



# APELE ROMANE

NATIONAL ADMINISTRATION



## REFERENCE POINTS OF ACTIVITY

- **1924 - The first Water Law which contain provisions referring to measure, register and water management;**
- **1956 - Water State Comity – river basins units for water management;**
- **1956-2005 River Basin Water Management Principle was conserved;**
- **1956-1989 – Level of organization : Minister (Water State Committee; Water National Council);**
- **1990-present days – “Apele Romane”**
  - **1990- 1998 – National Authority**
  - **1998-2002 – National Company**
  - **2002-2005 – National Authority**
  - **starting with 2005 – National Administration (Public Institution)**

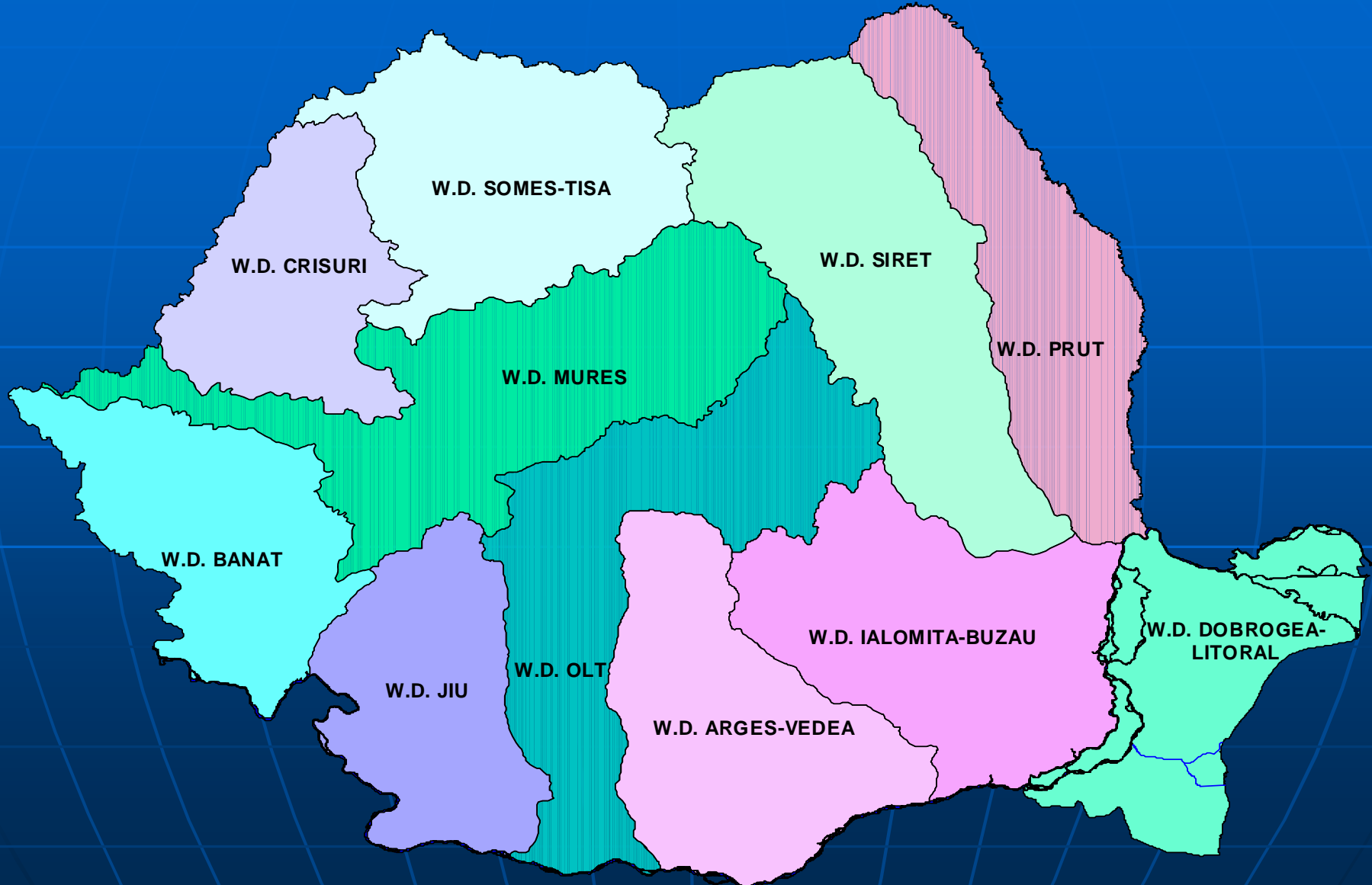


# THE EVOLUTION OF ROMANIAN WATER MANAGEMENT CONCEPT

- ◆ *I-st Phase : till 1974 - Quantitative water management – quantitative control for water*
  - Water Law - 1924
- ◆ *II-nd Phase: 1974-2000 - Quantitative and qualitative water management - quantitative and qualitative control for water*
  - Water Law nr. 8/1974;
  - Law nr. 5/1989;
  - Government Decision nr. 1001/1990;
  - Water Law 107/1996;
- ◆ *III-rd : 2000 - Sustainable water management - quantitative and qualitative control for water and healthy ecosystems*
  - Water Framework Directive 2000/60/EC - steps for sustainable water management ;
  - Water Law 310/2004



# APELE ROMANE'S WATER DIRECTORATES





# NATIONAL PATRIMONY

- ❑ 78,905 km watercourses
- ❑ 122 natural lakes
- ❑ 1,420 water storages with 14.2 bill. m<sup>3</sup> volume
- ❑ 9,365 km dikes for cities, villages, lands protection
- ❑ 6,600 km river bank stabilisation works
- ❑ 1,100 km canals
- ❑ 59 pumps stations



# FIELD ACTIVITIES

- ❑ RIVER BASIN MANAGEMENT PLANS
