

Asia Pacific Water Forum (APWF)
Regional Water KnowledgeHub for Groundwater Management
Workshop for the young professionals – ‘Groundwater – its myths and reality’
Bangkok, Thailand June 1, 2011

GROUNDWATER GOVERNANCE

an overview of the socio-political and economic
dimensions of managing intensive use

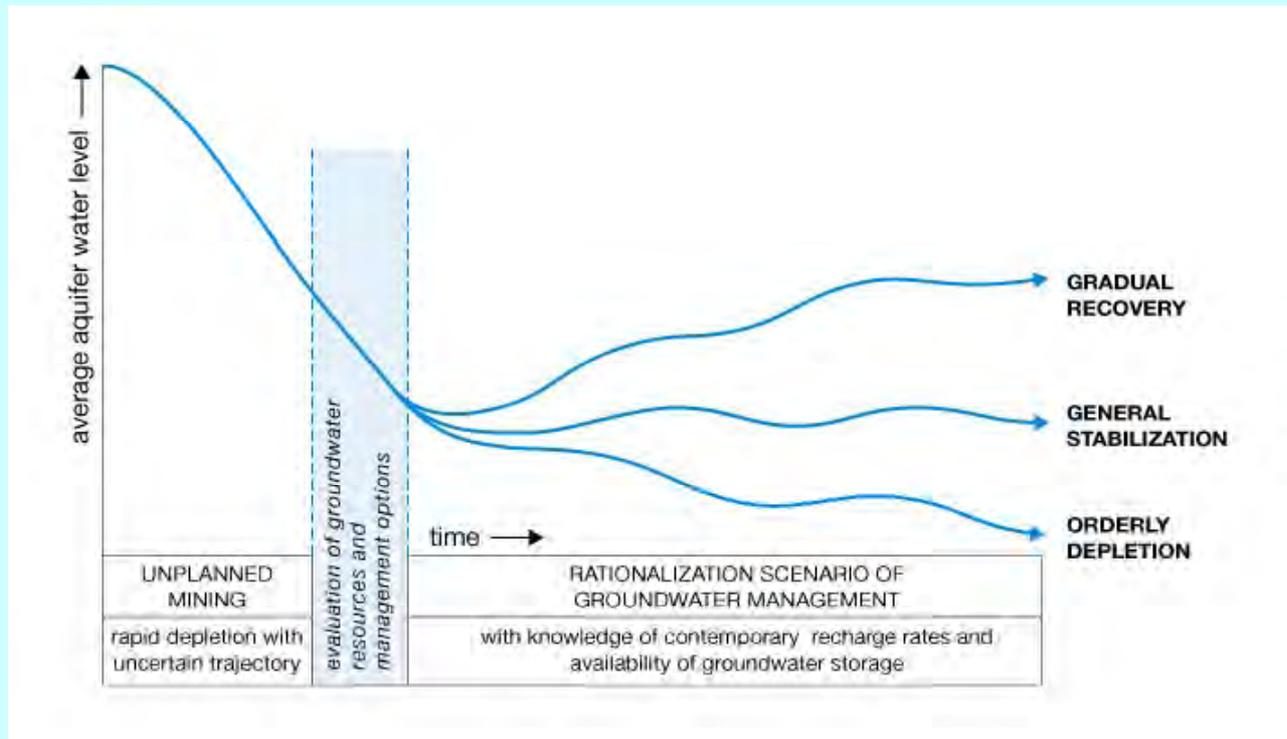
Héctor Garduño, Stephen Foster & Albert Tuinhof



- **COPING WITH INTENSIVE GROUNDWATER EXPLOITATION**
 - need to assess the resource & identify management options
 - a question of ethics & the ‘tragedy of the commons’
 - the concept of ‘governance’
 - the GW-MATE pragmatic approach to groundwater governance
- **THE ECONOMIC DIMENSION**
 - measuring the costs of groundwater use
- **THE SOCIAL AND REGULATORY DIMENSION**
 - stakeholder participation essential but is neither for free nor the magic bullet
 - groundwater use rights
 - balancing regulatory provision & stakeholder participation
- **POLITICAL REALITIES: GROUNDWATER GOVERNANCE IS NOT ISOLATED**
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WORLDWIDE MANY AQUIFERS ARE RUNNING OUT OF CONTROL

need to assess the resource & identify management options



ETHICS IN WATER USE

the reason for 'saving water' in a Mexican Sports Club



Shouldn't the current message

Please let us save water, because:

