

INECO

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The EU Policy for Groundwater Protection and the Current Situation in Cyprus

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Outline of Presentation



- **EU groundwater legislative framework**
 - The Groundwater Directive (80/68/EEC)
 - The Water Framework Directive (2000/60/EC)
 - The Groundwater Daughter Directive (2006/118/EC)
 - Other relevant European legislation
- **Current situation in Cyprus**
 - Brief overview
 - Article 5 analysis
- **Conclusions**



EU groundwater legislative framework



1. The Groundwater Directive (80/68/EEC)

- Directive on the protection of groundwater against pollution caused by certain dangerous substances.
- Provides a protection framework by
 - preventing the direct or indirect introduction of high priority pollutants into groundwater and
 - limiting the introduction into groundwater of other pollutants.



EU groundwater legislative framework (2)



2. The Water Framework Directive (WFD) (2000/60/EC)

- Groundwater protection is also a feature of the WFD, which is the basic legislation for the protection of Europe's aquatic environment.
- The WFD lays the foundation for a modern, holistic and ambitious water policy for the European Union.



EU groundwater legislative framework (3)



- Establishes a comprehensive framework for the sustainable management of European waters, including inland surface waters, transitional waters, coastal waters and groundwater.
- In essence, it requires water resources to be managed in an integrated way at river basin level.



EU groundwater legislative framework (4)



- It sets out specific environmental objectives and the deadlines by which these should be achieved.
- In particular, Member States are required to take measures to aim to achieve the WFD objective of 'good status' for water bodies by 2015.



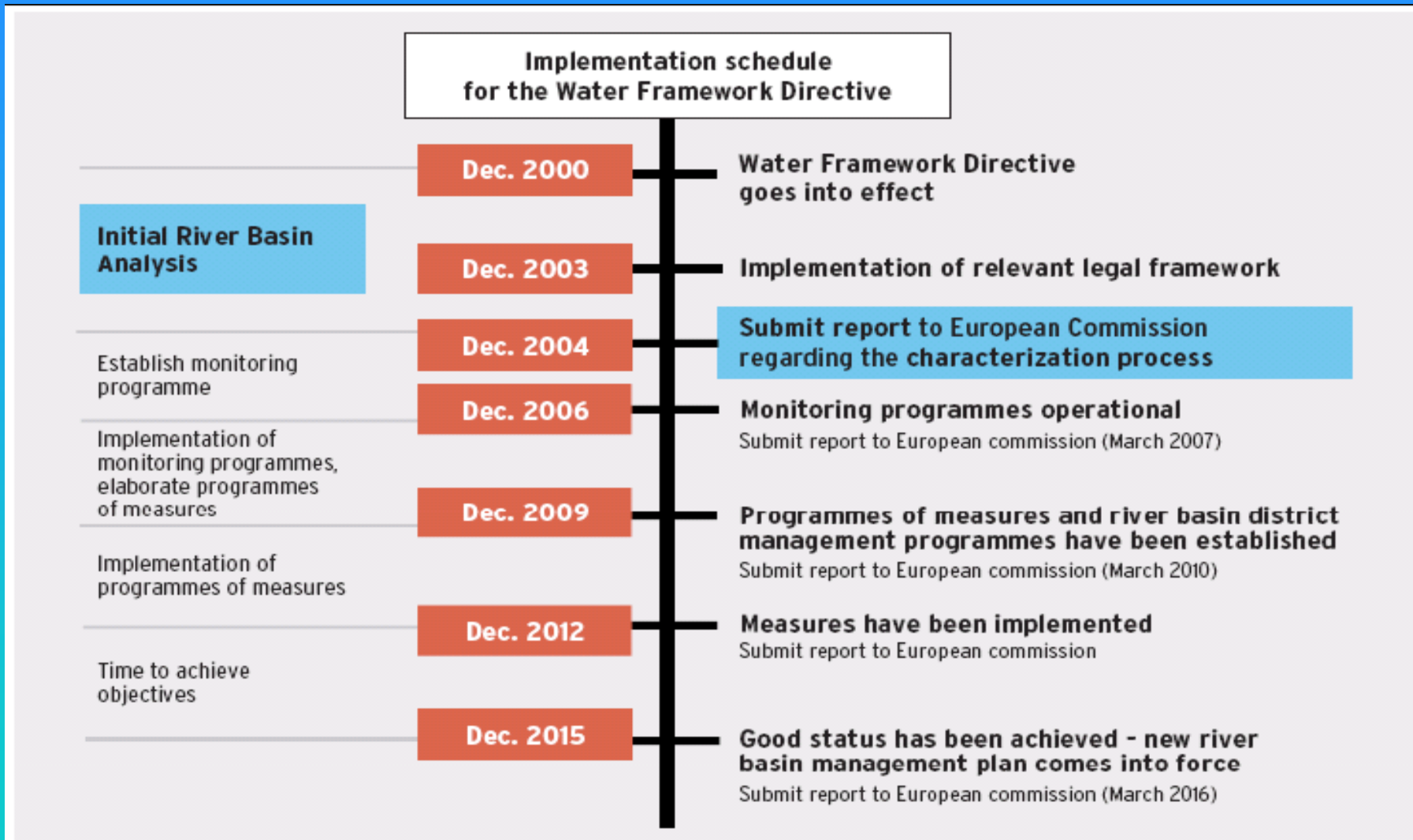
EU groundwater legislative framework (5)



