



Towards the development of a strategy for
aquifer protection and management in
Pegeia, Pafos

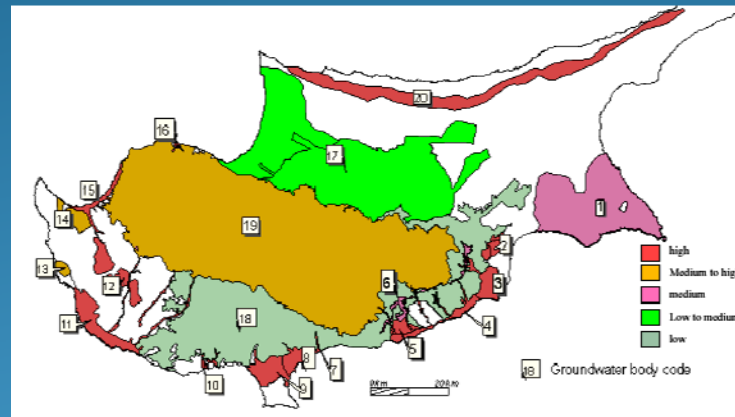
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AEOLIKI Ltd.

- Water stress : an important challenge for the majority of countries worldwide
- Water insecurity in Europe
- EU supports policy and research initiatives to address water stress
- Water availability in Mediterranean Countries is limited
- Water scarcity is a real problem in Cyprus
- Efficient groundwater management is an important policy priority in Cyprus



- Why efficient groundwater management is a policy priority for Cyprus ?
 - 13 out of 19 groundwater bodies are at risk;
 - Gwt resources are considered to be strategic reserves



- Why is it difficult to succeed in sustainable groundwater exploitation ?
 - “Water availability” pressures;
 - “Institutional capacity” pressures;
 - “Socio-economic” pressures;
 - “Stakeholder engagement” pressures
- **New culture on “responsible” water use**

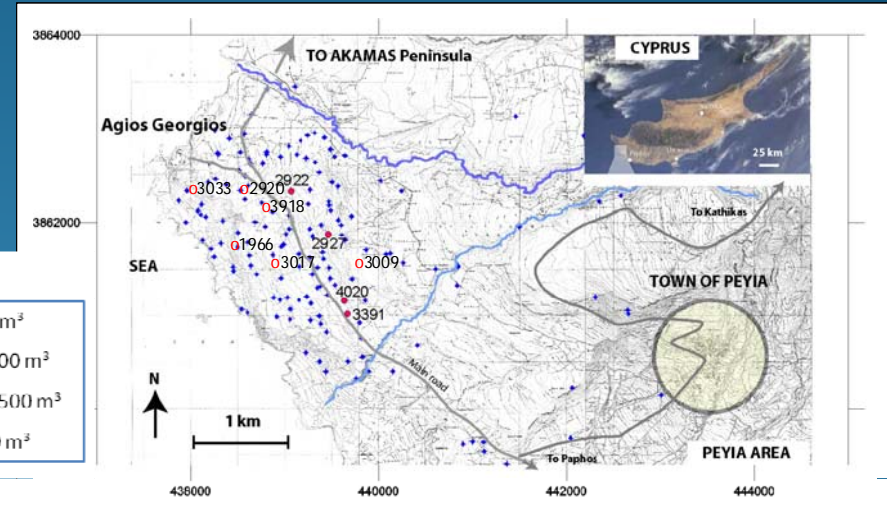
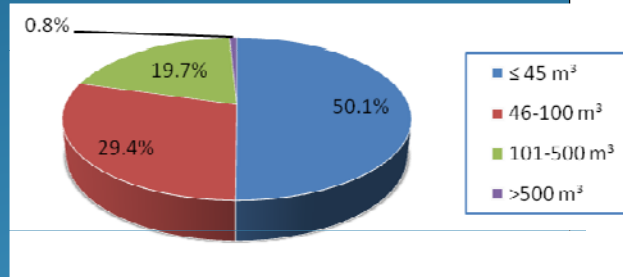
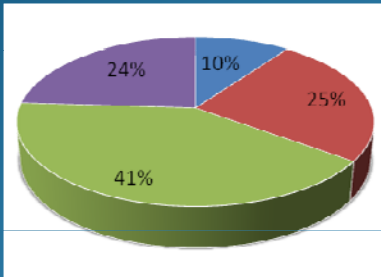