*tomorrow **you** will need the drop you waste today'*

be changed to

*today **your neighbor** needs the drop you waste ?*

THE 'TRAGEDY OF THE COMMONS'

2009 Nobel Laureate Elinor Ostrom's Principles

In 1968 **Garret Harding** coined the expression '**the tragedy of the commons**' in respect of : 'common pool resources' defined as natural resources that are difficult to divide up or to fence in, for which **what one resource user does can affect what is available to other users**

- clearly-defined **boundaries** for resource evaluation & allocation and congruence with prevailing local conditions and constraints
- formal **recognition** by government of the rights of the community
- collective arrangements for **decision making**
- layers of **nested stakeholder groups** to cope with larger resource systems
- effective **monitoring** with stakeholder involvement
- graduated **sanctions** for not respecting communal rules
- low-cost **conflict-resolution** mechanisms

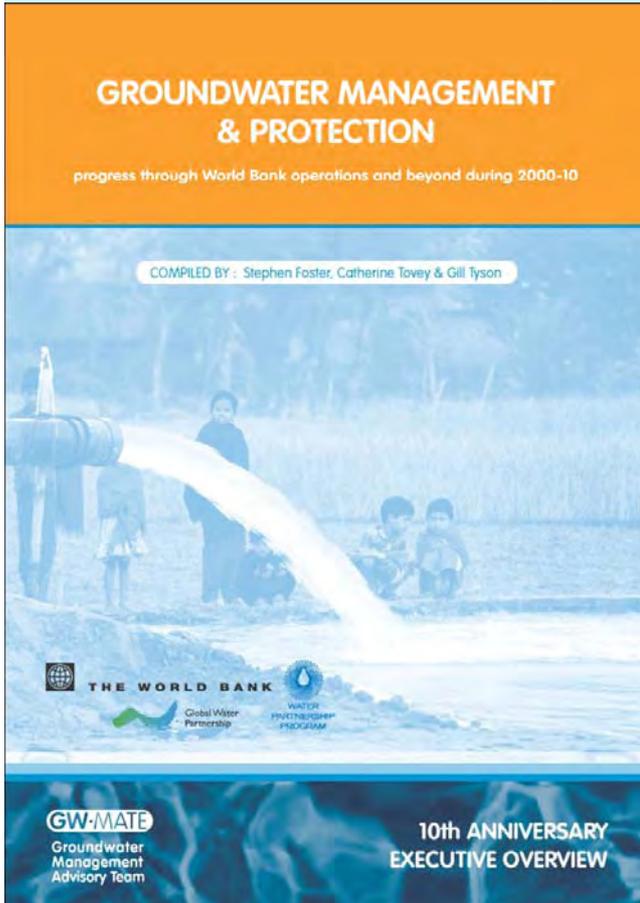
THE CONCEPT OF GOVERNANCE

from general to groundwater

- **governance** is the exercise of political, economic and administrative authority in the management of a nation's affairs at all levels
- **water governance** involves the corresponding framework for effective water resources management, including the delivery of all water services in a socially-responsible, environmentally-sustainable and economically-efficient manner
- **groundwater governance** (as a subset of the above) is focused on the exercise of appropriate authority and promotion of responsible collective action to ensure sustainable and efficient utilization of groundwater resources for the benefit of humankind and dependent ecosystems.

1ST STEP

understand the groundwater resource and its users



the key lesson after 10 years of on-the-ground joint work with developing nations is **'one-size-fits-all' simply inappropriate**

GW-MATE has evolved a **'pragmatic framework'** to guide selection of a balanced approach – recognising **hydrogeologic and socioeconomic setting** defines problem and constrains solution

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RESOURCE SETTING

HYDROGEOLOGIC CONDITIONS

- definition of manageable groundwater bodies
- resource renewability, recharge rates and sw interactions
- aquifer storage characteristics and economic reserves
- susceptibility to irreversible aquifer/ecosystem degradation