- Groundwater is one of the key components of the WFD, which requires
 - the achievement of good groundwater status,
 - provides for the monitoring of groundwater bodies as well as measures to protect and restore groundwater.
- Good groundwater status means the status achieved by a groundwater body when both its quantitative status and its chemical status are at least “good”.



EU groundwater legislative framework (6)





EU groundwater legislative framework (7)



3. The Groundwater Daughter Directive (GWD) (2006/118/EC)

- Article 17 of the WFD requires:
 - the establishment of criteria for assessing good groundwater chemical status (Article 17.2a),
 - the identification of significant and sustained upward trends and
 - for the definition of starting points for trend reversals (Article 17.2b).



EU groundwater legislative framework (8)



- A new GWD has been adopted on 12 December 2006.
- This new GWD on the protection of groundwater against pollution and deterioration, which complements the WFD, sets up criteria:
 - for the evaluation of good groundwater chemical status,
 - for the identification and reversal of significant and sustained upward trends in pollutant concentrations and
 - provides additional requirements concerning the prevention or limitation of indirect discharges.



EU groundwater legislative framework (9)



- The new GWD ensures that groundwater quality is monitored and evaluated across Europe in a harmonised way.
- The proposed approach for establishing quality criteria takes into account the local characteristics and allows for further improvements.
- According to Article 22(2) of the WFD, Directive 80/68/EEC will be repealed by the end of 2013, after which the protection regime is to be continued through the WFD and the new GWD.



EU groundwater legislative framework (10)



4. Other relevant European legislation

- **Nitrates Directive (91/676/EEC)** - contains provisions for the designation of vulnerable zones and Member State action where the amount of nitrate contained in groundwater is exceeding, or is likely to exceed 50 mg/l.
- **Habitats Directive (92/43/EEC)** - indirectly protects groundwater, in particular quantity. The requirement to maintain groundwater fed habitats implies safeguarding groundwater flow in these areas.



EU groundwater legislative framework (11)



- **Plant Protection Products Directive (91/414/EEC)** - regulates the authorisation of the placing of plant products on the market based on comprehensive risk assessments for humans and the environment. Concerning groundwater, authorisations would not be granted if the uses to be authorised (might) lead to exceeding maximum permissible concentrations for the active substances and relevant metabolites, degradation or reaction products as laid down in the drinking water directive 80/778/EEC, superseded by 98/83/EC.



EU groundwater legislative framework (12)



- **Biocides Directive (Directive 98/8/EEC)** - concerns the authorisation and the placing on the market of biocidal products such as pesticides, herbicides, or fungicides similar to Directive 91/414/EEC.
- **Urban Wastewater Treatment Directive (91/271/EEC)** - aims to protect the environment from the adverse effects of discharges of urban waste water and waste water from certain industrial sectors. This directive is indirectly relevant to groundwater (protection of receiving groundwaters from possibly contaminated waste waters originating from freshwater sources).