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The INECO case study

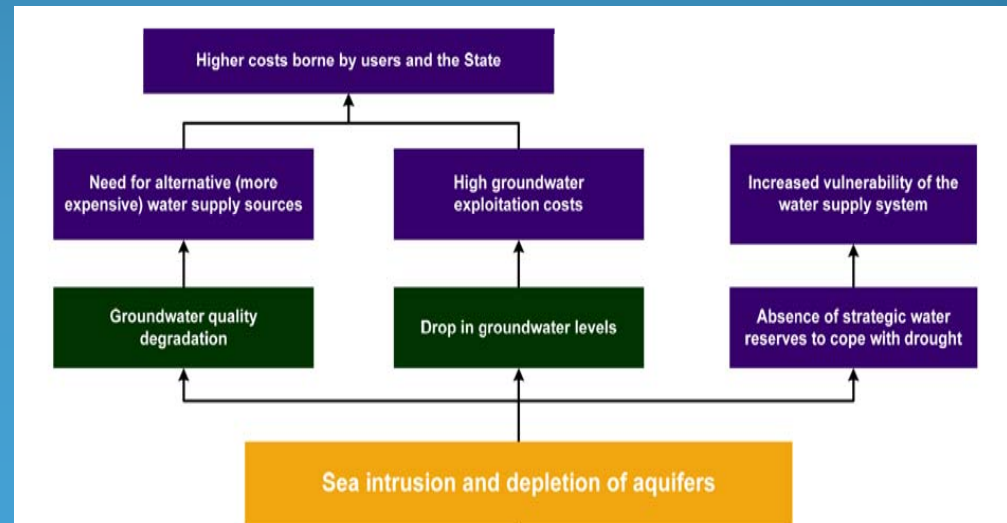
Pegeia aquifer

- Locally important water resource;
- Vulnerable aquifer;
- Conflicts and competition over water allocation and use;



Impacts

- Degradation of gwt quality;
- Drop in gwt levels;
- Water cuts during the last drought period;
- Less water for irrigation - Pafos Irrigation Project

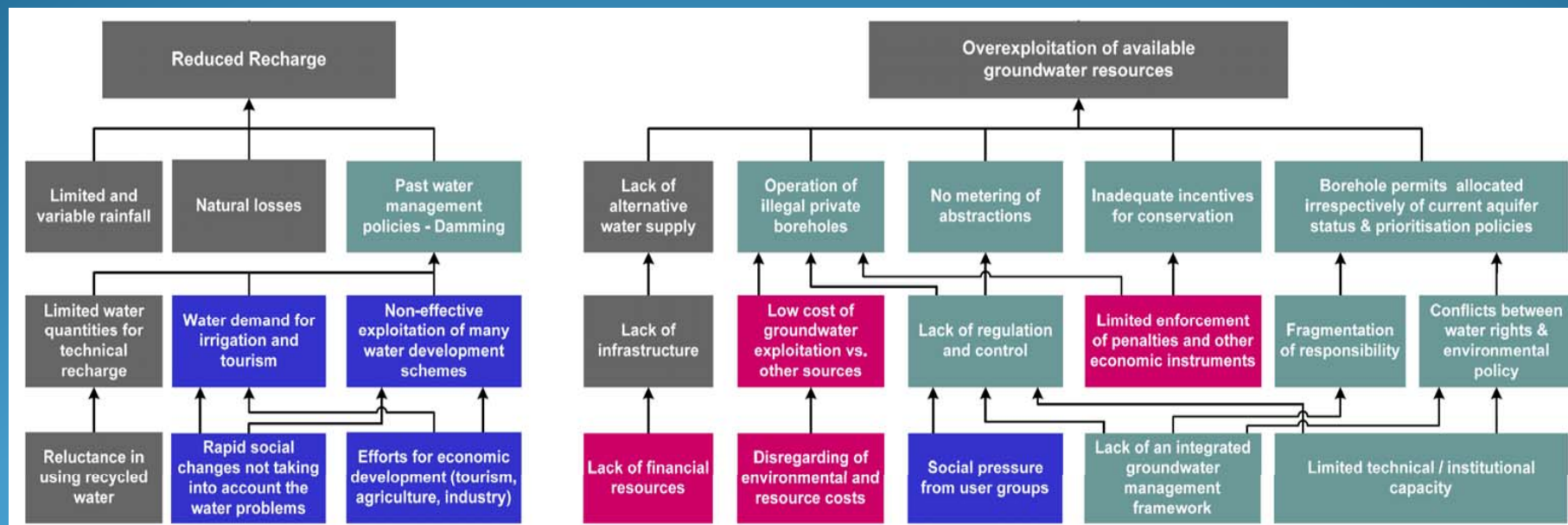
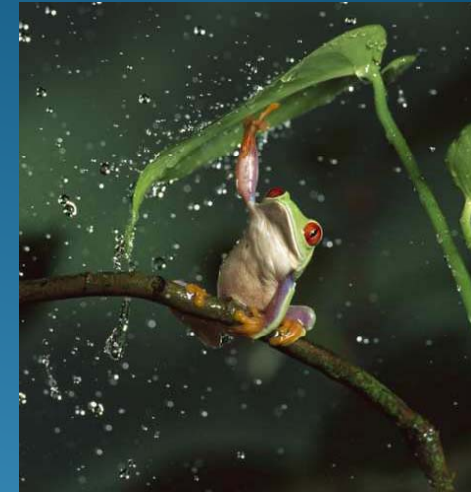


