



# PAWA – Pilot Arno Water Accounts

Grant Agreement

n. 07.0329/2013/671279/SUB/ENV.C.1

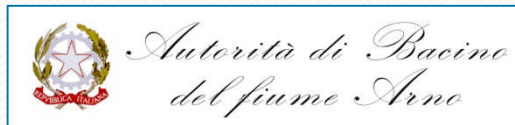
Kick-off Meeting of the  
2013 Halting Desertification in Europe Pilot Projects

DG ENV, Brussels, 5 February 2014

# PAWA partnership & grant



ISPRA is the technical-scientific branch of the Italian Ministry of Environment. It operates within the Environmental Agencies System, composed of 20 Regional and 2 Provincial Agencies according to a federative system combining direct knowledge and experience of local environmental issues with national and European policies (incl. EU WFD 2000/60/CE; EU Floods Dir. 2007/60/CE; WS&D Comm.) for environmental prevention and protection.



Since 1989 ARBA (one of the six River Basin Authorities of National Relevance) has been carrying out programming and planning activities on land protection and water resources management. In recent years, ARBA has been entitled, in accordance with the EU WFD, to draft the RBMP for the Northern Apennines River Basin District and to coordinate the implementation activities as regards to the EU Floods Directive.



SEMIDE/EMWIS is an initiative of the Euro-Mediterranean Partnership (EUROMED) that provides a strategic tool – the only one operational nowadays – for exchanging information and knowledge in the water sector between and within the EUROMED countries. In the framework of the WGs of the Mediterranean Joint Process between the EU Water Initiative and the EU WFD, EMWIS is also working on know-how exchange for specific themes selected by the EUROMED water directors.

*A 15-month pilot action (Jan. 2014–Mar. 2015) to halt desertification in the Arno River Basin (NW Italy).*

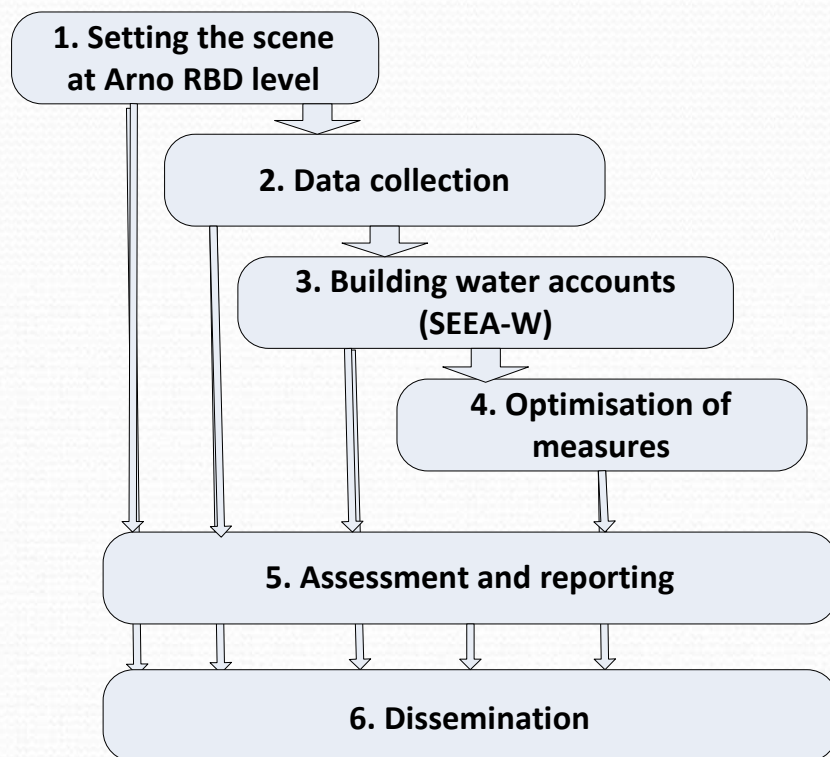
*This basin area already presents water scarcity and droughts, extensive water withdrawals and land use changes, with a situation expected to worsen in the future due to global climate changes.*

