters over the last 40 years, endangering India's cereal production
 - In nearly all countries in North Africa and the Middle East currently serious water scarcity problems impact their agricultural production
 - Water scarcity makes Algeria, Egypt, Iran and Morocco for about 40% of their grain demand dependent of the world market developments
 - In Iran agricultural areas are deserted and local population migrates

Example: a very serious situation in Iran



Water scarcity is going to be hardest felt in the agricultural sector (90% of its water supply) 13% of Iran's GDP en 23% of its employment

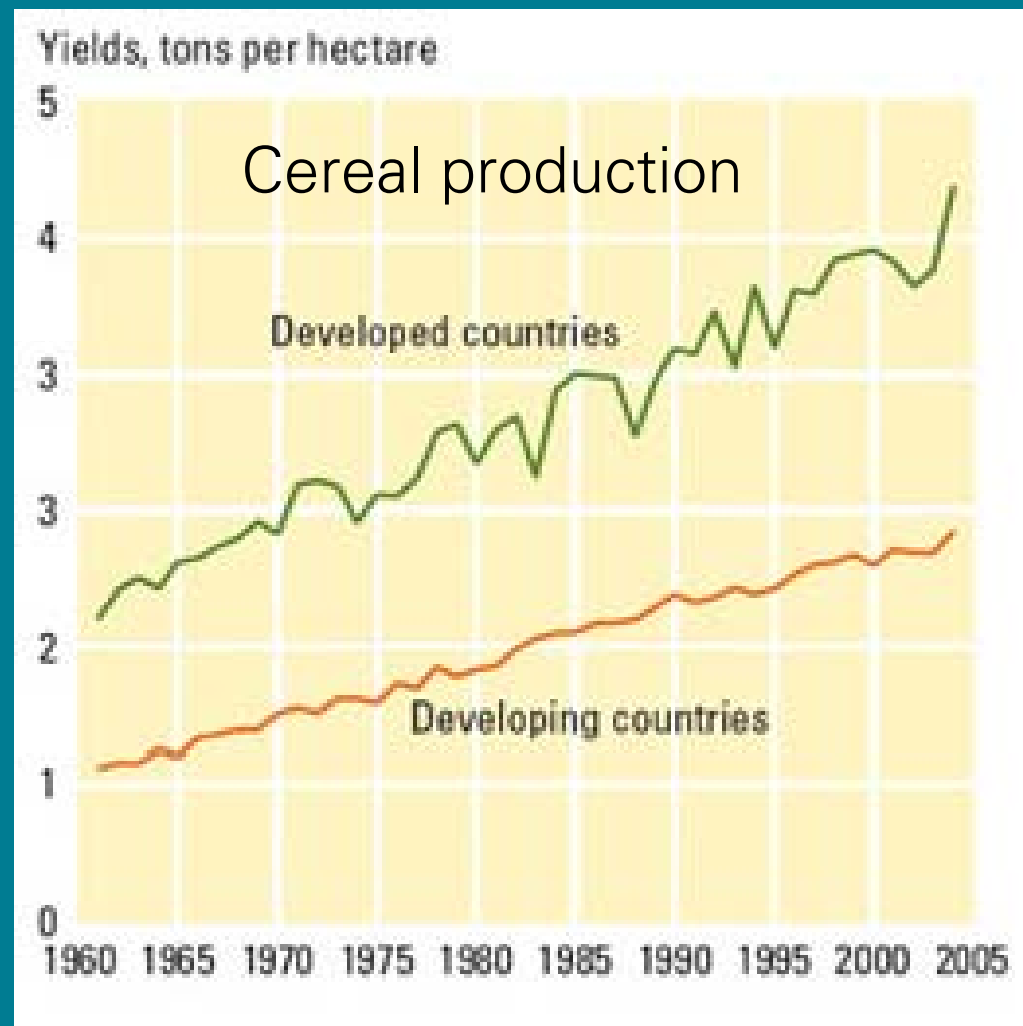


Water shortage is currently one of Iran's main problems and challenges for its future