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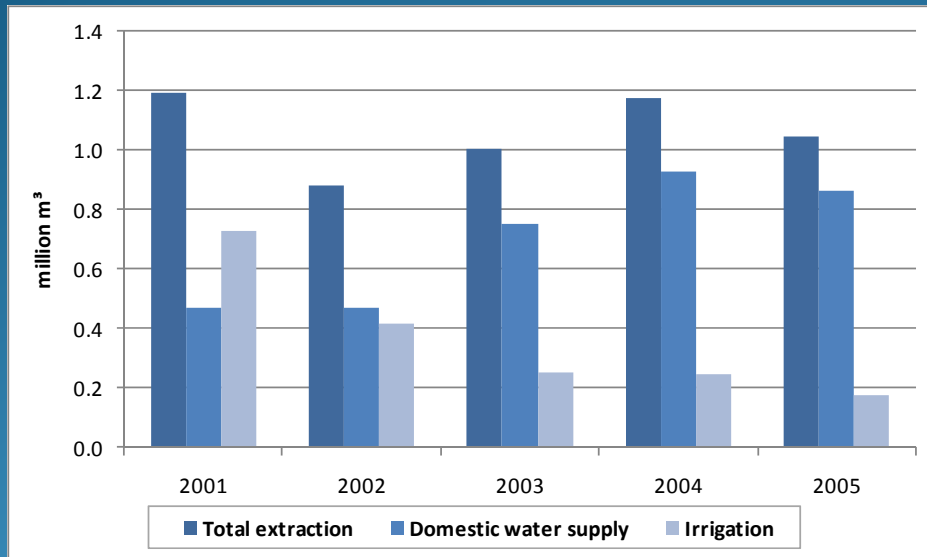
The INECO case study

Causes

- Low recharge;
- Overexploitation of groundwater resources;



- Aquifer monitoring (water table and salinity);
- Provision of irrigation supply from from Pafos Irrigation Scheme;

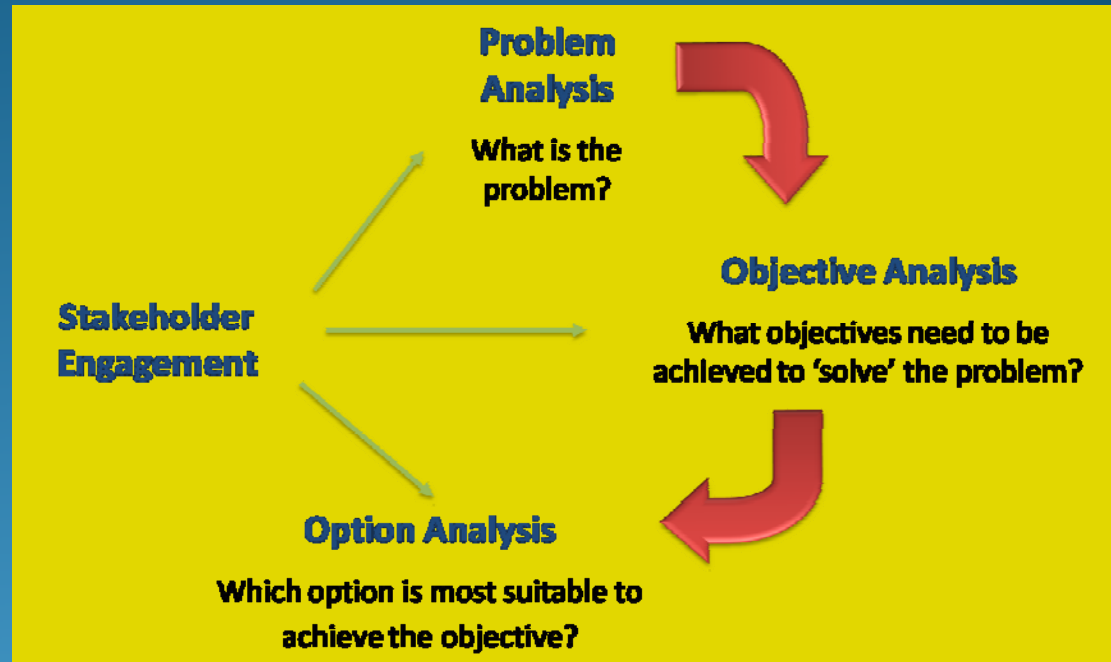


- Development of sewage collection and treatment plan

... the rapid development of the area increases the vulnerability of the aquifer ...there must be a way to achieve sustainable water management without compromising economic growth !!!!

What went or is wrong ?

