



SIDE EVENT



THE ROLE OF THE GROUNDWATER SILENT REVOLUTION: MORE CASH AND NATURE PER DROP

Re-thinking global water scarcity and security

	Title Presentation	Name	Affiliation and Institution
17	Introduction: is groundwater a blessing or a curse?	Elena Lopez-Gunn	Water Observatory (FMB) and London School of Economics, UK
4	Groundwater silent revolution: the role of groundwater in changing paradigms in water and food scarcity	Ramón Llamas	Water Observatory Fundacion M. Botin - Complutense University (UCM), Madrid, Spain
1	How sustainable is ground water use in the Middle East?	Peter Laban	IUCN, Switzerland and REWARD, Middle East
7	UNESCO's work in transboundary aquifers	Alice Aureli	UNESCO-IAH, Paris, France
5	Groundwater economics	Consuelo Varela	Universidad Politecnica de Madrid
2	Nonrenewable groundwater management	Michael E. Campana	Oregon State University and National Ground Water Association, USA
9	Groundwater in the analysis of the water footprint	Maite Martinez Aldaya	Univ. of Twente, Holland and FMB Water Observatory
6	Intensive Groundwater use: Silent revolution. Some comments and additional views	Peter Letitre	IGRAC, Holland
13	The role of Earth Observation and participatory GIS in groundwater management and monitoring	Alfonso Calera Belmonte	Regional Development Institute, Remote Sensing and GIS, Universidad de Castilla La Mancha, Spain
9	Groundwater management in Africa: the Pangani Basin Case study/Experience	Hamza Sadiki	Pangani Basin Water Officer, Pangani Basin Water Office, Tanzania
5	Groundwater management and the role of WUAs in northern China Experiences from WRDMAP Project	Catherine Watts and Simon Howarth (*)	DFID/Mott MacDonald, UK
10	PANEL DISCUSSION		



Groundwater: resource curse or resource blessing?

Elena Lopez-Gunn



Plan

- Introduction to this side event
- The Resource Curse Theory
- Groundwater as a resource blessing
- Groundwater as a resource curse
- Conclusion: groundwater security



Introduction

- **The Role of the silent groundwater revolution**
- **More cash and nature per drop**
- ***Re-thinking global water scarcity and security***



RE-THINKING GLOBAL WATER SCARCITY AND SECURITY

The Theory of the Resource Curse

- Definition:

'the tendency of countries with high levels of natural resources to exhibit worse economic and political outcomes'

(Morrison, 2008)

RESOURCE BLESSING VS RESOURCE CURSE?

ENVIRONMENTAL	Natural storage reservoirs with little evaporative loss a relatively low-cost good-quality water where often there is no other accessible supply exists for domestic supplies	Clean up costs Salinisation /land subsidence
ECONOMIC	drought resilience e.g. Managed aquifer recharge initial capital investment is much lower per irrigated hectare. Convenience Users can pump groundwater when needed, Natural transmission of water Timeliness: precision application e.g. when crops needs water most, which can greatly increase yields, Higher reliability and less transmission and storage losses. (During drought) reliable supplies	Boom and bust cycles? Suck in subsidies
SOCIAL	greater interpersonal, inter gender, interclass and more spatial equity than surface water use (Shah et al 2007 p. 396). greater interpersonal, inter gender, interclass and more spatial equity than surface water use (Shah et al 2007 p. 396). autonomy and empowerment groundwater offers in that it can be developed by individual farmers or small groups. Intrinsic motivation. Independence	‘War of the well (water lords)
INSTITUTIONAL	Possibly less prone to corruption Encourages entrepreneurship	Politically intractable ‘wicked problems





**Given a competent government
natural resources have
no INHERENT negative consequences**



ENVIRONMENTAL COSTS

MORE CASH AND NATURE PER DROP?