- ❑ WATER RESOURCES MANAGEMENT
- ❑ ADMINISTRATION OF NATIONAL SYSTEM OF HYDRAULIC STRUCTURES
- ❑ WATER PROTECTION AGAINST POLLUTION AND OVER - USE
- ❑ FLOOD CONTROL MANAGEMENT
- ❑ COORDINATION OF NATIONAL INVESTMENTS IN WATER RESOURCES FIELD
- ❑ TURNING TO ACCOUNT OF WATER RESOURCES
- ❑ APPLICATION OF INTERNATIONAL WATER AGREEMENTS



# WATER MANAGEMENT IN ROMANIA

## PRINCIPLES:

- ✓ water is a finite and vulnerable resource
- ✓ water management organized in each river basin
- ✓ integrate management for quality and quantity
- ✓ river basin solidarity
- ✓ polluter pays
- ✓ water create a economic value

## POLITICS:

- ✓ administration: knowledge; conservation; rational using of water resources
- ✓ rehabilitation and development of Water Management National System
- ✓ financial: implement the new economic mechanism
- ✓ institutional: implement the new structure of Apele Romane National Administration
- ✓ implement of European Union Directives
- ✓ participation: Basin Committee



# ROMANIAN WATER RESOURCES

- **Romania is relatively poor in water resources**, the available resource being of 40 billions m<sup>3</sup> and 1700 m<sup>3</sup>/inh/year
- **High variability in space**
  - mountain area is very important for runoff formation
  - 50% out of the total water resources are formed on 17% out of the total Romanian surface
  - specific discharge is:
    - ♦ less than 1 l/s.km<sup>2</sup> in Romanian Plain, Dobrogea, Timis and Arad plains
    - ♦ 40 l/s/km<sup>2</sup> in the high area of Fagaras and Retezat mountains
- **High variability during the year**
  - important floods in spring, beginning of summer, succeed by long drought:
  - high torrential regime
  - Qmin/Qmax-----1/1000 – 1/2000

