



The GEF International Waters Conference, Cairns

October 24 – 25th 2009

International Water Law: the UN GA Resolution & TARM Governance: UNESCO-IAH-ISARM

Ambassador Chusei Yamada
Shammy Puri

Cairns Oct 2009

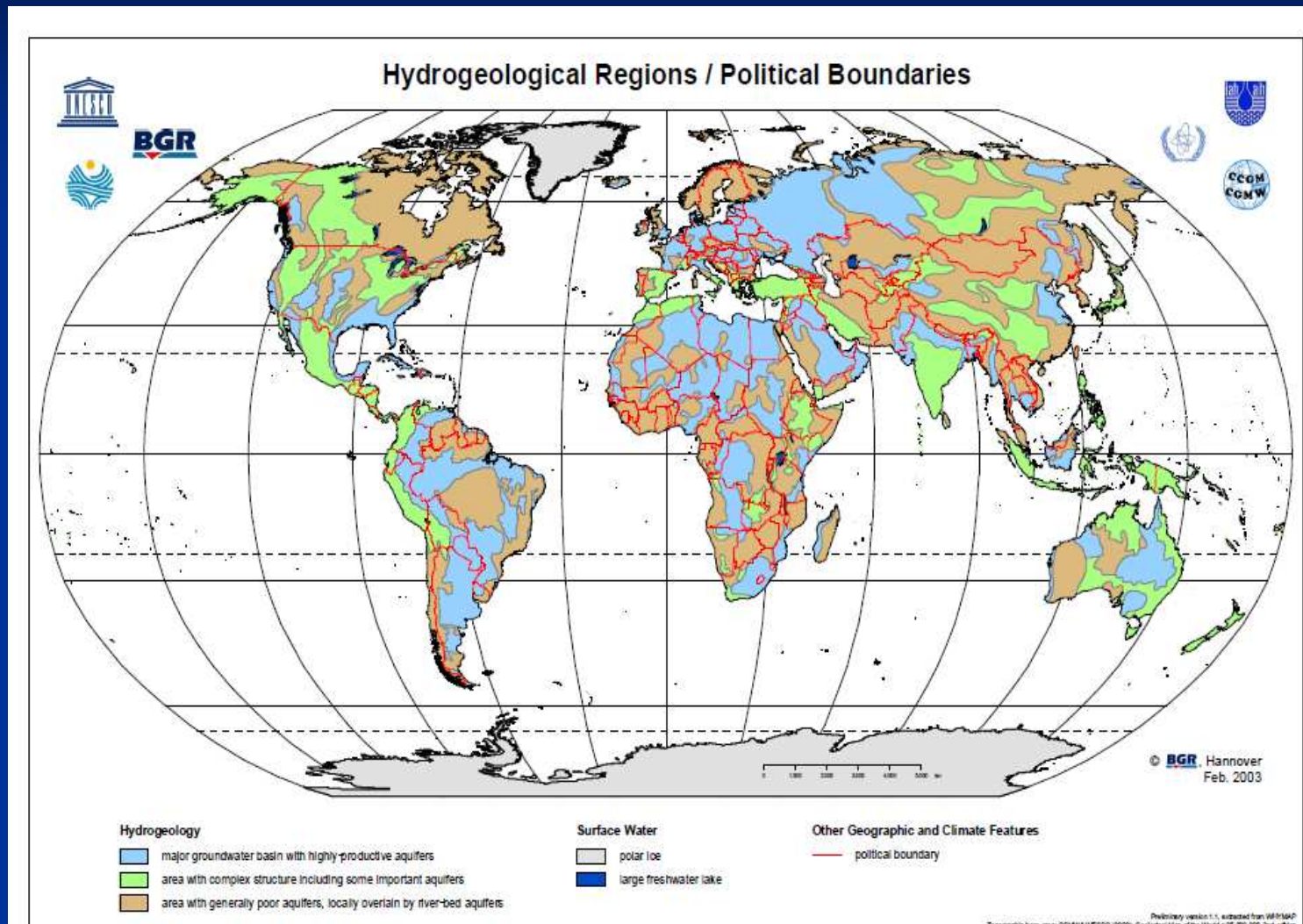
Codification of International Law for transboundary aquifers by the United Nations

Codification



- Sources of International Law
- International Treaties
- Customary International Law
 - International custom, as evidence of a general practice accepted as law (Article 38,1,b of the Statute of the International Court of Justice)