SOCIOECONOMIC SITUATION

- analysis of groundwater use drivers (urban vs rural) (waterwell construction costs, macro-policy interactions such as energy subsidies and crop price guarantees)
- groundwater use and users profile

MANAGEMENT APPROACHES & TOOLS

POLICY INTERVENTIONS

- macro-policy and macro-planning adjustments (indirectly affecting need/incentive for groundwater use)

DEMAND-SIDE MEASURES

- physical access constraint (well drilling bans or depth/size limits)
- real groundwater resource savings in irrigated agriculture/urban use

SUPPLY-SIDE MEASURES

- rainwater harvesting and recharge enhancement
- provision of alternative (imported) water supply

REGULATORY PROVISIONS

- groundwater access and use codes
- groundwater use rights (time dependence, transferability, extraction versus consumptive use) and use charging

COMMUNITY PARTICIPATION

- definition of zones for AMORs
- social organization (legitimacy, powers, rules)
- risks, sustainability and up-scaling

ACTION PLAN

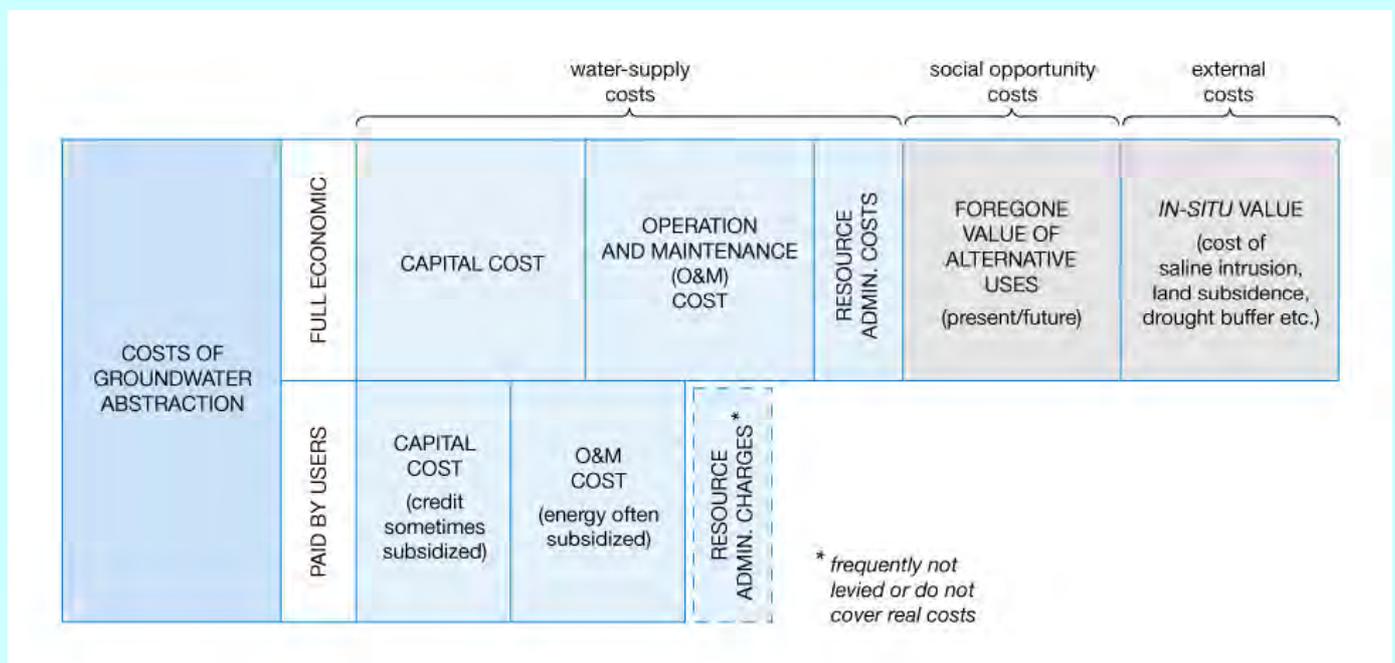
IMPLEMENTATION OF MANAGEMENT MEASURES

- investment priorities and scheduling of actions
- mobilizing stakeholder participation and essential roles of government

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THE ECONOMIC DIMENSION

Measuring the costs of groundwater use



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SOCIAL (stakeholder) PARTICIPATION

**without social participation
groundwater management is impossible,
but...**

social participation is not the magic bullet

- it must be based on sound hydrogeology

- it does not come free

**- It needs to be complemented by some regulation
& economic incentives/disincentives**

**- and must be enabled/nurtured
by government**

GROUNDWATER USE RIGHTS essentially legal in character !