*Eligible costs: € 200.015,00 / Grant: € 150.011,00*

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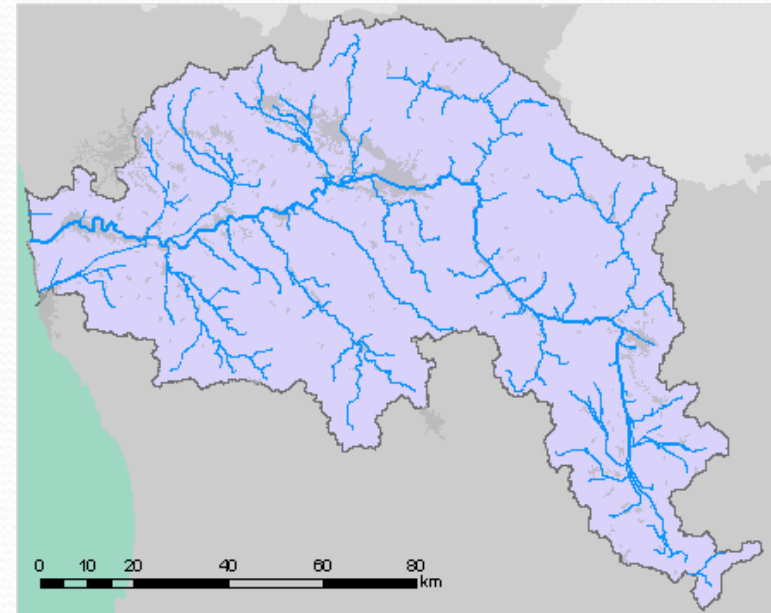
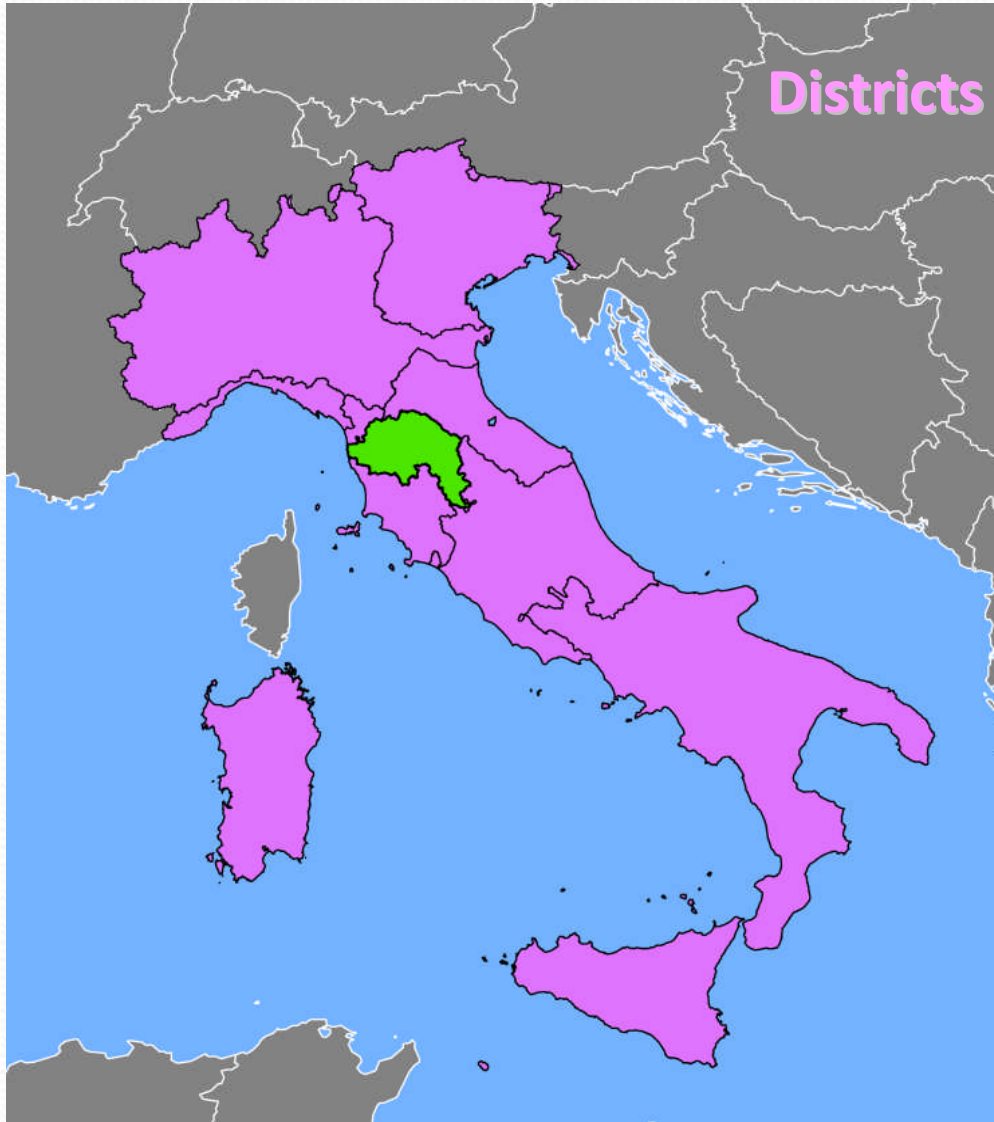
# PAWA activities & expected results