World Transboundary Aquifers

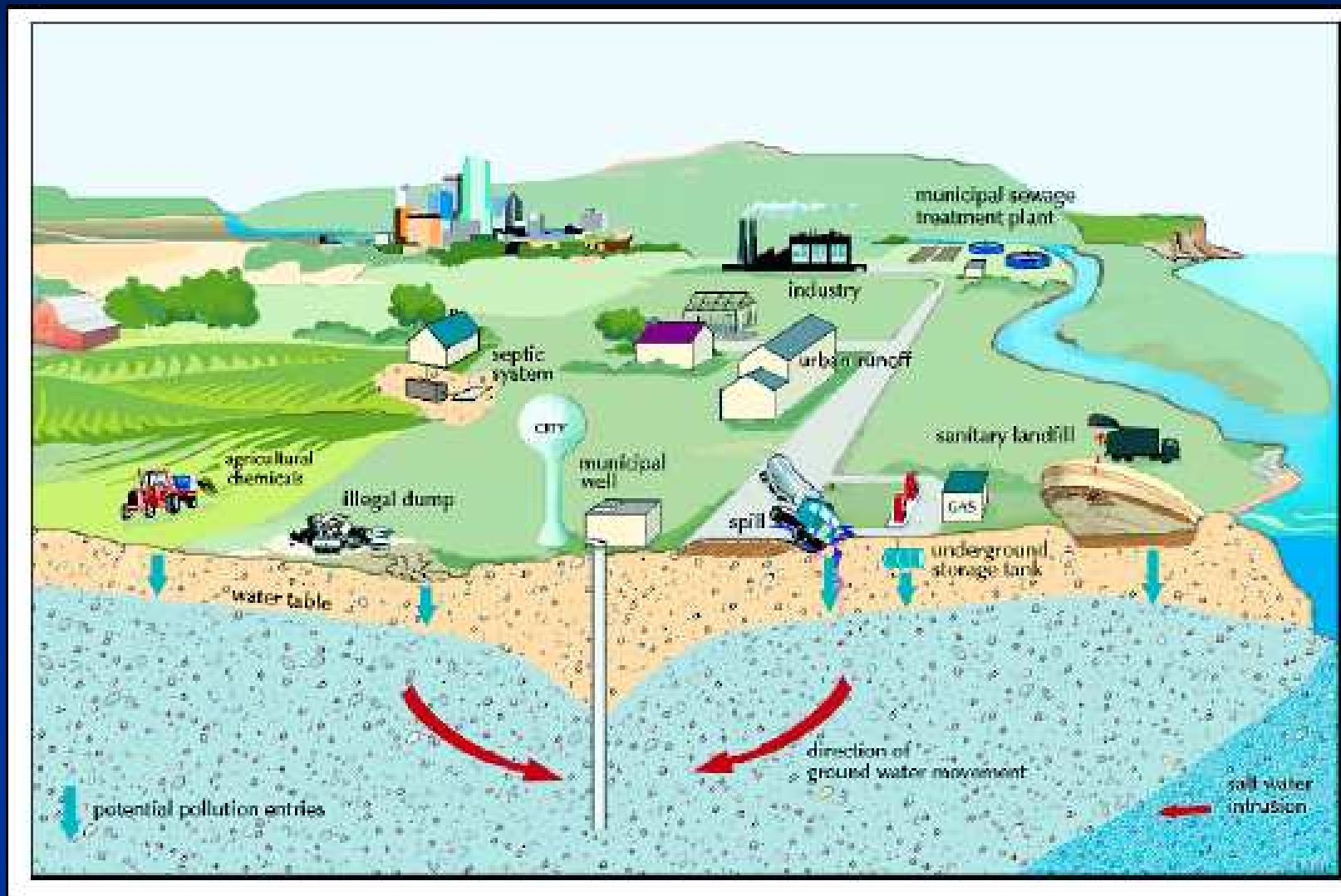


Scope of Application



- (a) Utilization of Aquifers
- (b) Other Activities Likely to have an Impact on Aquifers
- (c) Protection, Preservation & Management of Aquifers

Pressures on aquifers



Definitions



- Permeable water-bearing geological formation underlain by a less permeable layer
- &
- The water contained in the saturated zone of the formation

Sovereignty



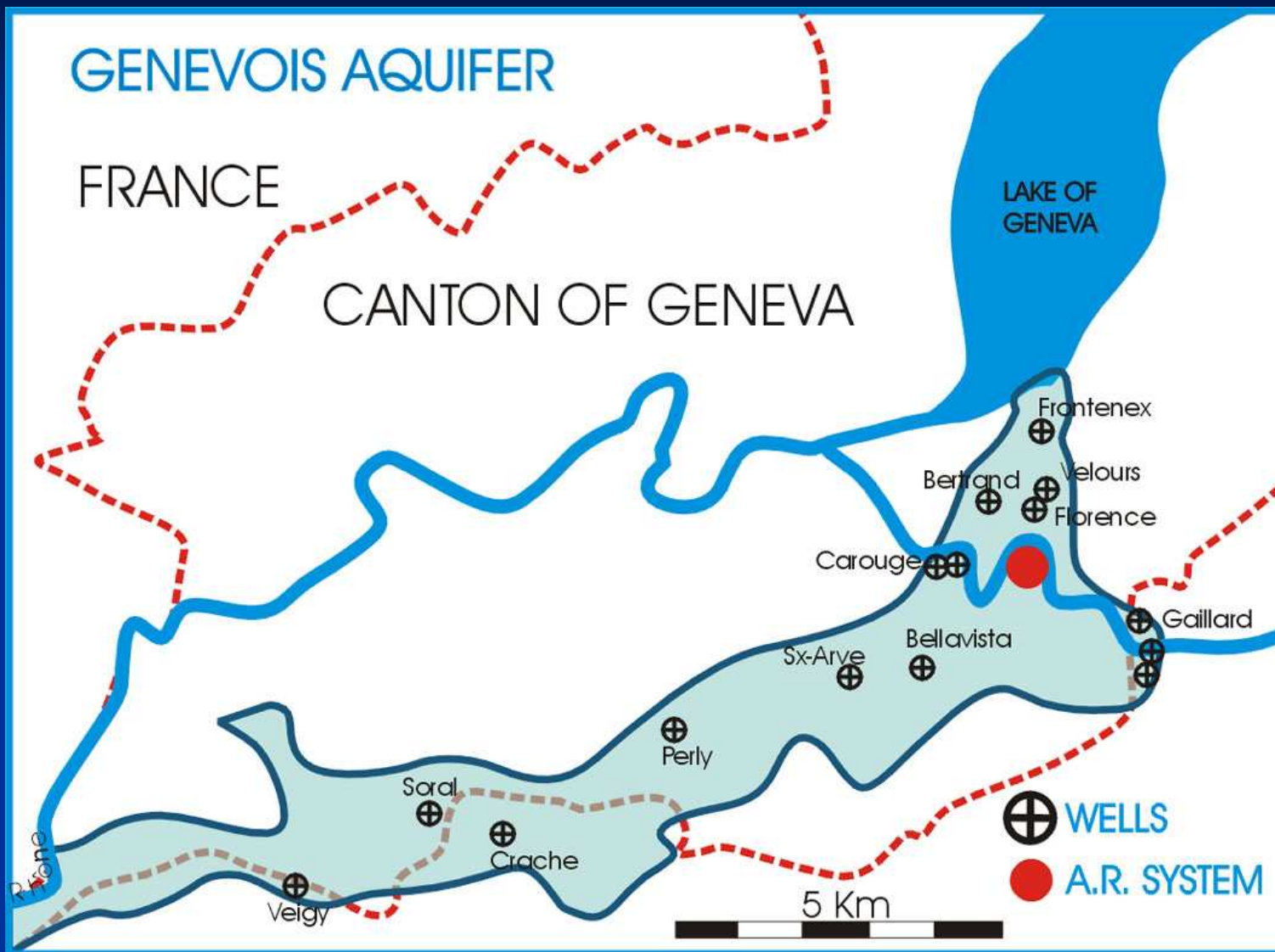
- Each Aquifer State has sovereignty over the portion of a transboundary aquifer located within its territory.
- It shall exercise its sovereignty in accordance with international law and the present articles.

Major Principles



- Equitable and reasonable utilization
- Obligation not to cause significant harm
- Obligation to cooperate

An example..



UN Resolution



63/124

December 11 2008

- Takes note of the draft articles
- Encourages the States concerned to make appropriate arrangements, taking into account the provisions of the draft articles
- Decides to consider the final form of the draft articles



Thank you...



Acknowledgement

UNESCO

International Association of Hydrogeologists

Economic Commission for Europe

Franco Swiss Genevese Aquifer Authority

Guarani Aquifer System Project

BGR

Cooperating Hydrogeologists

Chusei YAMADA

Governance

- Convergence of increasing climate variability with 2009 crises in food & finance....
- The technologies for freshwater are generally in place
- Actions is awaited....