EU groundwater legislative framework (13)



- **Integrated Pollution Prevention and Control (IPPC) Directive (96/61/EC)** – sets out controls in a site permit, designed to prevent or reduce emissions in the air, water and land from a range of activities listed in the Annex I of the directive.
- **Landfill Directive (99/31/EEC)** – concerns the landfill of waste. It aims to provide measures, procedures and guidance to prevent or reduce as far as possible negative effects on the environment, including groundwater.



EU groundwater legislative framework (14)



- **Sewage Sludge Directive (86/278/EEC)** - seeks to encourage the use of sewage sludge in agriculture and to regulate its use in such a way as to prevent harmful effects on soil, vegetation, animals and man.
- **Construction Product Directive (89/106/EEC)** - focuses on conformity aspects of construction products, taking into account possible risk to water environments, in particular release of dangerous substances to water.



EU groundwater legislative framework (15)



- **EU-Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency and amending Directive 1999/45/EC.** - protection of groundwater is included in the evaluation of substances by manufacturers and other relevant organisations. REACH leaves all room for the WFD/GWD and for the relevant authorities to evaluate substances (as such or in products) with regard to protection of water in general or in specific situations.



EU groundwater legislative framework (16)



- **Management of Waste from Extractive Industries Directive (2006/21/EC)** - a stand-alone legal instrument requiring minimisation of impacts to groundwater from mine waste facilities.
- **Environmental Liability Directive (2004/35/EC)** - provides a driver to prevent and remediate pollution in groundwater.
- **Drinking Water Directive (80/778/EEC, superseded by 98/83/EC)** - The objective of this directive is to protect human health from the adverse effects of any contamination of water intended for human consumption by ensuring that it is wholesome and clean.



EU groundwater legislative framework (17)



- **Soil directive:** the draft soil directive (negotiated in 2007) is focussing on the protection of soil; processes as for example erosion, sealing will have to be monitored, action plans will have to be written and, if necessary, measures will have to be taken. Also soil contamination is included. The introduction into soil of dangerous substances should be limited (Article 9).



EU groundwater legislative framework (18)



- Half of the above mentioned legislation is listed in Part A of Annex VI of the WFD as being part of the “basic measures” which Member States have to implement to achieve the objectives of the WFD.
- These directives are therefore complementary to the WFD, and their requirements must still be carried out.
- If the requirements within these existing directives are not on their own sufficient to achieve the objectives of the WFD, then Member States must carry out “supplementary” measures.



Current situation in Cyprus



1. Brief overview

- In Cyprus groundwater remains the main source for the non-government irrigation sector and most of the village water supplies.
- The groundwater resources of the island have been the most obvious and easily accessible sources of water for many years.
- As a result, they have been heavily over pumped especially during periods of drought.



Current situation in Cyprus (2)



- Heavy over pumping to meet an increasing water demand or to mitigate drought effects combined with low recharge rates resulted:
 - in the depletion of almost all aquifers and
 - sea water intrusion in many coastal aquifers.



1.1 Legislation

- Most of the above mentioned EU legislation has been transposed into national legislation through the Water and Soil Pollution Control Law.
- The WFD has been transposed through the Water Protection and Management Law of 2004.
- Cyprus is also in the process of transposing the new GWD. The required deadline for the transposition is the 16th January 2009.



1.2 Protection measures

- A number of measures are used to prevent and control pollution of groundwater. The most significant measures are:
 - Abstraction and licensing controls.
 - Discharge controls.
 - Monitoring programs.



Current situation in Cyprus (5)



- Installation of sewage disposal systems and implementation of directive concerning urban waste water treatment.
- Protection zones.
- Artificial recharge.
- Infrastructure works.
- Codes of good practice.
- Educational programs, etc



2. Article 5 analysis

- Under Article 5 of the WFD, Member States had to produce an environmental and economic analysis by December 2004, the so-called “Article 5 analysis” and report the results to the European Commission.