- 3 step participatory process;
- Problem analysis;
- Objective analysis;
- Option analysis

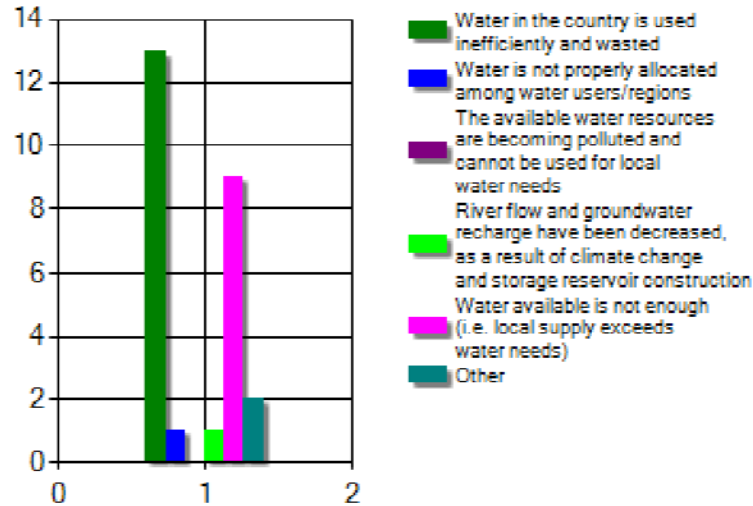


- 6 public participation meetings with local stakeholders;
- 3 questionnaires;
- INECO corner at Pegeia Town Hall;
- Flyer : "Building a common vision for managing groundwater resources in Cyprus" ;
- Posters : "Water and agriculture" - "Water and biodiversity" and "Water and housing permits" ;
- Non-technical report "The Case of Pegeia aquifer" ;
- Presentations to the public

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What went wrong ?

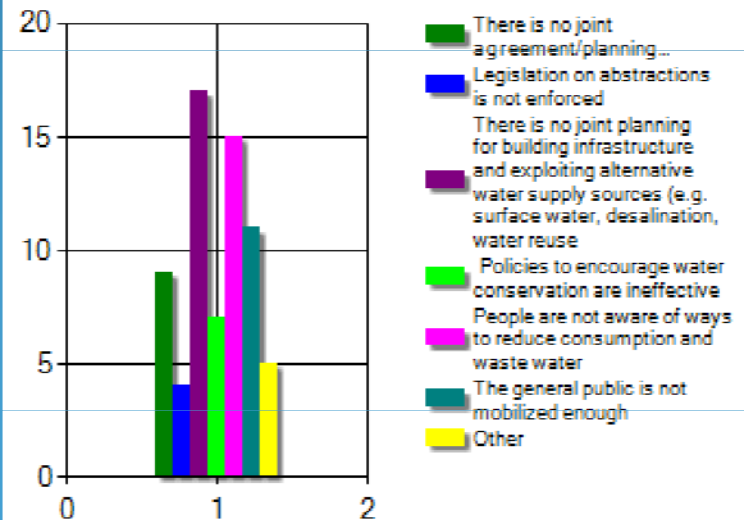
Which, according to your view, is the most important cause of groundwater depletion in your region? (only one answer possible)



- Building permits;
- Currently applied agricultural practices;
- Existing cropping patterns;
- Seasonal variation of water demand;
- Lack of awareness and education on water conservation;
- Lack of information on water issues;
- Lack of sewerage system;
- High water losses in the distribution system



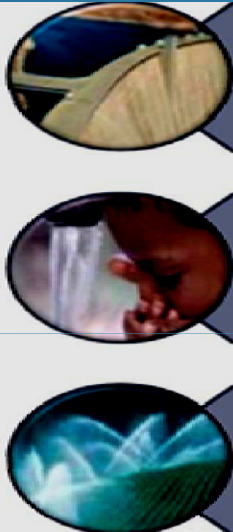
Which, according to your view, are the underlying cause(s) of groundwater depletion? (more than one answer possible)



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Key policy objectives

- Supply enhancement;
- Water use efficiency improvement ;
- Regulation and control over gwt abstractions;
- Enhancement of awareness among water users and citizens



- Enhance supply**
*Doing **more with more** raw water*
 - Who bears the cost?
- Increase productivity**
*Doing **more with the same** raw water*
 - Public subsidies vs. economic efficiency for low-value uses
- Phase out some uses**
*Doing **less with the same** raw water*
 - Often socially & politically undesirable
 - Enforcement?