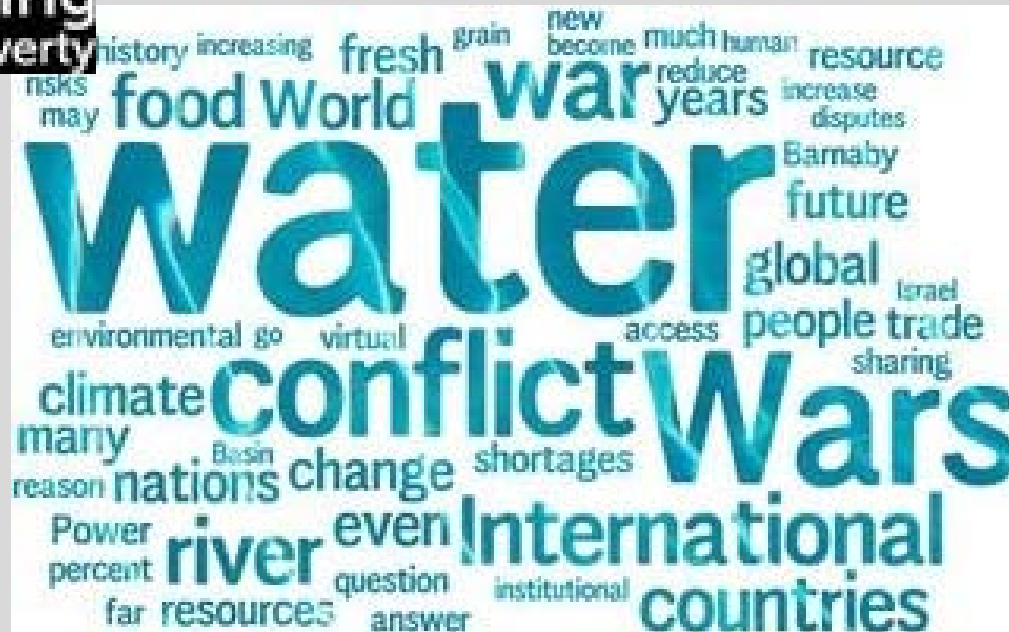
..While the world demand for food is increasing..



..And cereal production yields in the developing countries are lagging behind..



Water scarcity in relation to food security triggers international and intranational conflicts and endangers peace



Who / what to blame? (1)



Growing world population? Urbanization?

Climate change and deforestation?

Economic pressures/ free world trade?

Poor agricultural production and distribution methods?

Agricultural science and technology?

Poor water management practices ?

Water pollution? Lack of water recycling?

Lack of awareness and education in developing economies?

Resistance to change?

Irresponsible and excessive use of natural resources?

Lack of financial resources or willingness to invest?

Poor governance of nations?

Our lifestyle and food choices influence the larger world



Guess our daily consumption of freshwater in The Netherlands per capita



The import of food (raw) materials deprive other nations of large freshwater resources

Use of freshwater abroad for imported products

In cubic km (km³)