Current situation in Cyprus (7)



- For groundwater the analysis requires Member States to carry out:
 - a characterisation of all groundwater bodies and
 - a review of the impact of human activity on the status of groundwater with a view to identifying the groundwater bodies being at risk of failing to meet the WFD environmental objectives.



Current situation in Cyprus (8)



- The great majority of the groundwater bodies of Cyprus, due to the particularities of the island geography and the strong pressures that they receive, have been characterized as being "at risk".



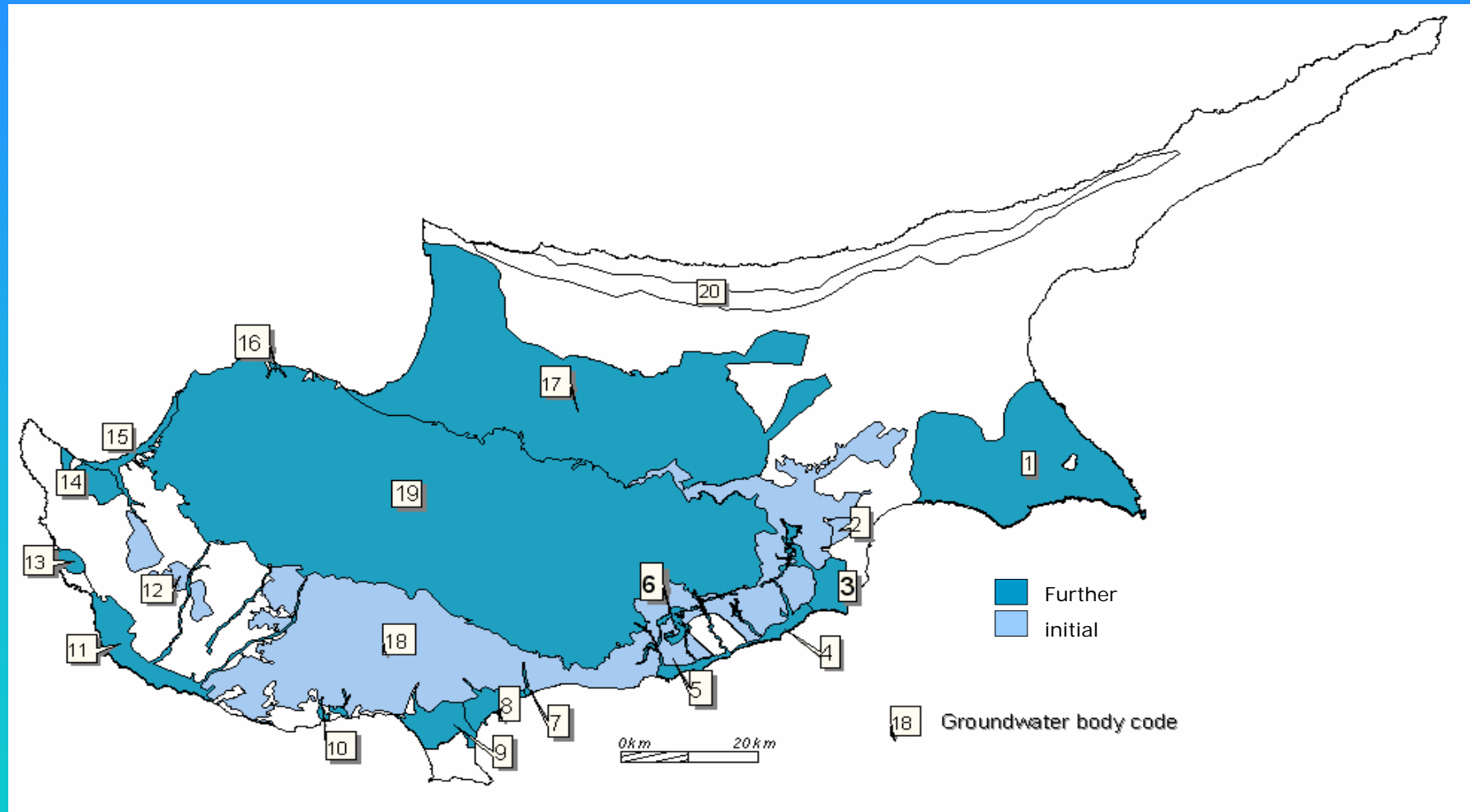
Current situation in Cyprus (9)



- Water bodies are identified as being “at risk” based on:
 - Known water quality problems, such as seawater intrusion in the coastal aquifers;
 - Overexploitation for water supply (drinking water and agricultural water);
 - The presence of human activities which could degrade the quality of the groundwater bodies (such as agricultural activities including the use of fertilizer and pesticides, livestock; non-sewered discharge of urban waste water and solid waste).