3R - Water Recharge, Retention, and Re-use

Climate Change Adaptation and Groundwater Management Made Practical



Recharge



Retention



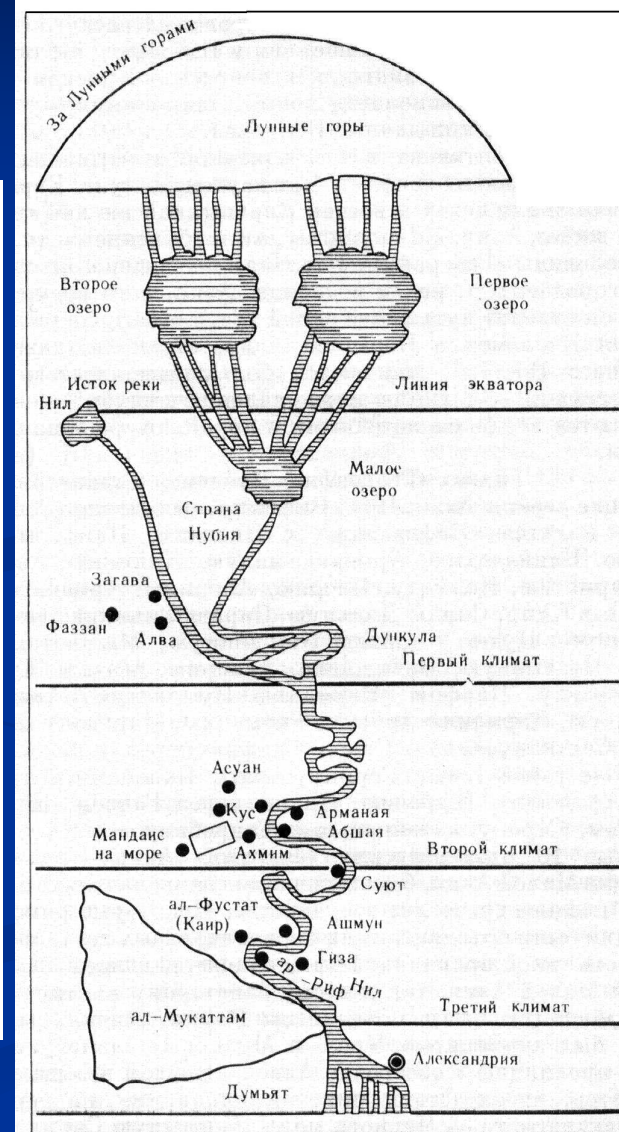
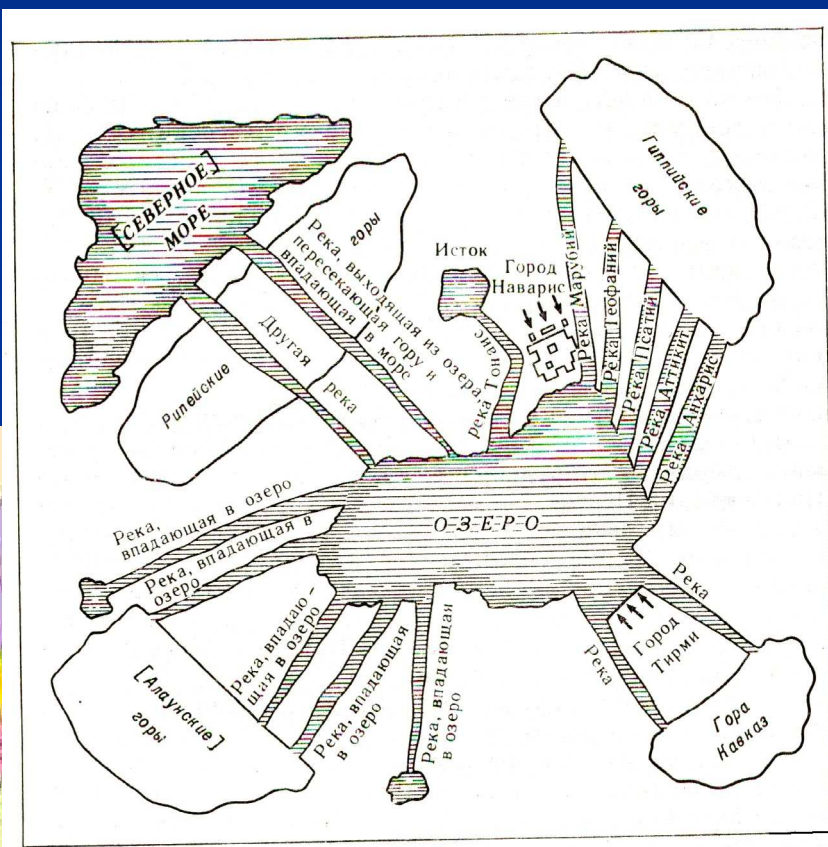
Re-use

- 2009 World Water Day was devoted to transboundary water

Approach

- Some history – transboundary waters in ancient times
- Global distribution of aquifers resources
- The matter of governance
- A “trialogue” - roles, rules, regulations & finance
- Building the TARM knowledge pyramid - lessons
- Where do we need action?
- Some messages

Ancient wisdom



ISARM Programme (2000 – 2009):

Multi disciplinary integrated approach

Inventory process well advanced,
70 in Americas, >30 in Africa, 90 in Europe, ?? In Asia

UN GA Resolution: Use of
Transboundary Aquifers

Scientific-Hydrogeological Scope

Legal Aspects

Socio-Economic Aspects

Institutional Aspects

Environmental Aspects

Transboundary Aquifers

Current focus, till the
culmination of the
Programme

Sharing countries will work
together... to ensure the
continued, sound *functioning*
of aquifer systems and will
reduce the *risks to the integrity*
of an aquifer system

Science to policy in the IHP

Transition of IHP's phases:

1990-1995 IHP IV

Hydrology and Water Resources Sustainable Development
in a *Changing Environment*

1996-2001 IHP-V

Hydrology and Water Resources Development
in a *Vulnerable Environment*

2002-2007 IHP-VI

Water Interactions:

Systems at Risk and *Social Challenges*

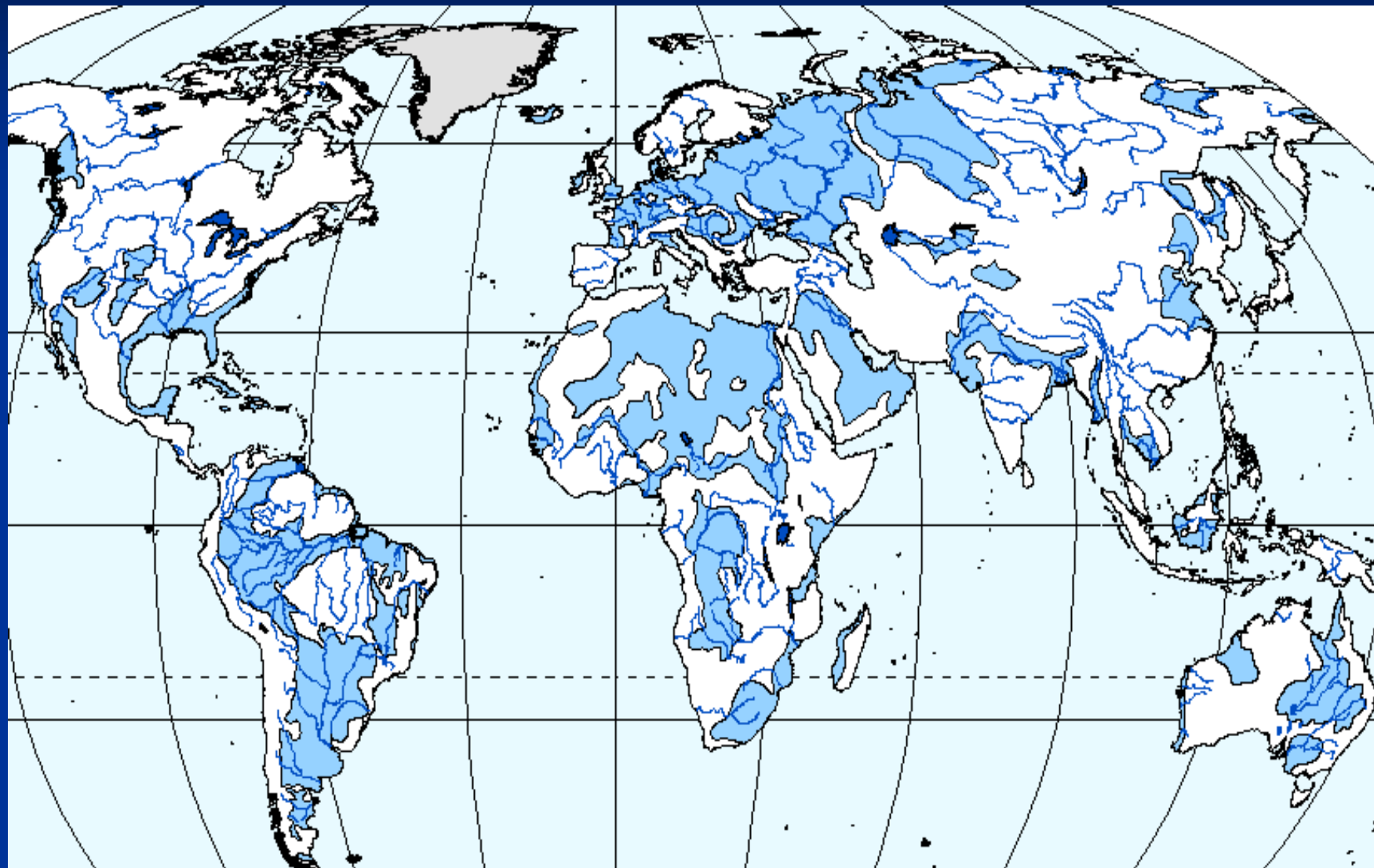
2008-2013 IHP-VII (operational)

Water Dependencies:

Systems under Stress and *Societal Responses*

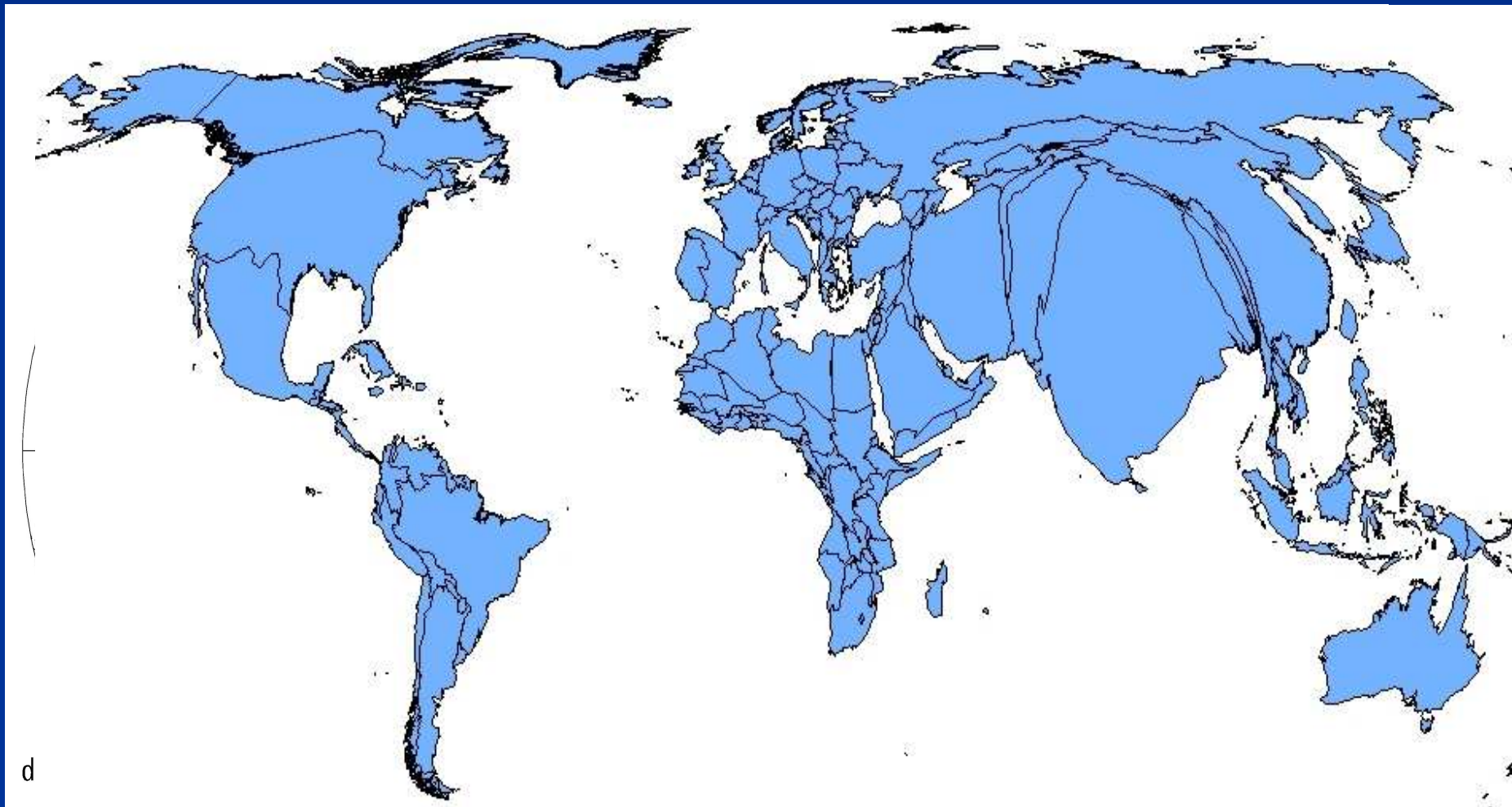
ISARM

Global Aquifer distribution...