- RIGHT is for use not ownership of groundwater
- RIGHT specifies :
 - effective & beneficial use
 - duration of operation
 - that security should be guaranteed
 - transferability promotes economic efficiency (but sometimes damages environment & increases social injustice)

but the water cycle must be taken into account, thus

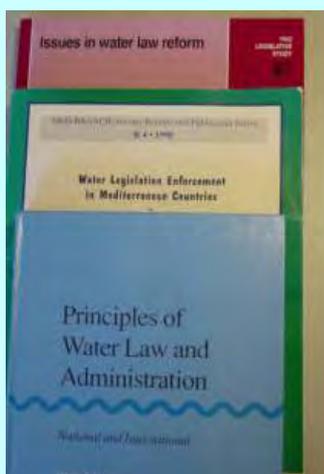
- permits should include abstraction, consumption & return flow volumes
- wastewater disposal permits should be granted simultaneously



rights desirable providing interests of poor and newcomers are protected and are implementable!!

REGULATORY PROVISION & STAKEHOLDER PARTICIPATION

What is the Right Balance ?



SECTOR	WATER-USE CLASSES	POLLUTING PROCESSES	OTHER CATEGORIES
Rural	domestic supply livestock rearing subsistence agriculture commercial irrigation	household waste disposal farmyard drainage intensive cropping wastewater irrigation	
Urban	water utilities private supply	urban wastewater disposal/reuse municipal landfills	drilling contractors educational establishments professional associations journalists/mass media
Industry & Mining	self-supplied companies	drainage/wastewater discharge solid waste disposal chemical/oil storage facilities	
Tourism	hotels and campsites	wastewater discharge solid waste disposal	
Environment**	river/wetland ecosystems coastal lagoons		

