Managing water scarcity in the Mediterranean

Richard Abdulnour
Senior Water Specialist
World Bank

March 21, 2017
Main messages

• **Unprecedented challenges** such as population growth, urbanization, economic and climate change are looming over urban water security in the region.

• The current **management of water resources is unsustainable** in many countries, and putting the region on a dangerous path towards major water crises.

• In this context, managing urban water service delivery is not sufficient anymore. The focus must **embrace broader water resources management** issues.

• Around the world a **broad range of approaches have proved effective** to tackle water scarcity. Yet their implementation can require **overcoming significant challenges** at all levels: institutional, social, technical, etc.

• **Wastewater recycling** is coming to the forefront of these efforts. There is **much to learn** from best practice examples across the world.
Unprecedented challenges are looming over urban water security in the region...

- Most of MENA population (> 60%) live in areas of high / very high water stress – a situation shared by much of the Mediterranean region

- Population growth, urbanization, economic expansion and climate change will enhance scarcities
  - In MENA region, urban population to ↑ by 120% by 2050
  - All climate models point to more severe and intense droughts in the future

- In 2050, per capita municipal consumption could be constrained to 70-85% its current level, due to ↓ of water availability and competition with other users (mostly agriculture)
...and the current management of water resources is putting the region on a dangerous path

- The use of freshwater resources is already unsustainable in many parts of the region, e.g.:
  - In Jordan, available groundwater to decrease by 30-40% by 2030
  - In Egypt, 20%-50% of surface water abstraction compromises environmental flow requirements

*GW stress has increased almost everywhere from 1990-2010*

- Water quality issues are on the rise (saltwater intrusion due to excessive GW abstraction, eutrophication...)

![Map showing increased ground water stress](image)
Managing urban water service delivery is no more sufficient

New questions become critical for service providers:

- Are the water resources we rely on managed in a sustainable manner?
- Which other users rely on these water resources?
- Will their (and our) water demand increase? What will that mean for our supplies?
- How will water resources be affected by climate change?
- Are there other, untapped water resources available?
- Etc.

Understanding and management of the urban water cycle in all its components, and its links to the watershed (and aquifer)

= Water 4.0
Many solutions have proved effective to help tackle chronic water scarcity...

1. **Increase supply from conventional resources**
   - Local groundwater
   - Local surface water
   - Inter-basin transfers

2. **Increase supply from non-conventional resources**
   - Wastewater reuse (potable/non-potable municipal use)
   - Seawater desalination (brackish water demineralization)
   - Stormwater harvesting

3. **Reduce urban water needs**
   - Demand management
   - Leakage reduction

4. **Cooperate with other users to increase freshwater allocations**
   - Wastewater reuse (non-municipal use)
   - Trading of water rights with non-municipal users

Credit for illustrations: CSIRO
...and to cope with water resource uncertainty, variability

1. Diversify water resources

2. Close the urban water cycle (at city/basin level)

3. Rely more on unlimited water resources

4. Increase/manage water storage
Wastewater recycling is coming to the forefront of efforts to tackle urban water scarcity

- **Strong experience** (Southern California, Namibia, Singapore), but need to be scaled-up

- **Technologies are known**, and often less costly than alternative, especially when accounting for scarcity

- **Strong integration is critical**, to overcome array of barriers to harvest this local resource

- **Public Outreach is key** to most successful experiences (e.g. Pure Water in San Diego)
Implementing these solutions can require overcoming many barriers

**Political**
- Limited awareness of the future risks to water security, associated economic costs
- Political cost of demand management

**Cultural/social**
- Strong tradition of silo-oriented engineering approaches in water planning
- Resistance to the use of alternative water resources for drinking purposes (reuse)

**Institutional / regulatory**
- Sector governance issues (lack of accountability, autonomy of service providers)
- Lack of mechanisms for stakeholders to plan/manage the water cycle in an integrated manner
- Rigid regulatory framework limiting the application of innovative solutions (reuse, water trading, PPPs, etc.)

**Technical / implementation**
- Limited awareness of potential solutions, strategies
- Insufficient capacity to plan them, structure their financing and procurement, and to operate them

**Economic / financial**
- Limited financial resources for major capital investments
- Lack of tools to assess and compare the economics of options

**Status quo**
Yet many cities have already pioneered effective solutions to build resilience to water scarcity...  

...and there is much to learn from these experiences!

- **The Water Scarce Cities initiatives**: bolster awareness of effective approaches to build urban water security and climate resilience across the MENA region:
  - Case studies
  - Facilitate exchange of knowledge among practitioners
  - Technical support to interested cities
- Thank you -