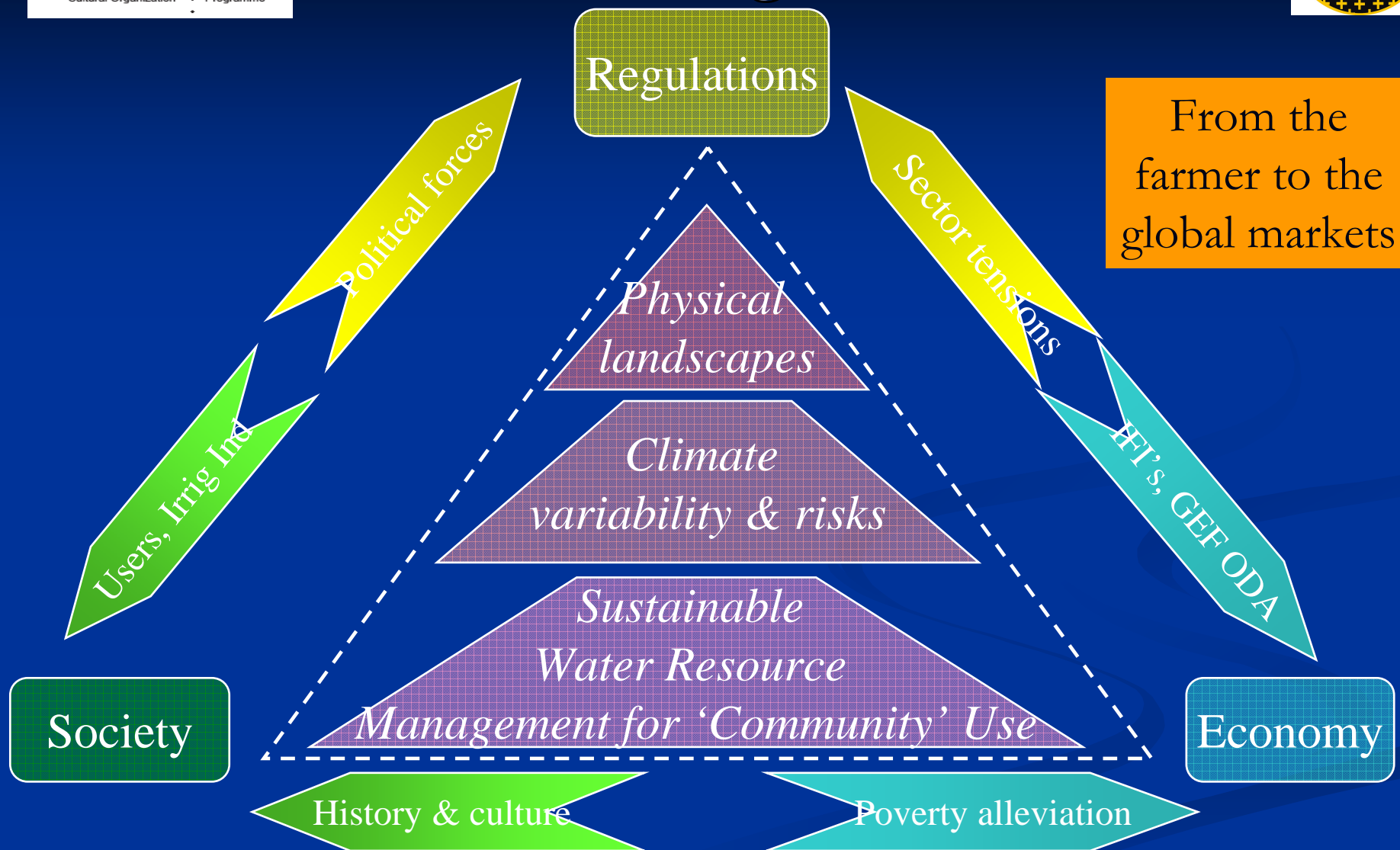


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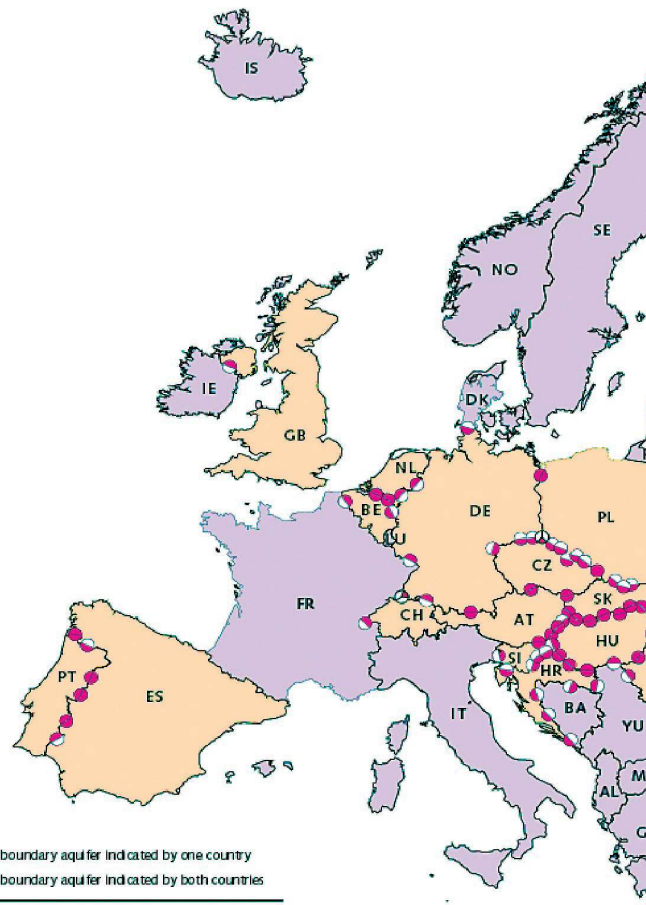
Utilisation of aquifer water