managers: must understand legal limitations and users

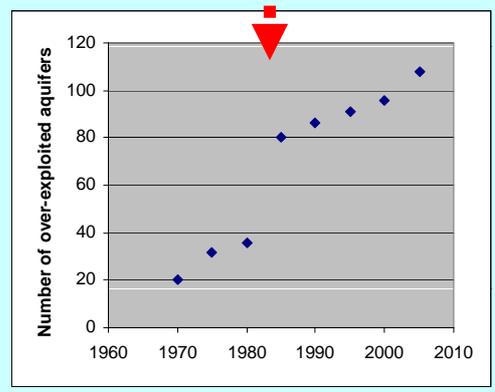
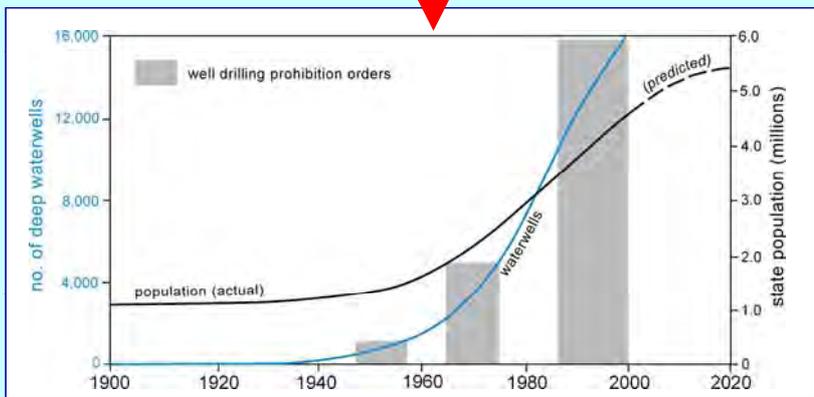
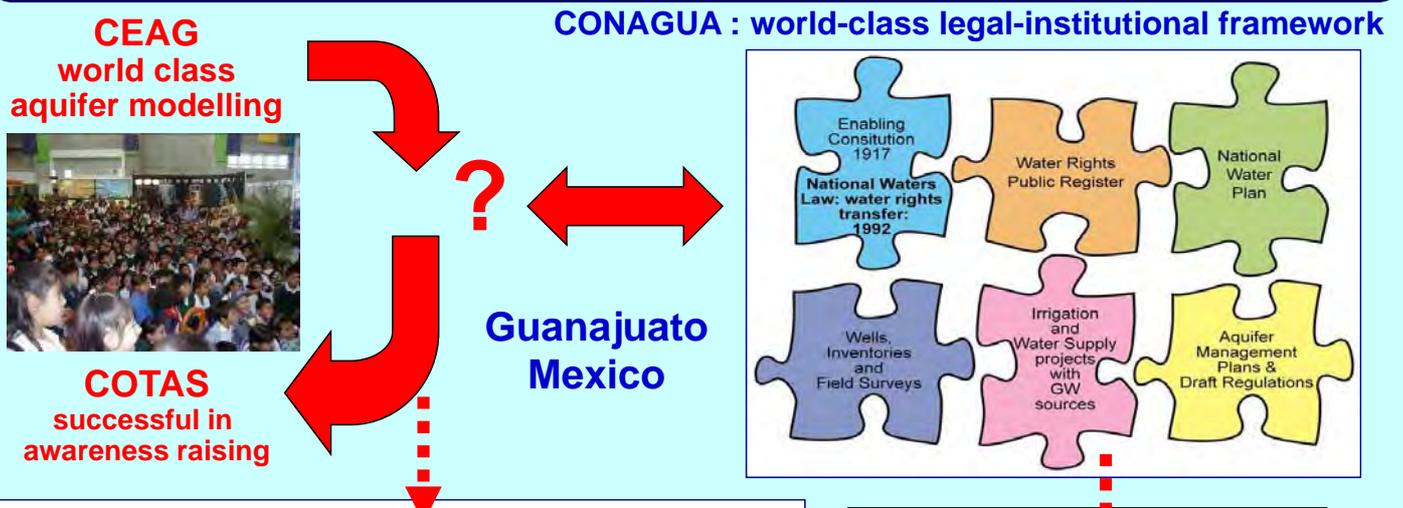
lawyers: must understand pragmatic requirements and users

both: must empathize and identify 'do-able', legally-sound approaches

STAKEHOLDER ORGANIZATION should depend on resource setting, transparent information & genuine user representation (with government protecting smaller users and supporting through 'lighthouse' function)

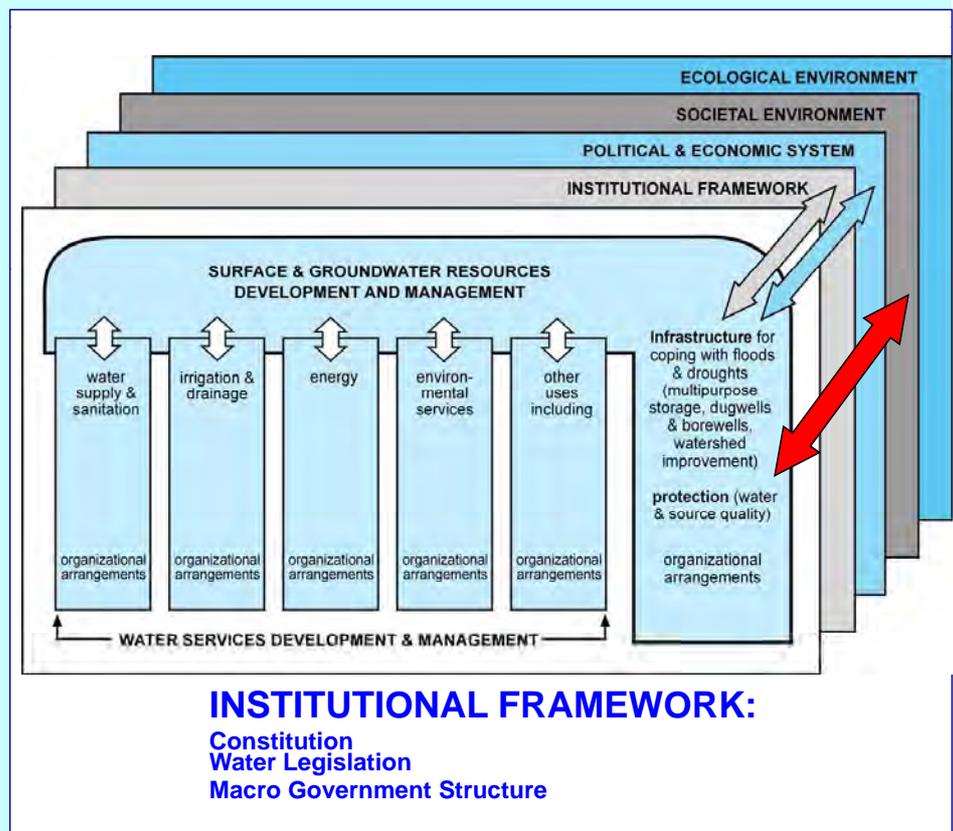
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THE JIGSAW PUZZLE OF GROUNDWATER RESOURCE MANAGEMENT
 push of ‘aquifer champions’ and ‘glue’ of effective coordination
 - not the ‘lubricant’ of corruption - needed