## Six interconnected activities



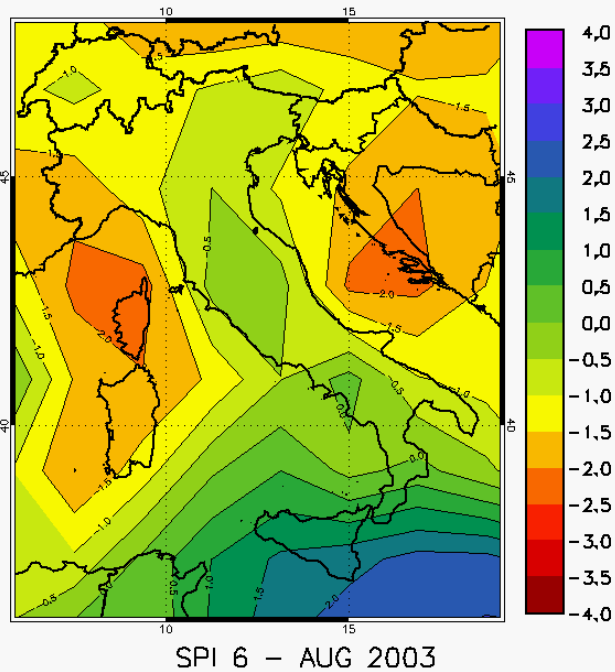
Act.	Deliverables	When
<b>1</b>	<i>D1.1</i> Catalogue of data sources and tools	T0+3
	<i>D1.2</i> Priorisation list of sub-basins	T0+3
<b>2</b>	<i>D2.1</i> Repository of data sets	T0+6
	<i>D2.2</i> Assessment of data availability	T0+6
<b>3</b>	<i>D3.1</i> 1 <sup>st</sup> draft water flow diagrams and associated SEEA-W tables	T0+8
	<i>D3.2</i> Geo-referenced database for water accounts	T0+9
<b>4</b>	<i>D4.1</i> Water efficient targets for future revisions Arno RBMP	T0+12
<b>5</b>	<i>D5.1</i> Water account tables	T0+15
	<i>D5.2</i> Final report	T0+15
<b>6</b>	<i>D6.1</i> Project leaflet	T0+3
	<i>D6.2</i> Compendium of lessons learnt	T0+15
	<i>D6.3</i> Detailed list of dissemination activities, including project presentations during events	T0+15

## The Arno river basin



- ❑ River length of 241 km
- ❑ Surface area of 8.228 km<sup>2</sup>
- ❑ 98% belongs to Tuscany Region; 2% belongs to Umbria Region
- ❑ The basin comprises 171 municipalities and the provinces of Arezzo, Florence, Pistoia, Pisa, Siena, Lucca, Livorno and Perugia