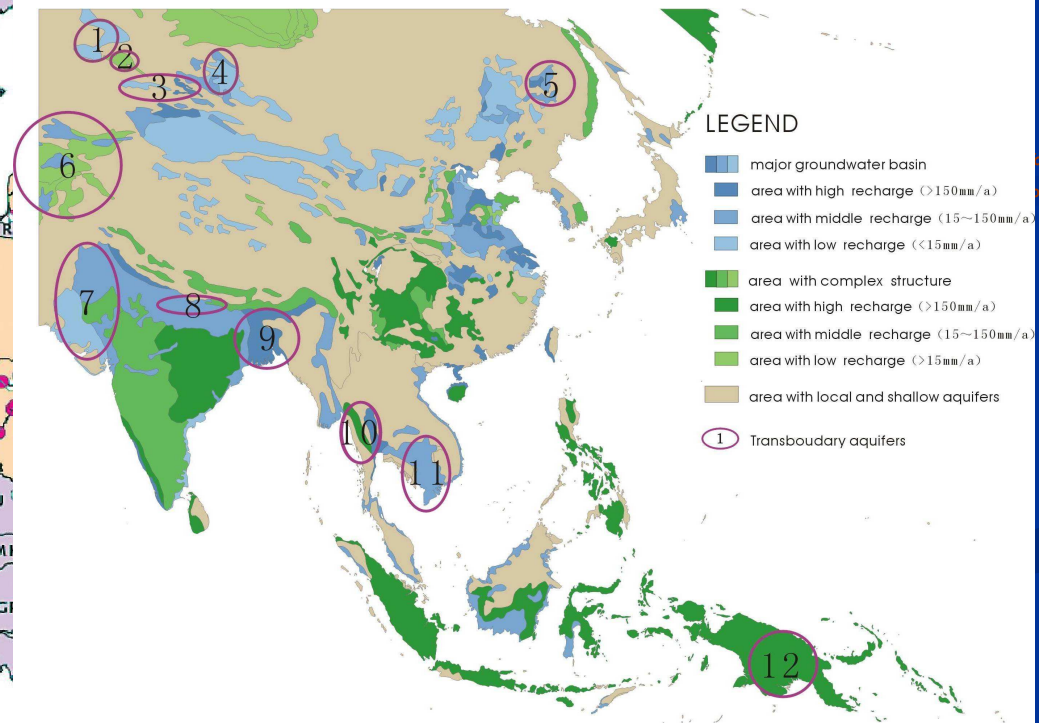
Roles, Rules, Regulation & Finance



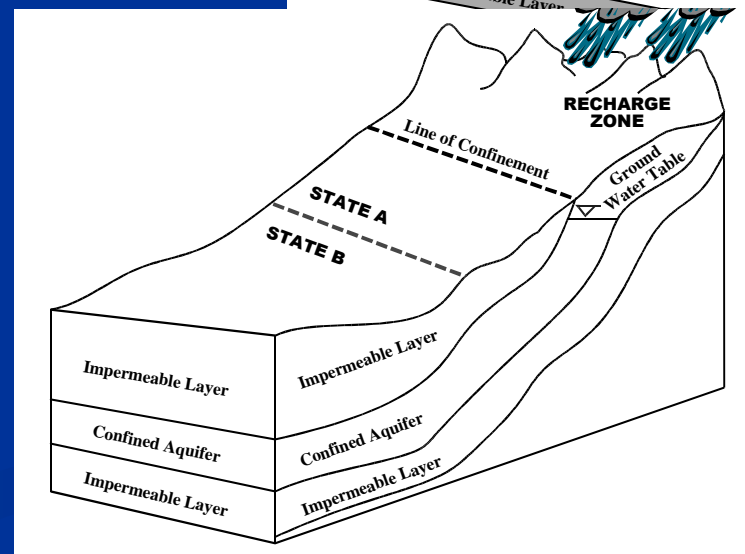
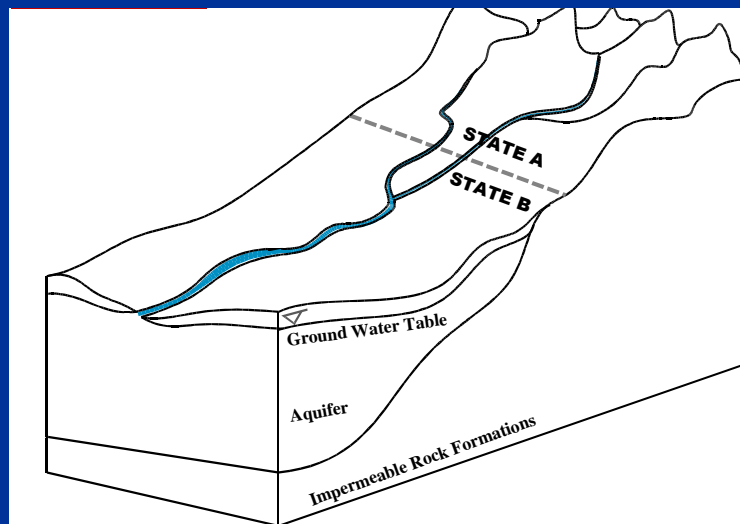
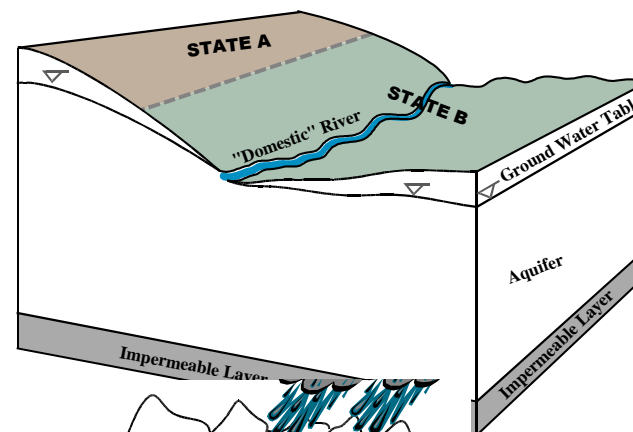
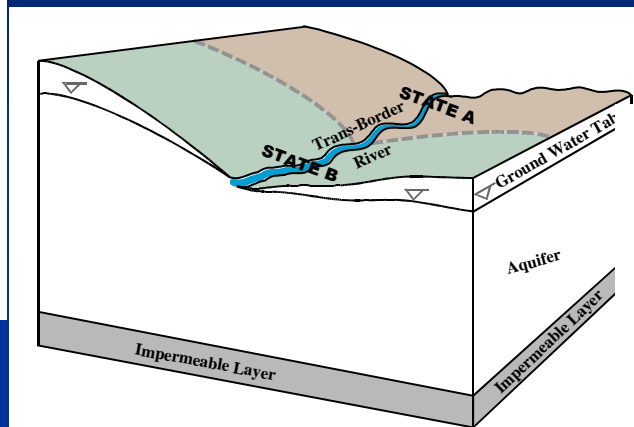
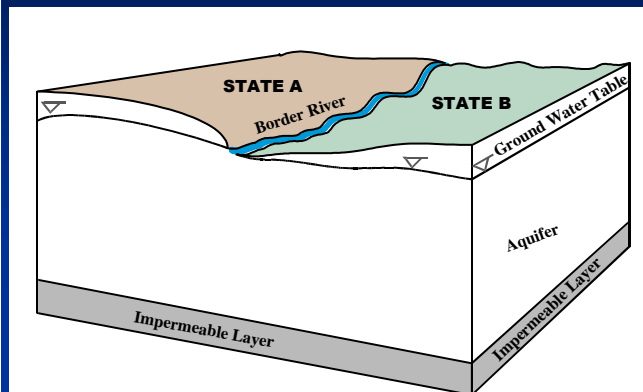
Almost all countries have transboundary aquifers...