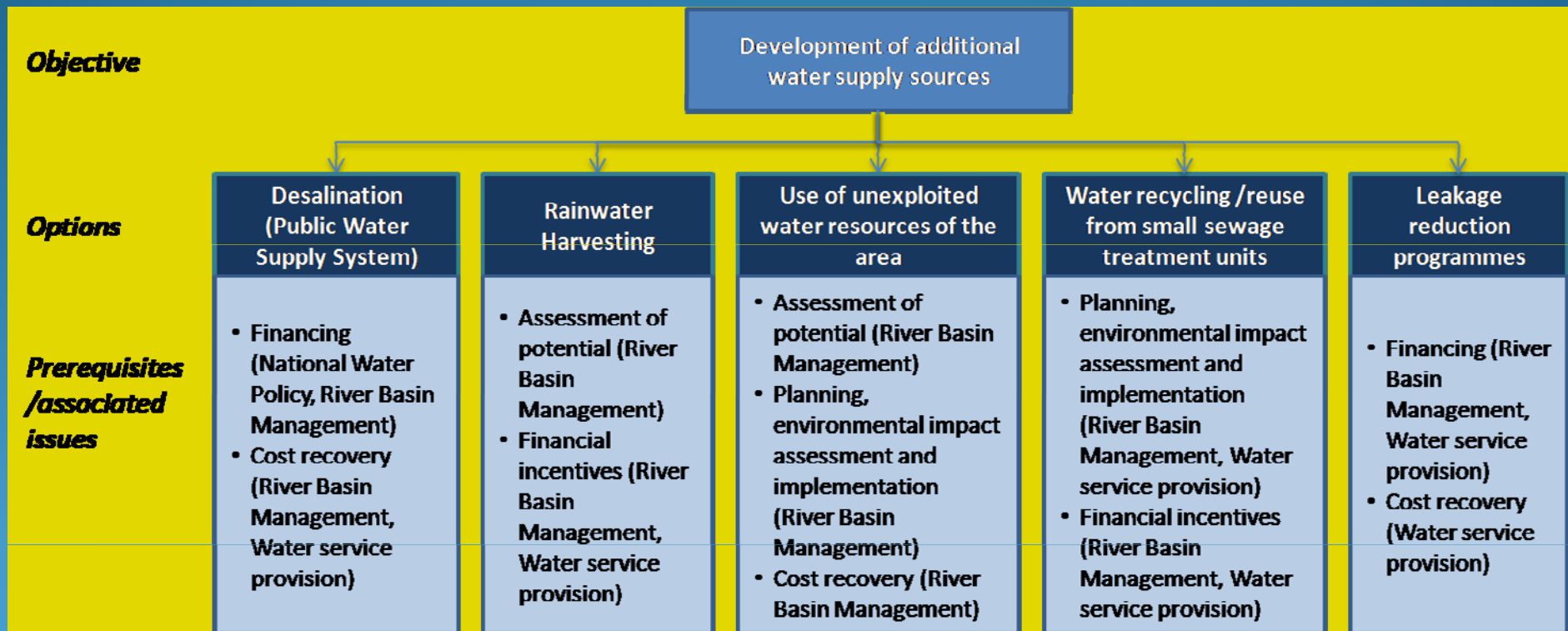
- Water management framework



Supply enhancement

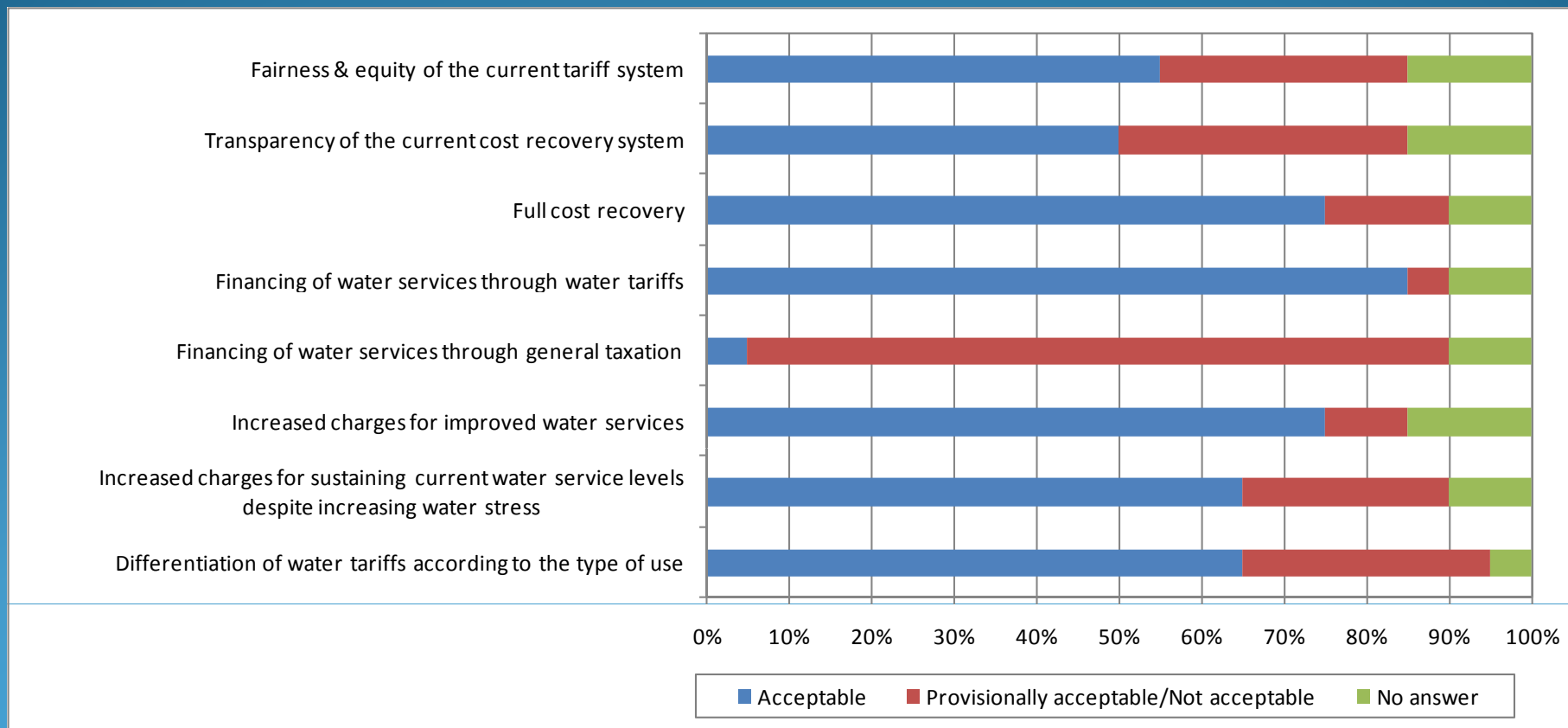


Development of additional water supply sources to substitute gwt use in the domestic sector