1	U.S.A.	176
2	Germany	106
3	Japan	98
4	France	72
5	The Netherlands	69
6	United Kingdom	64

Source: Chapagin en Hoekstra, 2004

A virtual flooding disaster

The entire surface of The Netherlands covered by 1,6 m of water



Much water abroad needed to produce our food

Liters of water needed for production

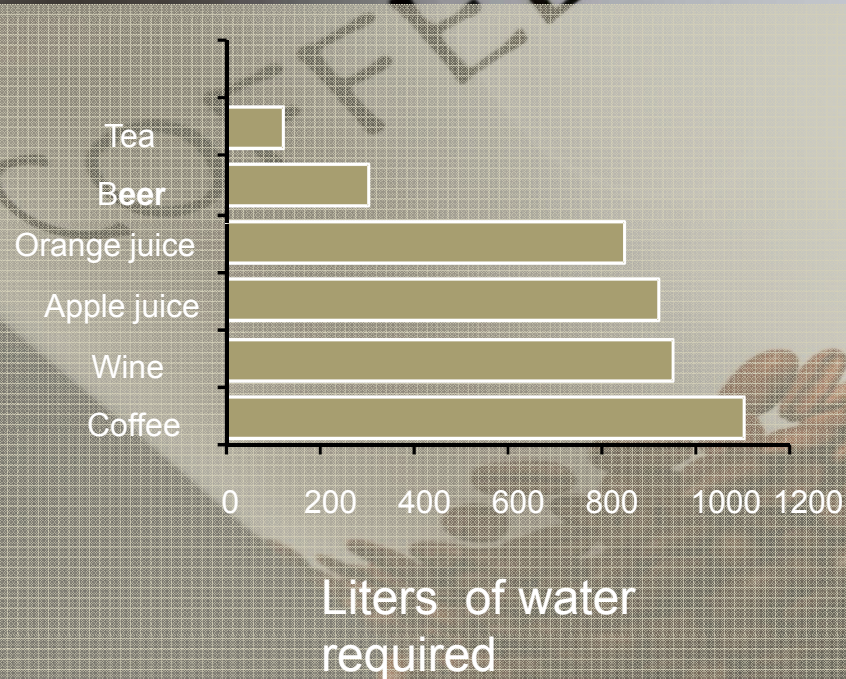
Cattle	1	4.000.000
Sheep	1	500.000
Poultry	1 kg	6.000
Soja	1 kg	2.000
Rice	1 kg	1.900
Palmoil	1 kg	2.000
Citrus	1 kg	1.000



Bron: FAO, 1997

Daily food and beverage consumption

Needed for the production of 1 liter

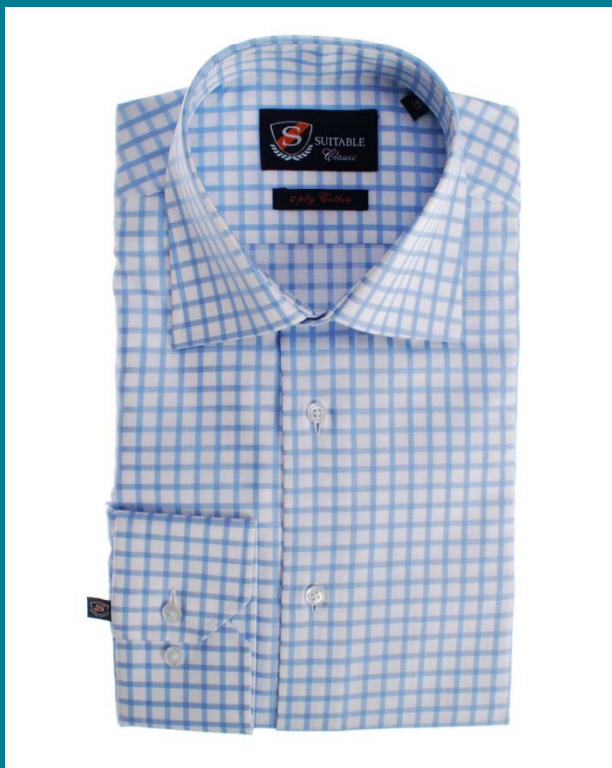


Source: 'The world's water 2008-2009', Peter Gleick, Island Press

50% of our food will never be eaten and water resources have been used superfluously



