


Water Reuse and Urban and Periurban Agriculture


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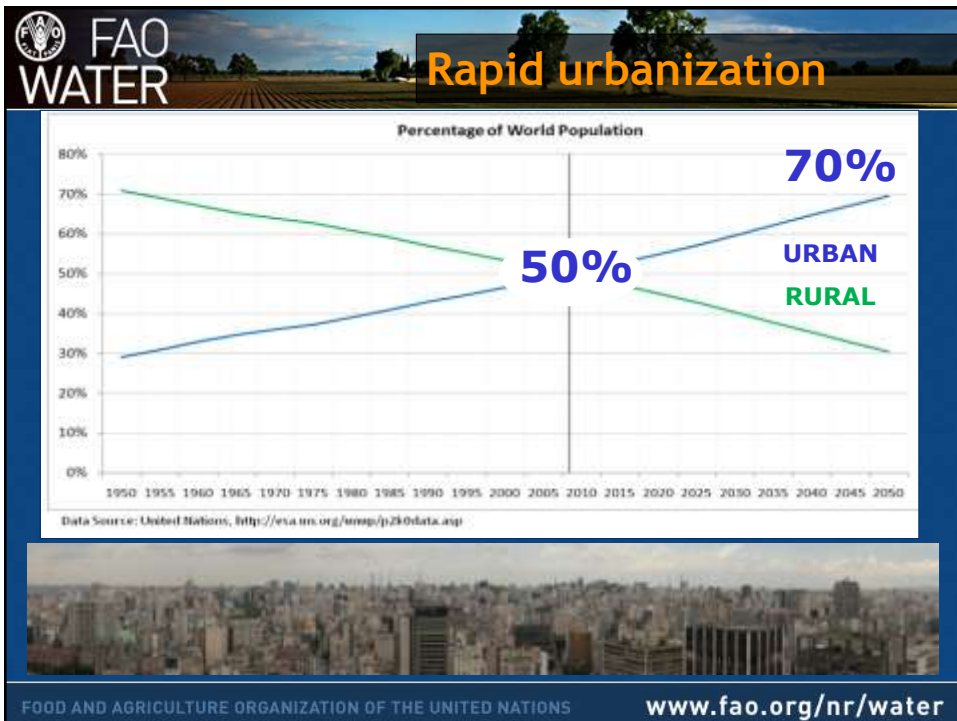
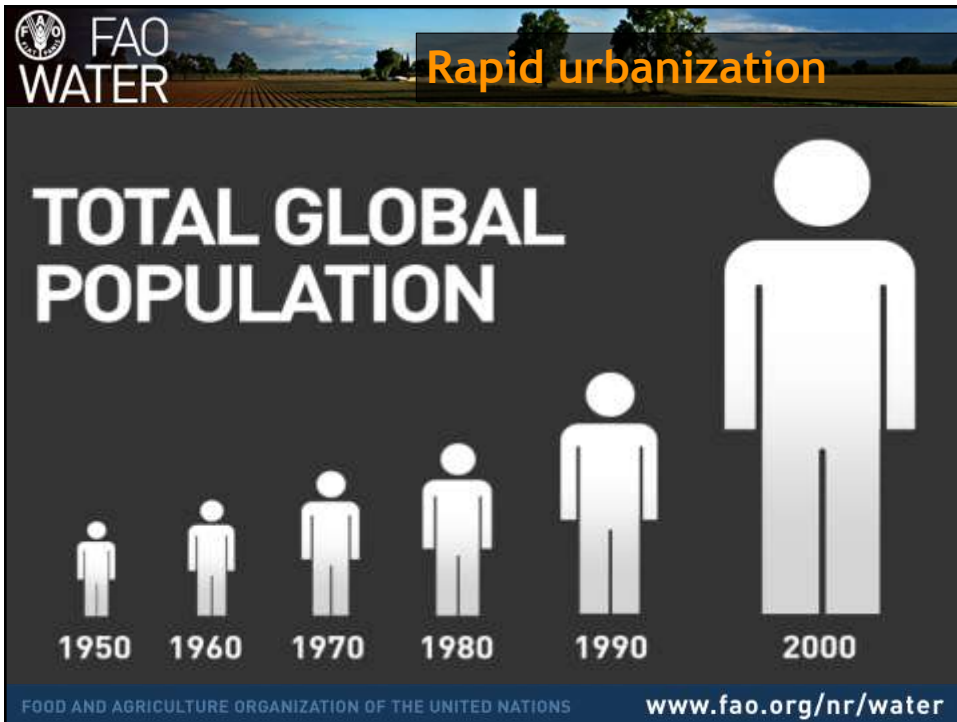


Outline

- **Problems** of rapid urbanization
How UPA contributes to solve these problems
UPA needs Resources
- **Water Reuse**
- **Benefits** of water reuse in UPA
- **Barriers** for water reuse in UPA
- **Responses** to overcome these barriers

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Some related problems

- **Poverty belts:** unemployment, food insecurity and malnutrition
- **Water supply:** not enough water to cope with increasing demands
- **Insufficient sanitation:** exposure to pollutants