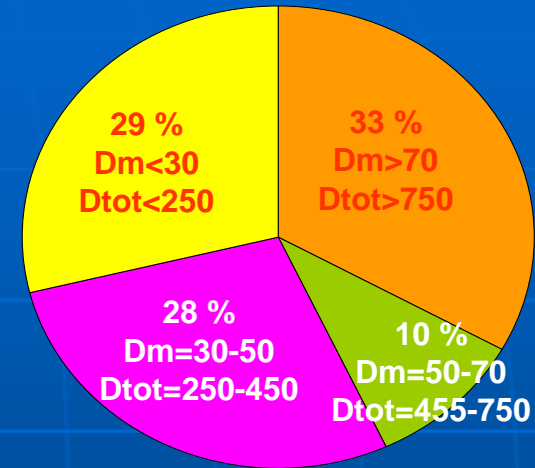




# WATER RESOURCES

- ❑ Romania has a theoretical yearly water potential of about  $134 \times 10^3$  millions  $m^3$  (multi-yearly average stock) of which:
  - $40 \times 10^3$  millions  $m^3$  from the inner rivers;
  - $85 \times 10^3$  millions  $m^3$  from Danube river (1/2 of the water stocks);
  - $9 \times 10^3$  millions  $m^3$  from ground water.
  
- ❑ The amount of technical resource that can be used is about  $61 \times 10^3$  millions  $m^3$  per year, some  $1700 m^3$  per year and inhabitant.

# Floods in Romania 2005-2006



Dm – Average damages ( billions lei)  
Dt- Total damages ( billions lei)



Affected areas in 2005

Affected areas in 2006

- Counties with very high degree of vulnerability
- Counties with high degree of vulnerability
- Counties with mean degree of vulnerability
- Counties with low degree of vulnerability



## FLOOD RISK MANAGEMENT IN ROMANIA

Modernization of the hydro-meteorological information system for real-time warning-alarming of the population:

- **DESWAT** (63.41 mil. RON allocated through the Budget Law);
- **WATMAN** (value of up to 59 mil. USD)



# FLOOD RISK MANAGEMENT IN ROMANIA

## DESWAT PROJECT

*(DEStructive WATER Abatement and  
Control of Water Disasters)*

**IN IMPLEMENTATION STAGE**

**DESWAT**

# UPGRADE HYDROLOGICAL MONITORING STATIONS



## UPGRADE OR REPLACE THE EXISTING STRUCTURES:

- 581 Hydrological stations
- 70 Quality monitoring stations
- 250 Rain gauge stations



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ZCZC 001
SRRO40 JHMM 130600
HHXX 13061
44216 2210042 50045 60050 3311313 51643 71383 5510010 50060=
44218 2210102 50110 60124 3311993 72253 5511050 50000=
44353 nil=
44358 2210007 50009 60010 3312332 72422 5511050 50000=
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44367 nil=
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44373 nil=
44376 nil=
44378 2210
nnnn
    
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**SITUAȚIA ȘI PROGNOZA HIDROLOGICĂ**

St. Hidrom.	St. Hidrom.	St. Hidrom.	St. Hidrom.	St. Hidrom.	St. Hidrom.	St. Hidrom.	St. Hidrom.	St. Hidrom.	St. Hidrom.
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

ROMANIA  
MINISTERUL APELOR ȘI PROTECȚIEI MEDIULUI  
COMPANIA NAȚIONALĂ  
"INSTITUTUL NAȚIONAL DE METEOROLOGIE, HIDROLOGIE ȘI  
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e-mail: deswat@deswat.inm.ro http://www.deswat.ro

### BULETIN HIDROLOGIC

Anul IV Nr. 60 din 01.03.2002

#### CARACTERIZAREA STĂRII RĂURILOR în intervalul 28.02.2002 ora 07<sup>00</sup> - 01.03.2002 ora 07<sup>00</sup>

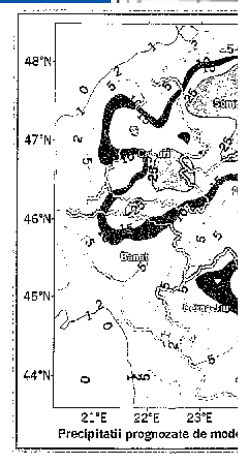
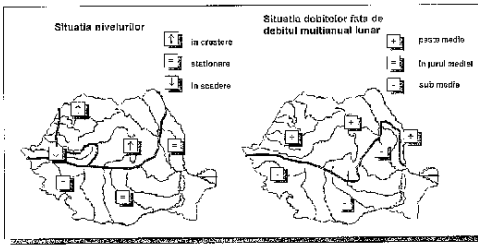
Debitele au fost în general staționare pe râurile din Banat, Oltenia, Muntenia și sudul Moldovei și în creștere, cu efect combinat al precipitațiilor cazute în interval și cedării apei din straturi de zapada din zona de munte, pe celelalte râuri, exceptând cursurile inferioare ale râurilor din Crișana, Iarmavelor și Mureșul (curs mijlociu și inferior), pe care debitele au fost în scădere.