Other agricultural products claim also much freshwater



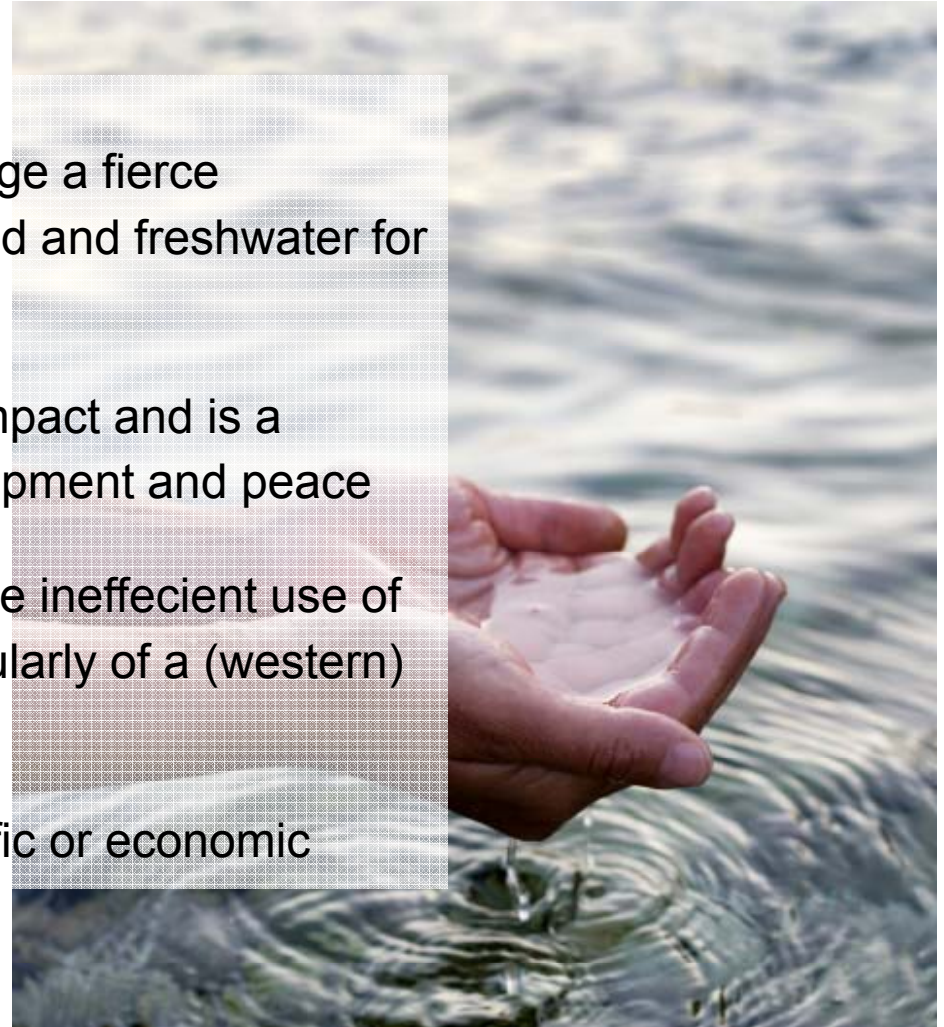
2.700 liter of water



11.000 liter of water

Conclusions

- In the years to come we may envisage a fierce competition between nations for land and freshwater for food security
- Water scarcity has a huge social impact and is a serious threat for sustainable development and peace
- Water scarcity is directly related to the inefficient use of our renewable resources and particularly of a (western) lifestyle focused on consumerism
- There is no lack of technical, scientific or economic solutions: there is still time to act