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Urban and Peri-urban Agriculture

- **WHAT IT IS ?**
It is the safe production of agriculture products in and around the cities. Involving 800 million urban residents worldwide








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FAO WATER UPA contributes to solve urbanization problems

- Availability of nutritious food
- Employment and income
- Greener cities
- Recycling of wastes



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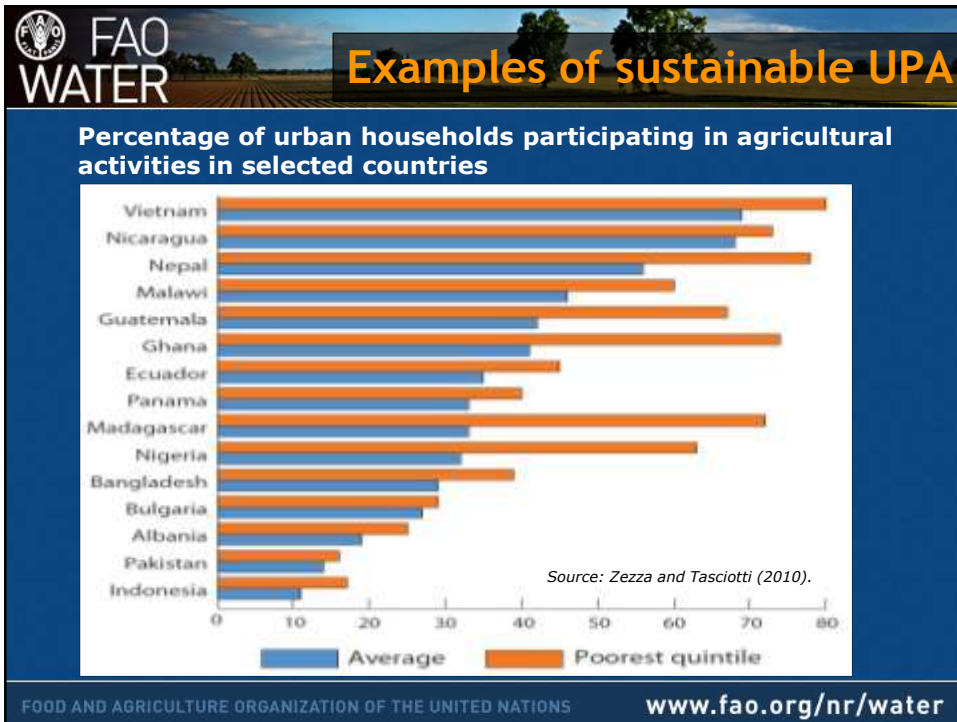
FAO WATER Examples of sustainable UPA



Cities receiving FAO assistance

- Technical Cooperation Programmes
- Emergency and Rehabilitation Programmes
- Unilateral Trust Funds
- Government Cooperation Programmes
- Government-Sponsored Cooperative Programmes
- Self-help

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 **Examples of sustainable UPA**

- **Dakar, Senegal**




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 **Examples of sustainable UPA**




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Resources for UPA


LAND




WATER




NUTRIENTS (N, P...)



ORGANIC MATTER




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Water for UPA

UPA requires **water** of enough **quality**
(not necessarily drinking water quality)




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FAO WATER **Water for UPA**

In water scarce regions, in periods of drought and in a context of deficient sanitation, there is

low availability of clean water in and around cities




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FAO WATER **Water for UPA**

How to provide affordable and safe water to UPA without interfering drinking water supply?:

Safe use of treated wastewater



Rainwater harvesting in urban areas




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Benefits of Water Reuse


- Reliable source of water and nutrients for agriculture
- Preventing pollution downstream

Conventional sanitation



→

Ecological sanitation and reuse



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Let's take the chance

Coordinating sanitation with reuse

- Increasing amounts of wastewater produced that will need good management
- The safe use of treated effluents for UPA should be considered in sanitation plans






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FAO WATER **Barriers and Responses**

- Health and Environmental Risks
- Response
- Options to minimize risks
 - Treatment options
 - Non-treatment options



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FAO WATER **Barriers and Responses**

- Negative Public Perception
- Response
- Terminology
- Cultural problems
- Religious concerns
- Advocacy and awareness campaigns




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Barriers and Responses

- Institutional complexity
 - Are responsibilities and jurisdictions among parties clear?
 - Agriculture
 - Cities
 - Environment
 - Health
- Response
 - Coordination mechanisms
 - Platforms for negotiation.



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Barriers and Responses

- Economic Feasibility
 - Benefits > Costs?
 - The most cost-effective alternative?
 - Who will pay for the costs of a reuse project?
- Response
 - Low cost technologies
 - Economic appraisal



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Barriers and Responses

- Land Tenure Insecurity
- No incentives for investment



- Response
- Urban planning



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Summary and conclusions

WATER REUSE

Win Win

- Cities providing water, nutrients and organic matter to agriculture
- Agriculture providing food, employment and income to the cities and improving the urban landscape.

Barriers to be overcome
Response options



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