Current situation in Cyprus (10)



Characterisation status of the groundwater bodies of Cyprus



Current situation in Cyprus (11)



GWB Code and Name	Assessment ⁽¹⁾	Characterisation	Reasons for being 'At Risk'				
			Over-pumping	Sea Water Intrusion	Pt. source pollution	Diffuse Pollution	Artificial Recharge
CY_1 Kokkinochoria ⁽²⁾	At risk	further	yes	yes	no	yes	no
CY_2 Aradippou Gypsum	No Risk	initial	yes	no	no	no	no
CY_3 Kiti-Perivolia, Tremithios Riverbed	At risk	further	yes	yes	no	yes	yes
CY_4 Softades-Basilikos coastal plain & riverbed	At risk	further	no	yes	no	yes	no
CY_5 Maroni Gypsum	No Risk	initial	yes	no	no	no	no
CY_6 Mari-Kalo Chorio Chalks and Choirokoitia sandstones	At risk	further	yes	no	no	no	no
CY_7 Germasogeia Riverbed	At risk	further	no	no	no	yes	yes
CY_8 Lemesos	At risk	further	yes	yes	no	yes	no
CY_9 Akrotiri	At risk	further	yes	yes	no	yes	yes
CY_10 Paramali and Avdimou	At risk	further	yes	yes	no	no	no
CY_11 Pafos Coastal Plain and riverbeds	At risk	further	yes	yes	no	yes	yes
CY_12 Letymvou-Giolou Gypsum	No Risk	initial	yes	no	no	no	no
CY_13 Pegeia limestones	At risk	further	yes	yes	no	no	no
CY_14 Androlikou limestones	At risk	further	yes	yes	no	no	no
CY_15 Chrysochou-Gialia coastal plain & riverbed	At risk	further	yes	yes	no	no	no
CY_16 Pyrgos	At risk	further	yes	yes	no	no	no
CY_17 Central and Western Mesaoria	At risk	further	yes	yes	no	no	no
CY_18 Lefkara - Pachna	No Risk	initial	yes	no	no	no	no
CY_19 Troodes area ⁽²⁾	At risk	further ³	no ⁴	no	no	no	no

Groundwater bodies identified as 'at risk' and needing further characterisation



Conclusions



- The most important upcoming deadline with regard to the WFD is the end of 2009.
- Member States including Cyprus have to complete the first River Basin Management Plans (RBMPs) and establish a Programme of Measures for achieving the WFD environmental objectives.
- All the measures shall be made operational by the end of 2012.



Conclusions (2)



- Measures in addition to the measures already in force must be implemented to prevent deterioration and restore all bodies of groundwater, the great majority of which have been identified as being at risk of failing to meet the WFD objectives.
- This can be achieved only by a drastic reduction in abstraction rates, which in many aquifers should be accompanied by artificial recharge.
- Action is also required in order to solve the pressing groundwater pollution problems caused by urbanisation and agricultural activities.



Conclusions (3)



- These corrective measures may have serious social and economic impacts.
- Public participation in the planning process by discussing issues and contributing to their solution is essential.
- Through participation, widely acceptable solutions for river basin planning can be arrived at. This can avoid potential conflicts, problems of management and costs in the long term.



Conclusions (4)



- Public participation plays a key role in the WFD. Member States are required to ensure public consultation in the production of the RBMPs (Article 14).
- The INECO Cyprus stakeholder workshop feeds in well with the work done under the WFD, and
- will assist in our effort to make WFD implementation successful.



**THANK YOU
FOR YOUR ATTENTION**