Epilogue

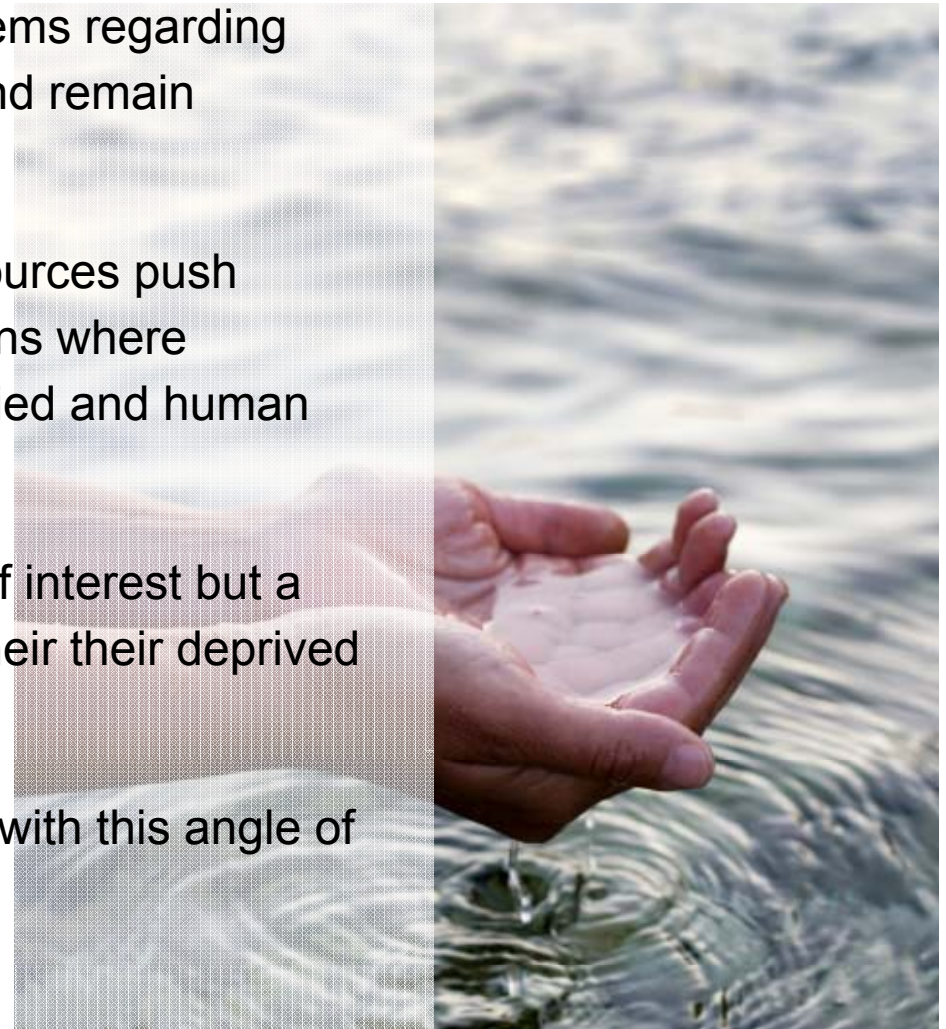
The role of churches?

Food for thought



Food for thought (1)

- We cannot accept the growing problems regarding waterscarcity and its social impact and remain indifferent
- Our lifestyle and wasteful use of resources push a part of humanity into living conditions where primary living needs cannot be satisfied and human dignity is at stake
- For Christians it is not a matter of self interest but a matter of justice and solidarity with their their deprived neighbours
- Churches could position themselves with this angle of approach in the societal debate



Food for thought (2)