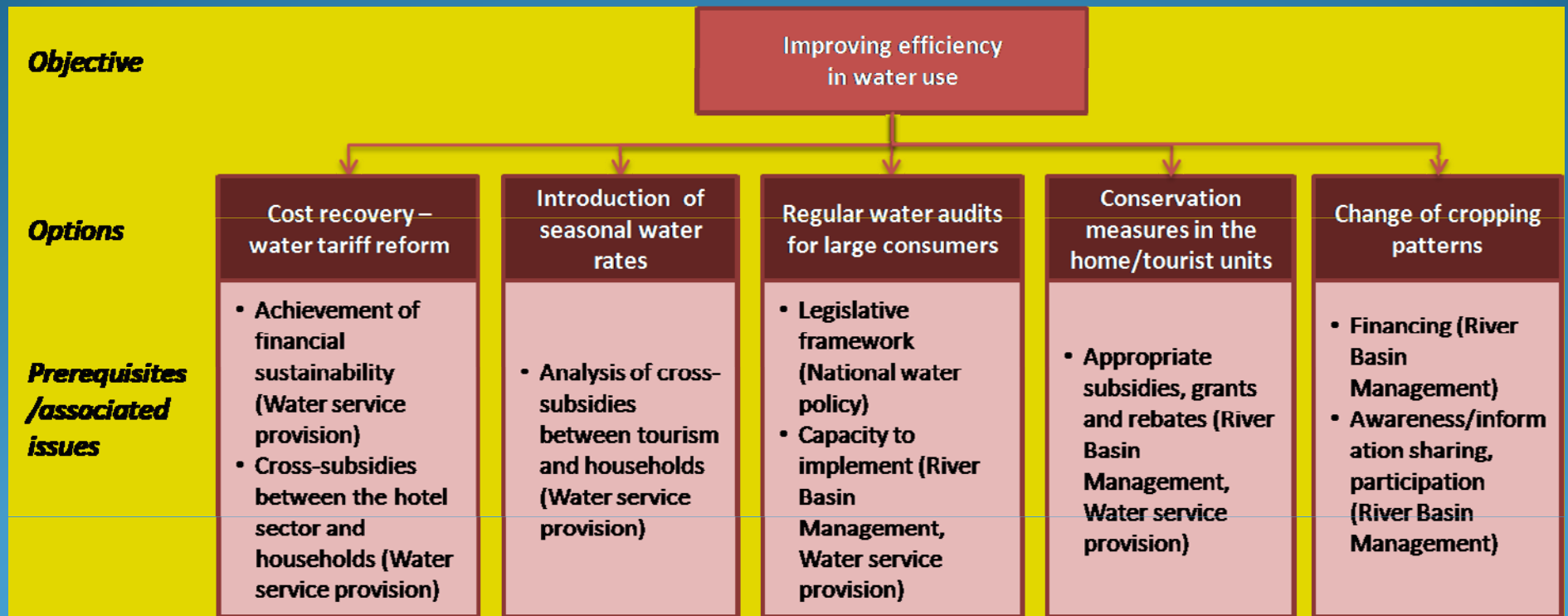
Supply enhancement

Cost recovery and cost sharing issues



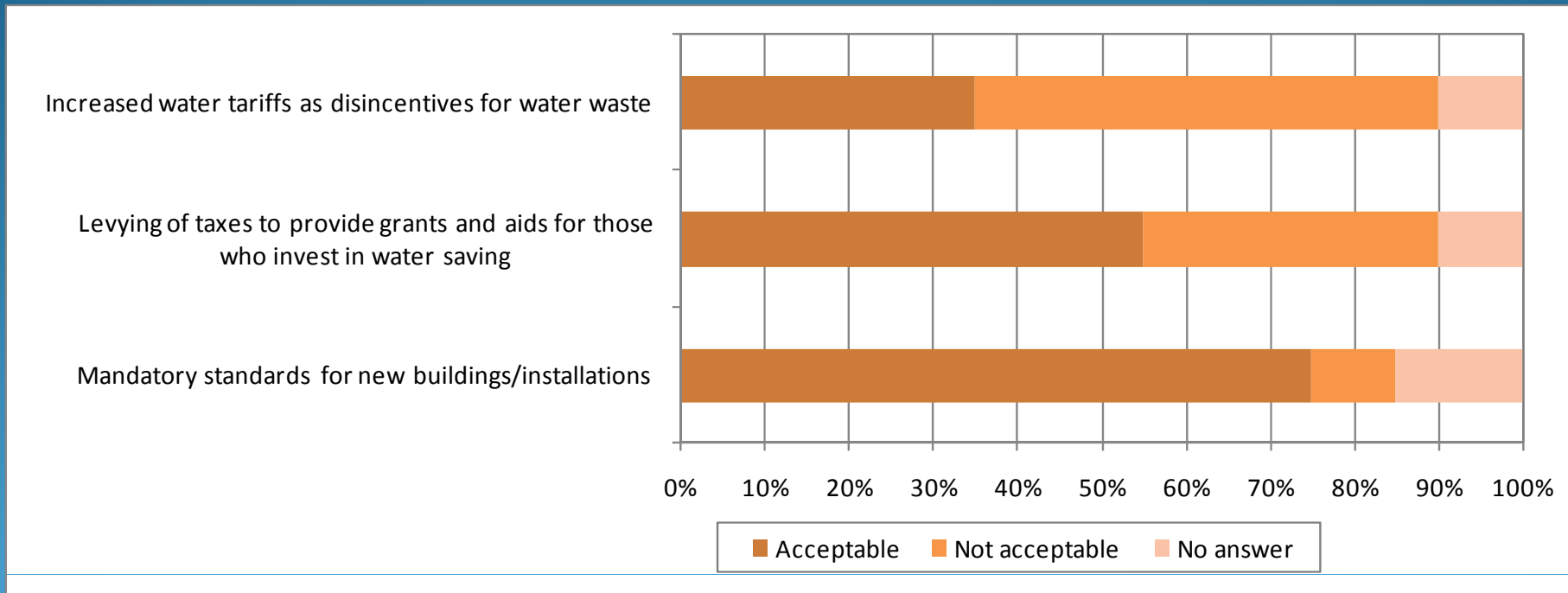
Water use efficiency

Improvement of efficiency in water use in the domestic sector and in irrigated agriculture, as part of the overall policy for water conservation