SOCIO-ECONOMIC BENEFITS

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OEnvironm ental Goods and Services	Definition	Global Reach	Western Mancha aquifer
Provisioning service e.g. Storage and retention	Drinking water supply	2 billion people rely on groundwater directly for drinking water > 50% of cities with population of more than 10 million rely or make significant use of groundwater	La mayor parte de los municipios del acuífero se abastecen con agua potable
	Agriculture	40% of world's food relies heavily on groundwater Land irrigated from aquifers ahs increased 113 times between 1990 and 1990. Aquifer supplies more than half the world's irrigated land	Irrigation consumes between 85% and 95% groundwater; 130.000 to 230000 ha
	Industrial	e.g. manufacturing processes and geothermal and cooling systems	Negligible as direct use
Regulating services	water regulation;	Groundwater stores and releases water, sustains river flows, springs and wetlands	
	water purification and waste treatment,	Through microbial degradation of organic compounds and potential human pathogens, microbiological and some chemical contaminants removed retarded or fragmented	
	erosion and flood control	e.g. by absorbing run off	Helps to reduce flash floods by slowing system down
	climate regulation	Primary buffer against climate variability and spatial variability of droughts Potential innovation as future use for anthropogenic carbon sequestration in the ground	Amortigua la variabilidad climática, especialmente las sequías
Supporting services	Necessary for the production of all other ecosystems services	e.g. groundwater recharge and discharge	Wetland maintenance and nitrogen, carbon cycles
Cultural services	Non material benefits people obtain from ecosystem services	Spiritual enrichment, cognitive development, religious value and symbolism	ElQuijote Capítulo XXIV, parte II.

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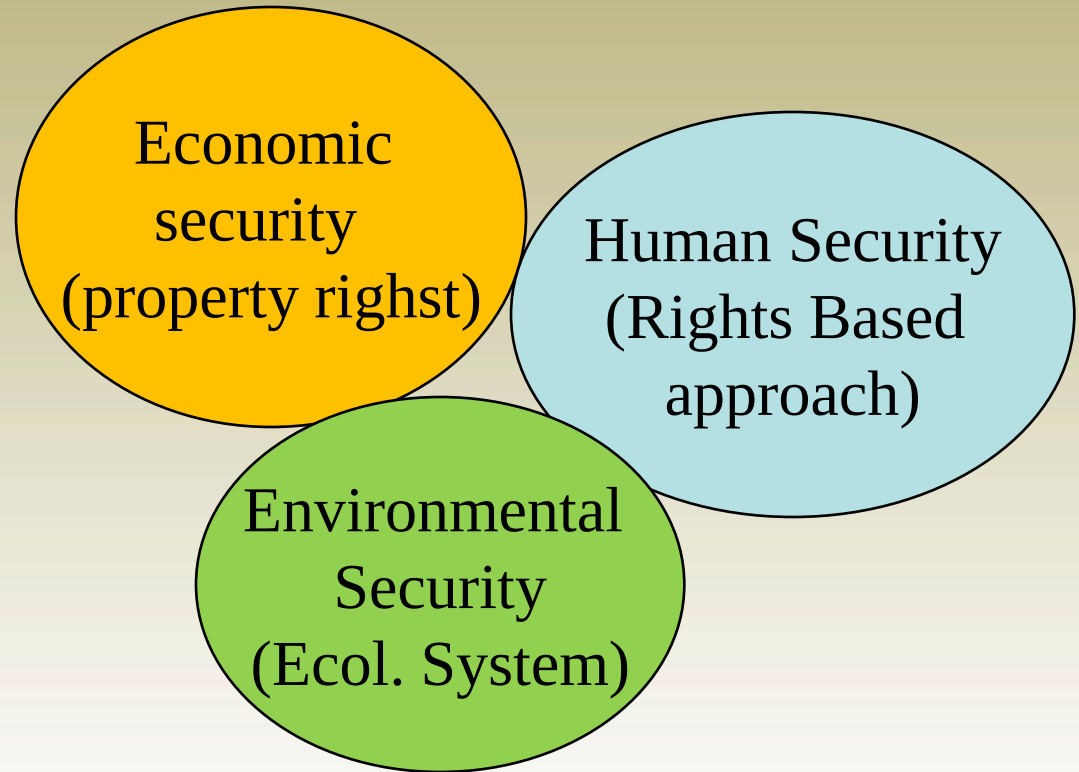


REAL LIFE QUANDARIES

**Rents for current vs
future generations**

**-Groundwater and
socio-economic change**

**-Groundwater and
resiliency (inc. Climate
change)**



Global Silent Groundwater revolution

Good Governance criteria (Labonte et al 2007)

- Accountability
- Transparency
- Responsiveness
- Effective/efficient
- Rule of law
- Equitable/inclusive
- Participatory and consensus oriented



'Good enough' governance?