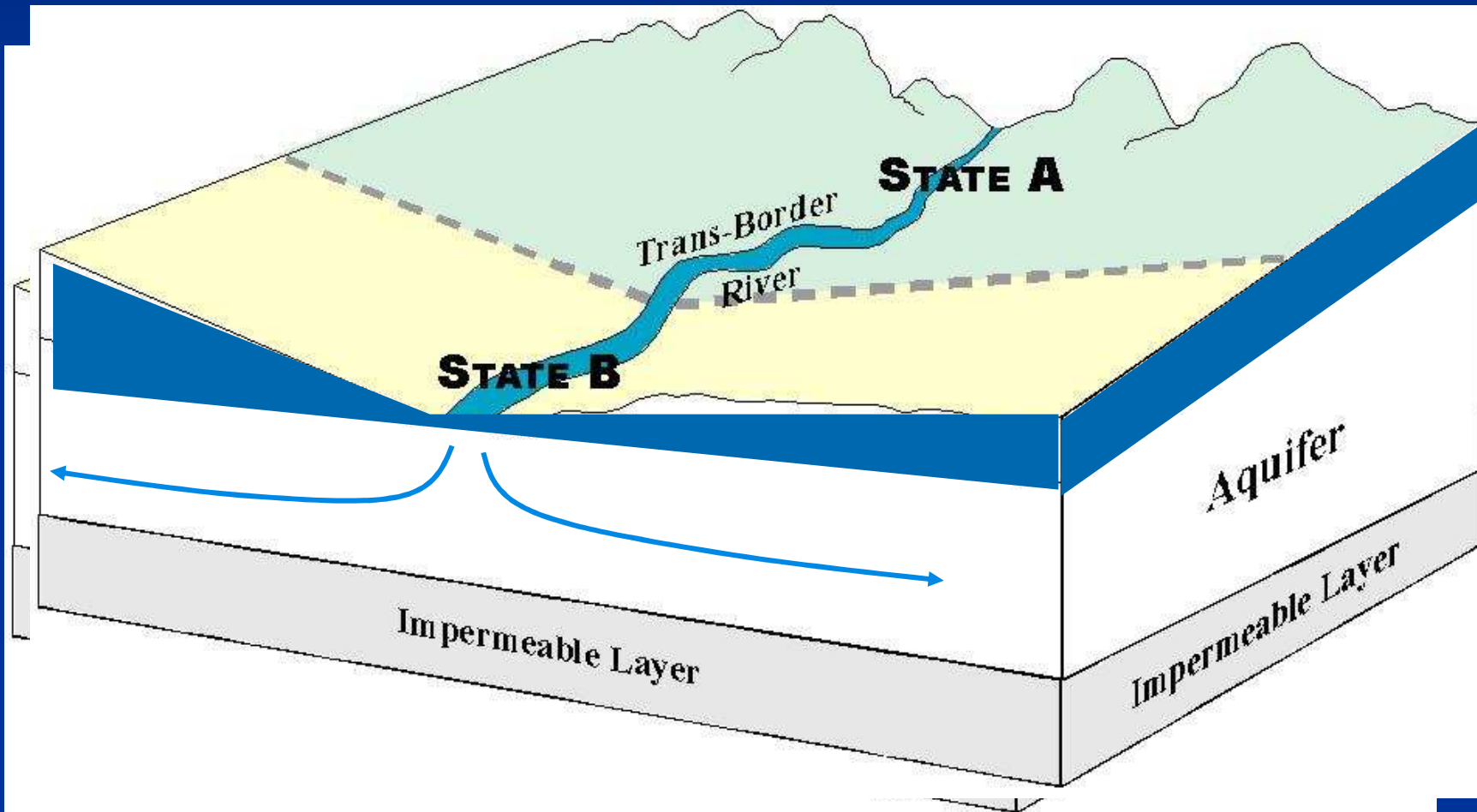
The occurrence of transboundary aquifers in Asia



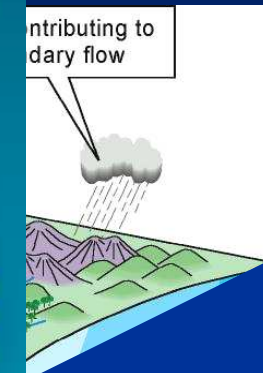
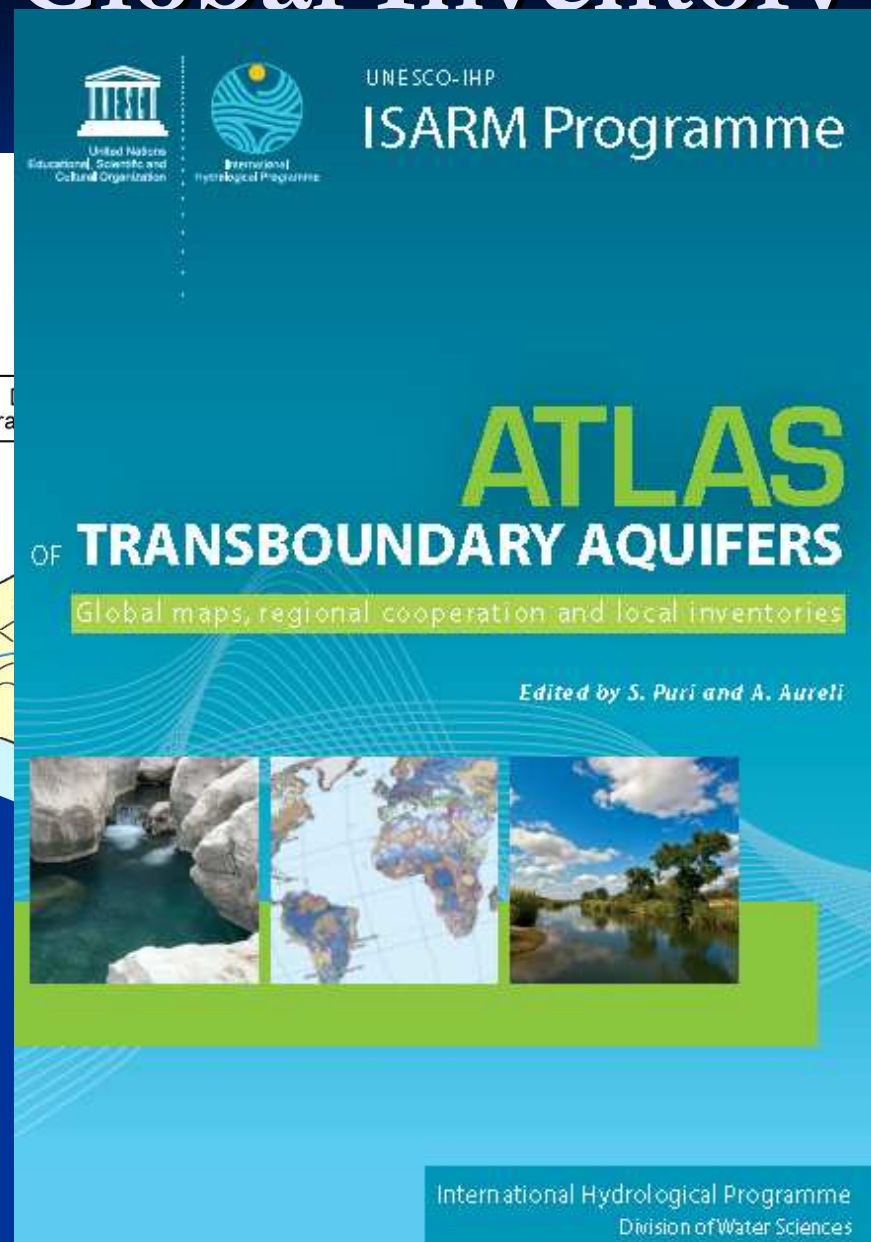
Typologies of transboundary aquifers



.....aquifers come
with 'pre fitted' storage...