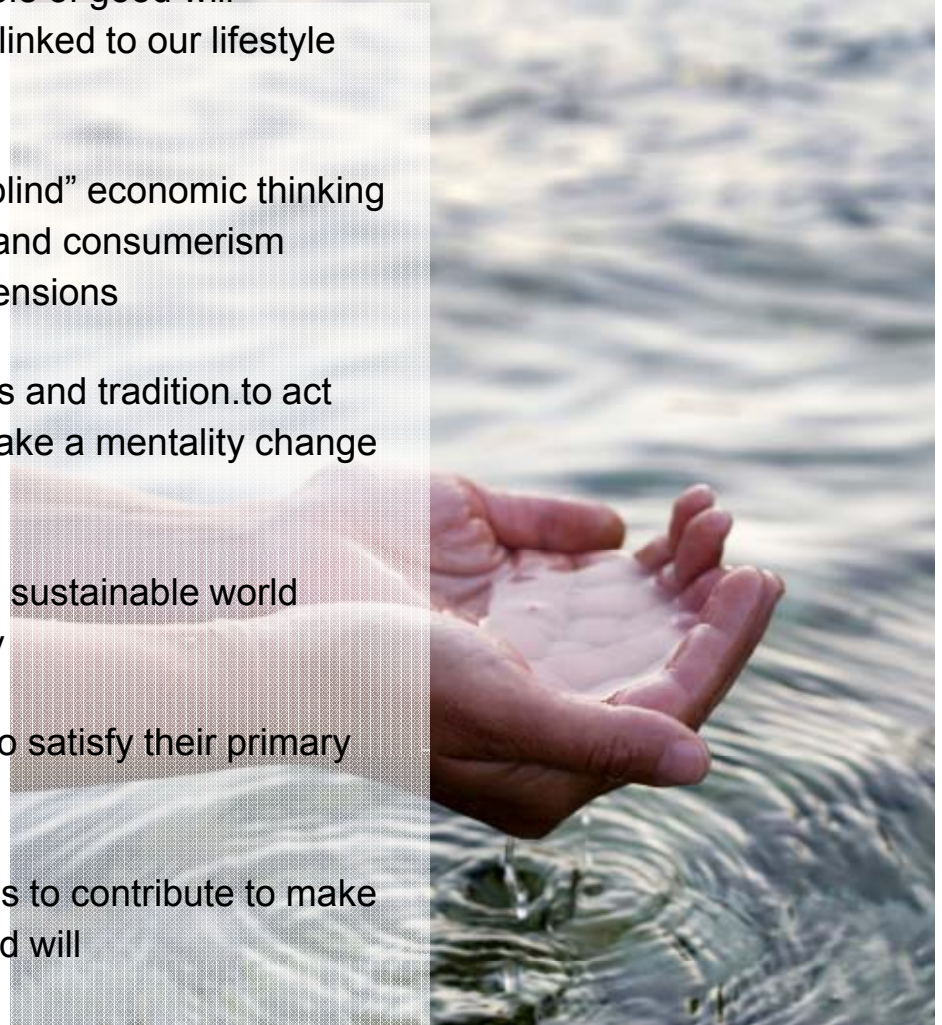
- *...it is necessary to overcome a purely consumerism focused mentality..*
- *.. to encourage ways of agricultural and industrial production..*
- *...respecting the Creation and satisfying the needs of people..*
- *....the real motives have to be found in searching for authentic worldwide solidarity inspired by values of love, justice and human wellbeing..*

Benedictus XVI, World Peace Day, 1-10-2010



What could churches do?

- Creating awareness among Christians and people of good will that water scarcity and foodsecurity are directly linked to our lifestyle
- Contribute to a mentality change to overcome “blind” economic thinking focused exclusively on increasing world trade and consumerism beyond the scope of human and ecological dimensions
- Help to inspire Christians by our Christian values and tradition.to act positively, creatively and with enthousiasm to make a mentality change possible...
- ...A mentality change that is needed to realize a sustainable world based on principles of justice and human dignity
- Advocating an austere lifestyle allowing others to satisfy their primary needs
- Advocating help (use our talents) and willingness to contribute to make changes possible in alliance with people og good will



How?

- There are many already existing projects and working groups and organizations within the WCC that have a relationship with water scarcity
- Create awareness or put more emphasis on the link with our (western) lifestyle and focus on consumerism lack of respect for our food
- Incorporate these issues in all the WCC activities with an interface to these problems (e.g. the Ecumenical Water Network)



Examples of activities for regional and local churches

- Include the waterscarcity problem and its relation to food in prayers and publications
- Create awareness among children via the education channels
- Show concern in contacts with politicians and decision makers
- Organize and attend conferences to create awareness
- Support community based initiatives and projects
- Set or highlight role models for austerity and responsible
- Support fundraising
- Invest in waterfunds (Social Responsible Investing)
- Support and highlight work of churches abroad in countries with problems
- Work together with NGO's