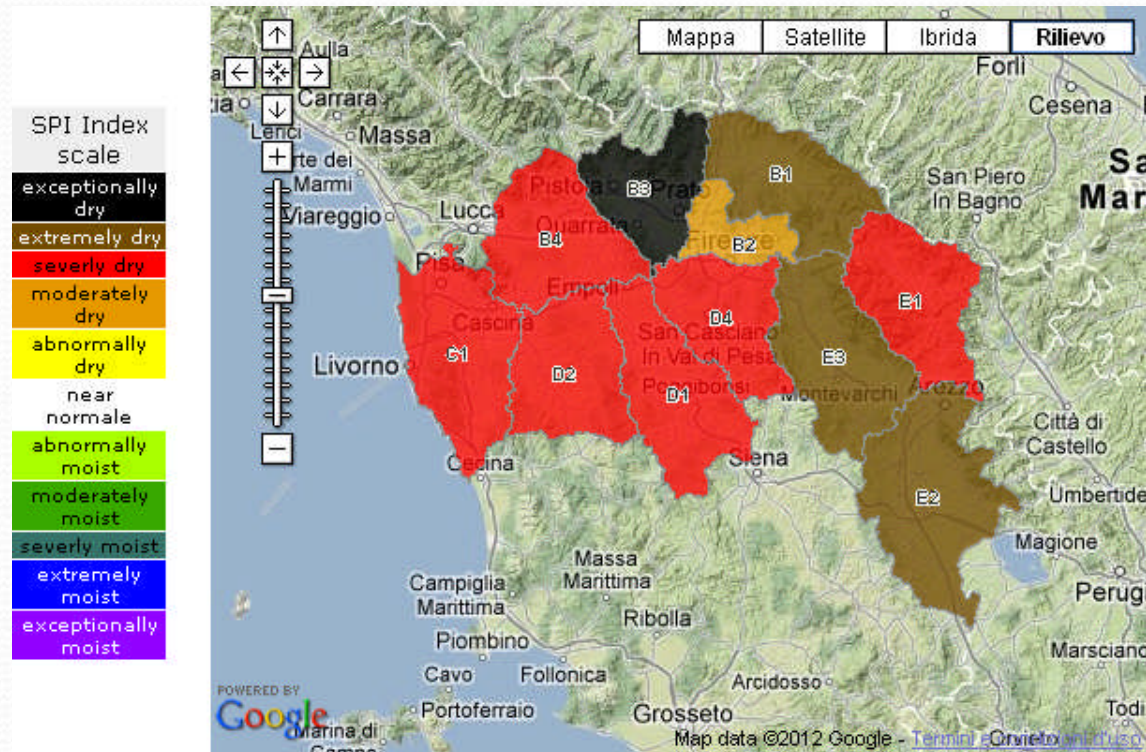
# Drought in the Arno River Basin during the last 10 years



6-month SPI index in August 2003 – based on the 2.5° NCEP/DOE reanalysis.

**2003 & 2007** – Serious summer drought in the basin; many decentralized aqueducts remained without direct water supply.

**2011-2012** – Anomalous autumn drought in the basin that lasted till Spring. It was characterized by not only the total absence of flow peaks (very common in late autumn) but also new absolute minimum recharge rates (registered between Oct. and Mar.), with reference to the available time series of rain gauge data (last 90 years).



SPI index in the different sub-basins 180-days in July 2012 – based rain gauge data.