Creșteri mai importante s-au produs pe râurile din Maramureș și din bazinul Someșului. Se situează peste COTLELE DE ATENȚIE: Someș-Bocșen (160+40), Lăpuș-Japuzel (350+0) și Tur-Călinești Oaia (350+20), iar în interval a fost depășită oca de atenție pe Căvanic la s.h. Căvanic (60+2) și pe Vișeu la s.h. Bistra (220) ulterior nivelurile scăzând din nou această oca.

Prin explințarea sistemelor hidro tehnice s-au produs variații de debite pe: Tur, Crișul Repede, Jiu, Argeș, Dâmbovită, și Siret.

Debitele înregistrate la ora 7 se situează peste mediile multianuale lunare pe râurile din Maramureș, Crișana, Transilvania, pe Prut, Siret, Suceava, Moldova și Bistrița și sub aceste valori pe celelalte râuri, cu coeficienți moduli cuprinși întru 0,30-0,80.

S-a menținut gheața la maluri numai pe cursul superior al Bistriței.



Simbol	Descriere simbol	Valoare
d1	Debitul vânt	180
v	Viteza vânt	8,3
T	Temperatura aer	28,0
T1	Temperatura aer (de etaj)	8,0
P	Precipitații	950,9
P1	Precipitații înregistrate	588,9
P2	Valoarea înregistrată pe o zi	4
P3	Valoarea înregistrată pe o săptămână	680
P4	Precipitații înregistrate	3,3
P5	Precipitații înregistrate	4,1
P6	Minimul înregistrat	155,0

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# FLOOD RISK MANAGEMENT IN ROMANIA

## WATMAN PROJECT

*(Information System for Integrated  
WATer MANagement)*





# FLOOD RISK MANAGEMENT IN ROMANIA

## **WATMAN PROJECT** main objectives (1):

- Building of Emergency Intervention Centers (one in each water directorate) endowed with special equipment for intervention in case of floods and accidental pollution;
- Modernization of existing informational system from water field and interconnection with informational system of central and local administration;
- Realization of permanent intervention sections in case of accidental pollution for main rivers and trans-boundary rivers;