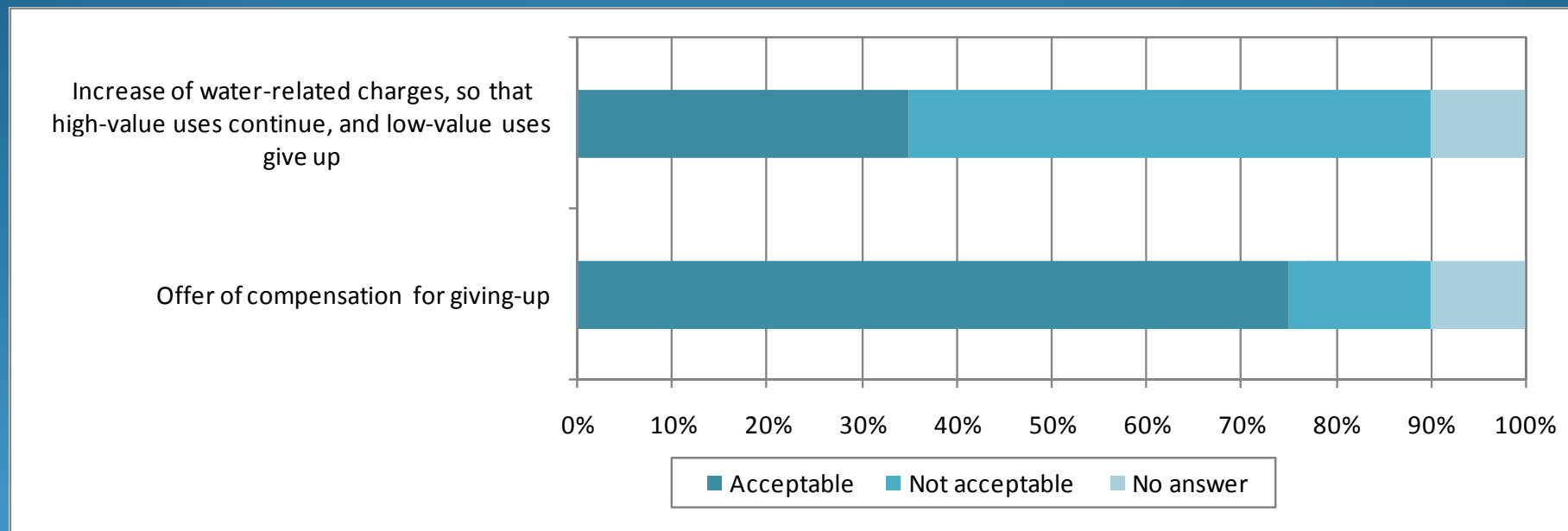


Water use efficiency

Water conservation



Water use efficiency

Phasing-out of specific water uses

Regulation of abstractions

Objective

Regulation of abstractions

Options

Borehole monitoring & control

Penalties and fines for overabstraction

Development of desalination for the hotel sector

Conservation measures in the home/tourist units

Prerequisites /associated issues

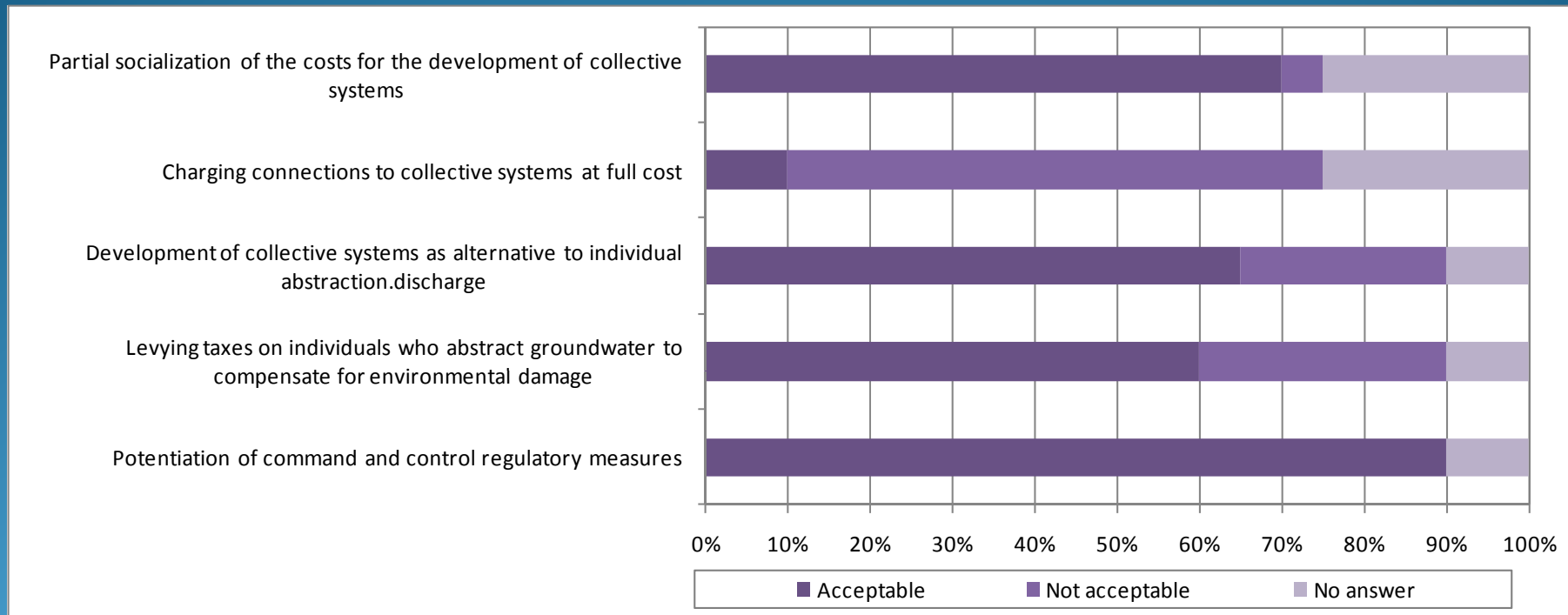
- Institutional organization (National water policy)
- Feasibility and capacity to implement (River Basin Management)

- Monitoring of private boreholes (River Basin Management)
- Social issues/conflicts of interest

- Cost of desalinated water vs. cost of water from the public system (Water service provision)
- Procedures for licensing (National Water Policy and Law)

- Appropriate subsidies, grants and rebates (River Basin Management, Water service provision)

Regulation of abstractions



Public participation

Broader mobilization of local citizens and actors as part of the overall effort already undertaken in Cyprus for the development of a new water culture among professionals, water users and citizens

Objective

Enhancement of awareness and participation

Options

Awareness campaigning

Information sharing (web, meetings)

Citizen's jury and panels

Prerequisites /associated issues

None identified
Actions required at all levels

- Information disclosure at the local level (River Basin Management, Water service provision)
- Use of non-technical language

- Legislative framework (National Water Policy and Law)
- Procedures and implementation (River Basin Management, Water service provision)

Public participation

- Existing public participation campaigns with many deficiencies ;
- Give citizens the true opportunity to express their views;
- Enhanced awareness and improved accessibility to background information;
- Difficulties to understand disclosed information - share information in a non-technical way;
- Decisions taken are not always impartial

- Effective public participation is a sharing process of views – ideas – suggestions rather than conference type gatherings;
- Public involvement requires sharing of information on water issues;
- Unwillingness to disclose information on water issues tend citizens to believe that decisions are not always impartial;
- Public involvement will be enhanced through open and inclusive public hearings – awareness campaigns – round table discussions – exchange of views and ideas;
- Citizens feel comfortable when they have the floor to state their views rather than when they are only an inactive audience;
- Questionnaires to collect information and views proved to be a useful tool;
- “responsible” water users



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Thank you very much