GROUNDWATER RESOURCE MANAGERS MUST ARTICULATE CONCERNS to empower society and strengthen governance

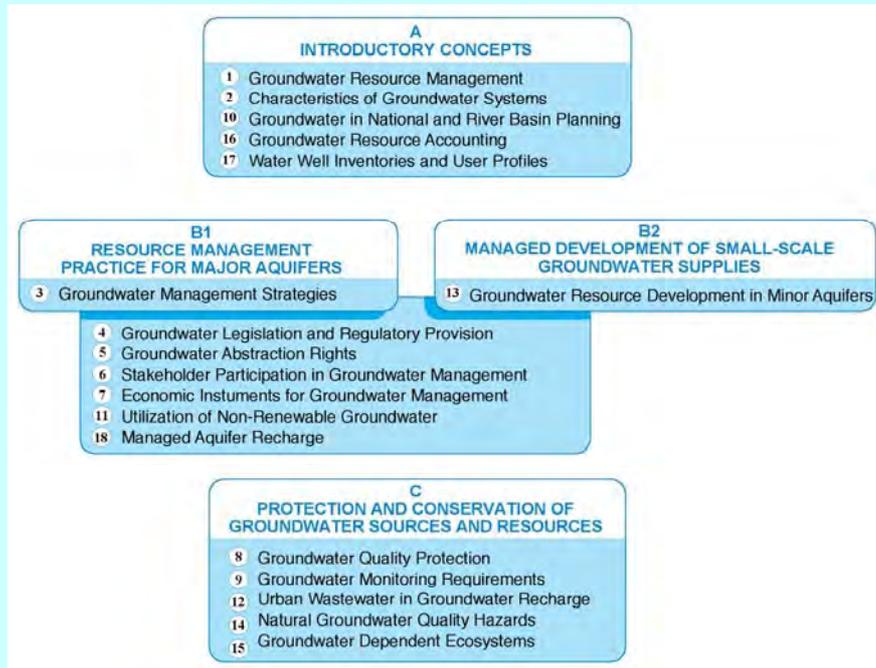
- being frank about 'business as usual' consequences
- acknowledging current limitations and advocating future needs as regards capacity for resource management implementation
- providing transparent information to society so as to counteract vested interest and corruption
- challenging macro-policies which increase groundwater demand



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OVERALL SCOPE & STRUCTURE OF THE BN SERIES

Some key tools/approaches



BN-11 stabilization or orderly depletion?

BN-16 'economically exploitable reserves'

BN-6 users confronted with harsh reality, enabled & nurtured

BN-15 ecosystems GW needs

BN-17 & 18 preparation on-hold

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OTHER DOWNLOADABLE PUBLICATIONS

23 Case Profiles - aimed at making available knowledge acquired & lessons learned from experience around the world

5 Strategic Overviews – in depth papers synthesizing GW-MATE experience in key aspects of groundwater policy formulation

1 Groundwater Quality Protection Guideline – for water utilities, municipal authorities & environmental agencies

<http://water.worldbank.org/water/related-topics/groundwater-management-advisory-team>

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