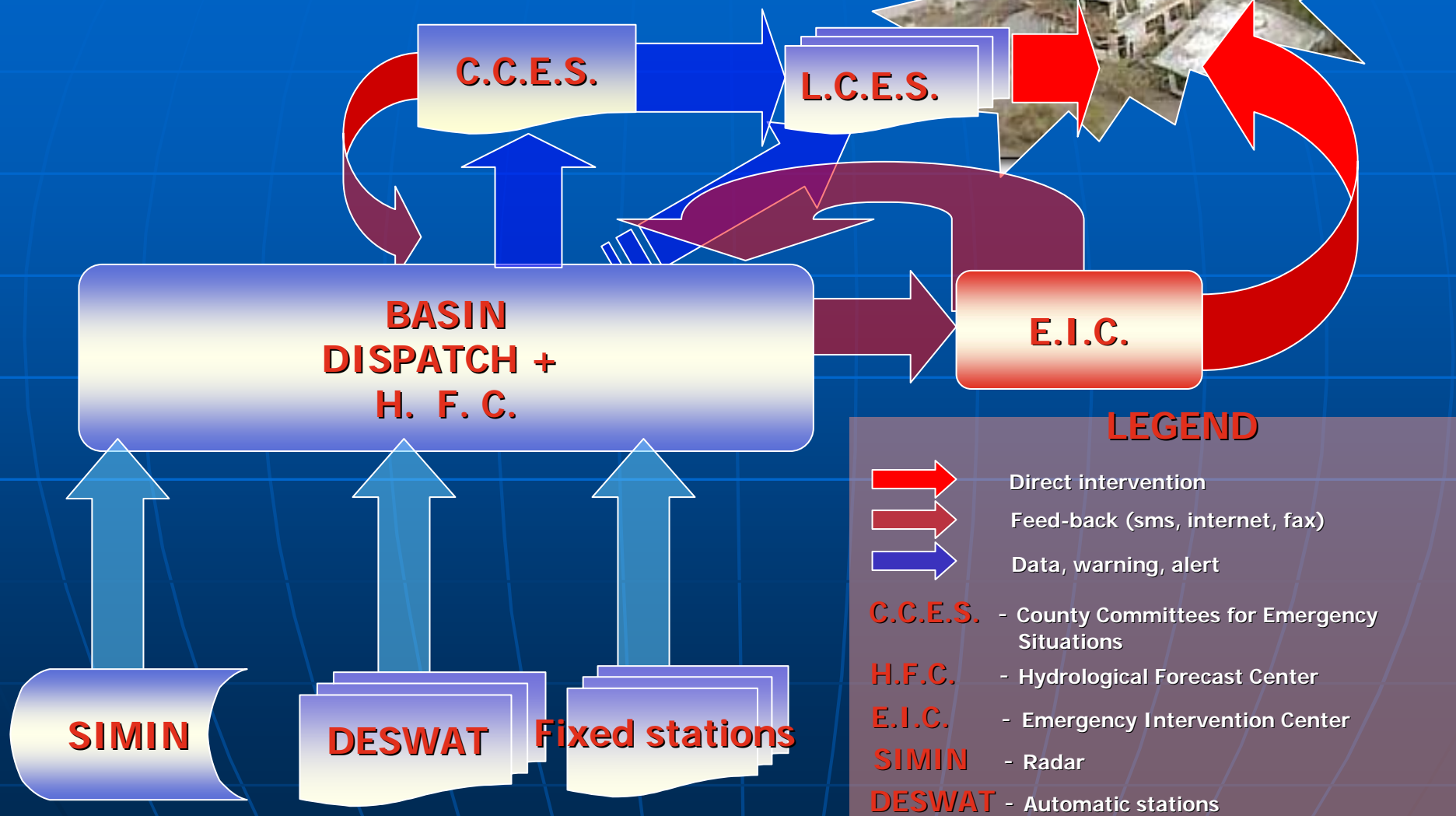
# FLOOD RISK MANAGEMENT IN ROMANIA

## WATMAN PROJECT main objectives (2):

- Realization of intervention plans to optimize actions of all actors involved in case of floods, ice flows, accidental pollution, etc;
- Endowment with software for setting up of potential areas to be affected by floods, accidental pollutions, etc;
- Endowment with software for establishing and assessing of damages produced by floods, accidental pollutions, etc;
- Endowment with software for setting-up of action plans in case of dangerous phenomena.

# WATMAN PROJECT

## ACTION SCHEMA AT RIVER BASIN LEVEL





# ECONOMIC ASPECTS IN WATER FIELD

- **WATER FRAME DIRECTIVE 2000/60: "water is not a commercial product, but produce economical value"**
- **ECONOMIC PRINCIPLES**
  - **END-USER PAY**
  - **POLLUTER PAY**
  - **COSTS RECOVER OF WATER MANAGEMENT (QUANTITY AND QUALITY)**
  - **STIMULATION OF THE BENEFICIARY FOR PROTECTION OF THE WATER RESOURCE**
- **CONTRACTS WITH END - USERS**
- **IN 1991 WAS ESTABLISHED THE NATIONAL UNITARY SYSTEM OF PRICES, TARIFFS AND PENALTIES IN THE WATER FIELD**