Global Inventory



Knowledge pyramid

Vulnerability and future management

In many cases, the people most vulnerable to these changes are those in less economically developed countries who do not have the adaptive capacity for change so there may be a significant impact on international efforts towards poverty alleviation and the achievement of the Millennium Development Goals. Döll (2009, this issue) finds that countries such as India, Pakistan, Iran, Saudi Arabia, Morocco and eastern China have particularly high sensitivity indices as they suffer from strong water scarcity, take more than 30% of their water supply from groundwater and have a low to medium human development indicator. Many African countries and semi-arid regions of Mexico, southwest USA and Australia also have high sensitivity indices. Over 15% of the global population could be affected by a decrease in renewable groundwater resources of at least 10% in the future (Döll 2009, this issue).

Adaptive management is seen as a key component which is particularly relevant to groundwater; it is also a central concept in Earth systems engineering, which views sustainable solutions as requiring a whole systems approach which integrates coupled human and natural systems, echoing the messages of Alcamo *et al* (2008). The adaptation measures needed to respond to changes in groundwater systems through climate change impacts can only be formulated based on a solid foundation of observations over long time scales. There is therefore a substantial need to continuously monitor groundwater systems and recharge (Narasimhan 2009, this issue). There is also a need to improve on computational models related to the hydrological cycle at scales relevant to decision making (Bates *et al* 2008).

Its in the mind...

inflexible = ineffective



predictable

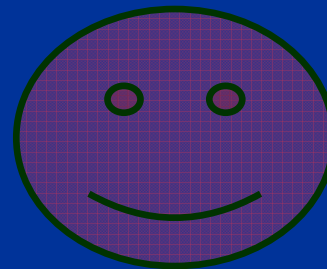
linear

Complex adaptive
system

Perception &
representation

Unpredictability

Linear..(optimal)
planning
-*'optimal'* output
-*command & control*
planning
-*top down central*
planning
Effective hierarchical
organisations
-*scientific knowledge*

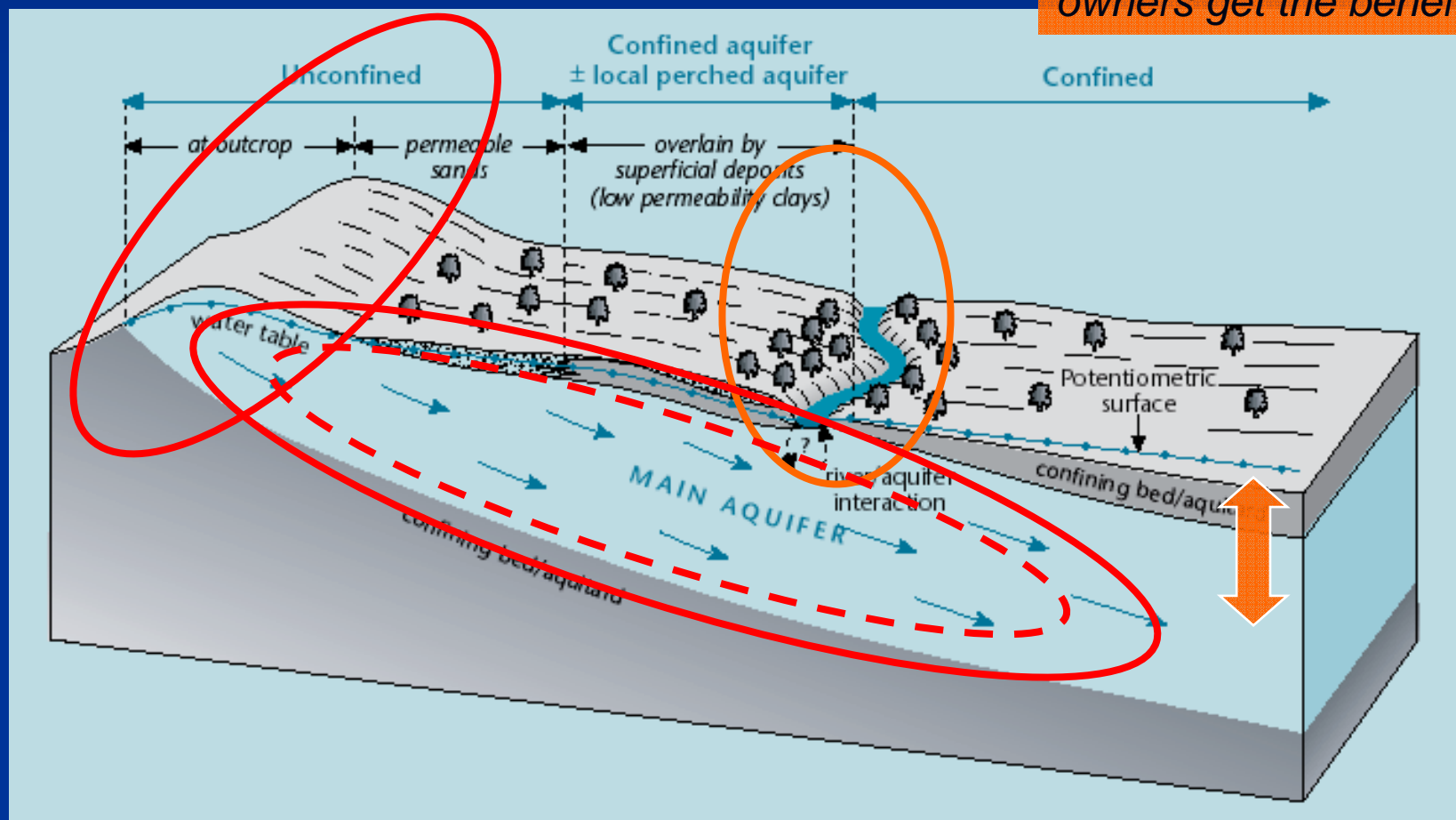


EcoSystem

Adaptive management
-processes & interactions
between parts of different
temporal & spatial scale
-experiment, monitoring,
evaluation, feedback, & iterate
-*distributed & localised planning*
Organisation that deals with
change
Knowledge diversity=scientific +
wisdom

Governance in Aquifers for adaptive management

How to incorporate this to policy to ensure that land owners get the benefit



Message to take back..



- The ancients recognised transboundary waters
- The science community seem to communicate with ease across boundaries
- Cross Community Collaboration requires patience and perceptiveness [CCC – PP]
- Regulations, society & economy operate in a trialogue – recognise the tensions / attractions
- Inflexible = ineffective; linear vs, complex adaptive systems



The valley of
Susamyr in the
Tien Shan
mountains...

Thanks you for your attention !

Questions? Contact:

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www.unesco.org/water/isarm

www.iah.org/isarm

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