# THE IMPLEMENTATION OF THE WATER FRAMEWORK DIRECTIVE THROUGH RIVER BASIN MANAGEMENT PLAN

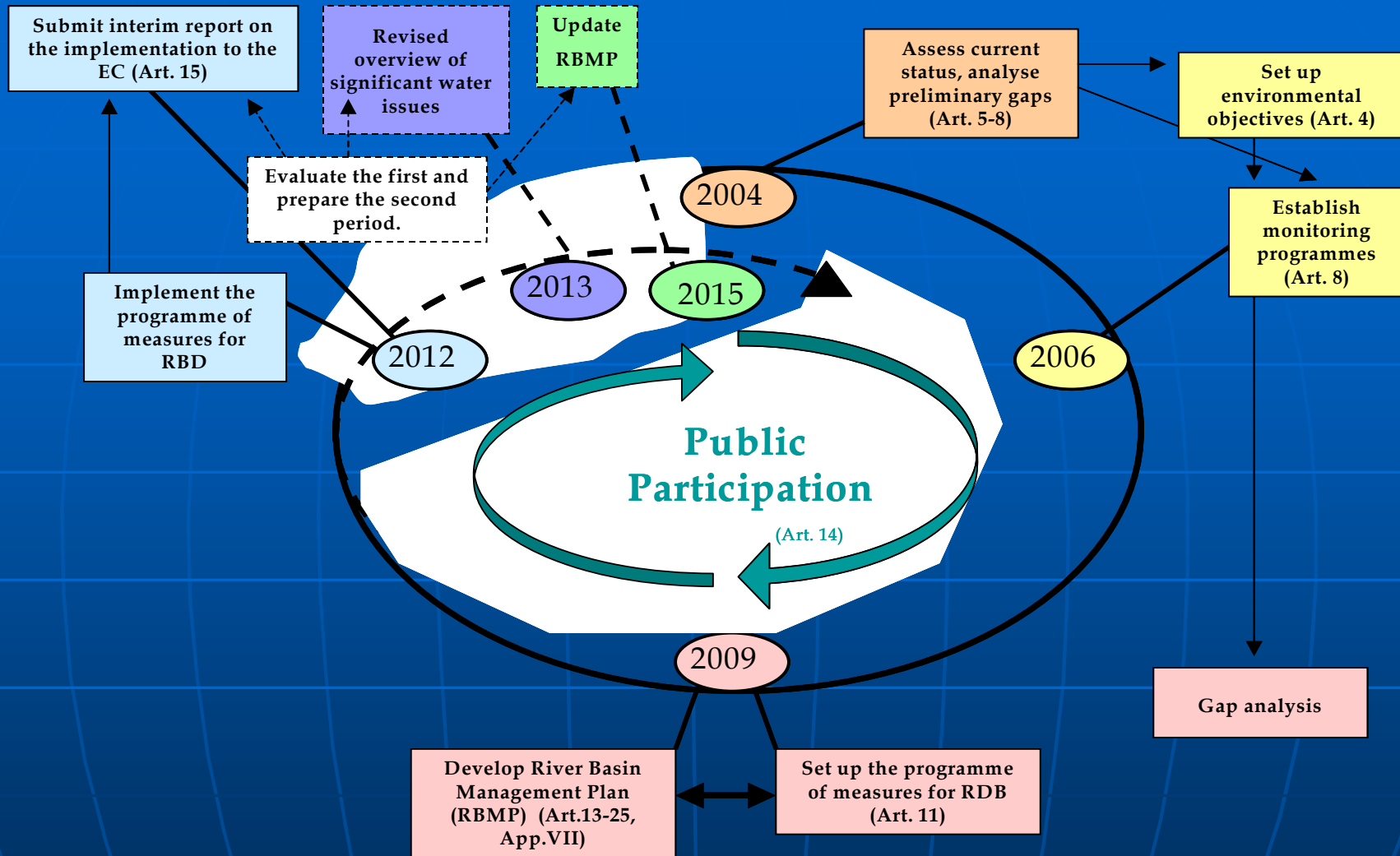
## CONCEPTS

- good water status
- integrated monitoring of waters
- heavily modified water bodies
- river restoration
- economic analysis at river basin level
- public participation

# RIVER BASIN MANAGEMENT PLAN

## CONTENT

- Characteristics of the River Basin District
- Analysis of pressures and impacts
- Identification and mapping of protected areas
- Integrated water monitoring
- Environmental objectives
- Economical analysis of water use
- General program of measures
- Special program of measures on sub-basin level, water categories, ecosystems
- Public participation



## TIME TABLE FOR WORKING OUT RIVER BASIN MANAGEMENT PLAN

**THANK YOU FOR YOUR INTEREST**