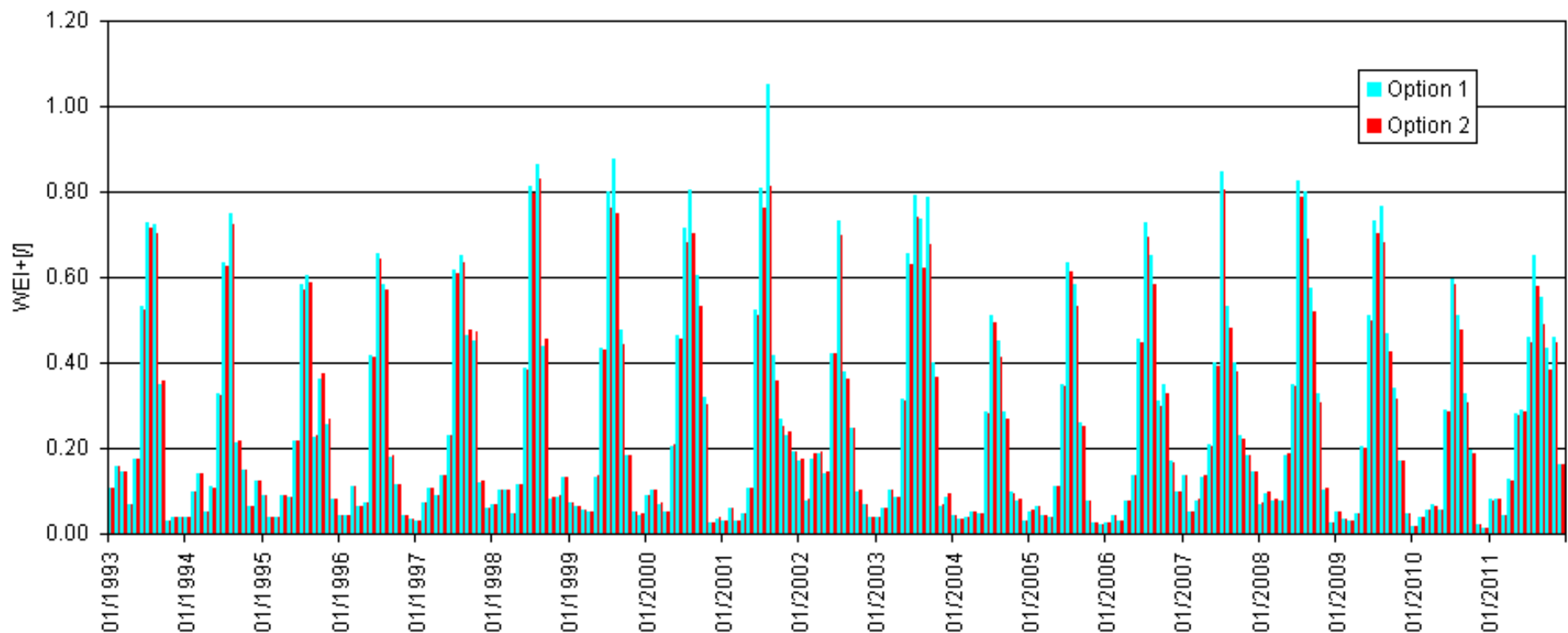
# Water scarcity and management of critical conditions

## What are we doing?

- In 2008 a Water Balance Plan for the Arno River Basin was adopted in accordance with Legislative Decree 152/2006 and its provisions managing withdrawals and releases are binding on the territory including granted volume reduction which aims to ensure environmental protection (i.e., respect of EF) and optimization water uses
- A draft version of a “drought management plan” was included in the PoM of Northern Apennines District RBMP
- Plans are based on a 10-year experience of "drought management" provided by a special Water Protection Commission, which includes representatives from local administrations, municipalities, water management companies, and government representatives.
  - This Commission monitors and manages droughts by the means of:
    - Mid- and long-term meteo forecast analysis, regarding ground- and superficial water body recharges; and
    - Implementation of participative policy for the management of water reservoirs and limitation of withdrawals.

# Water scarcity and management of critical conditions

In the framework of the 2010–2012 activities of the CIS “Water Scarcity & Drought” Expert Group, ARBA and ISPRA tested the application of a modified Water Exploitation Index for the Arno River Basin on a monthly basis. In the example below, option 1 includes Environmental Flow (EF), option 2 excludes EF. The more critical years are well highlighted by WEI+ values close to 1.0.



# 1. Setting the Scene at Arno RBD Level

Inception workshop and training on SEEA-W and ECRINS



1<sup>st</sup> workshop/training with stakeholders  
Florence, 20-21 March 2014



Inventory and description of existing data sources and tools

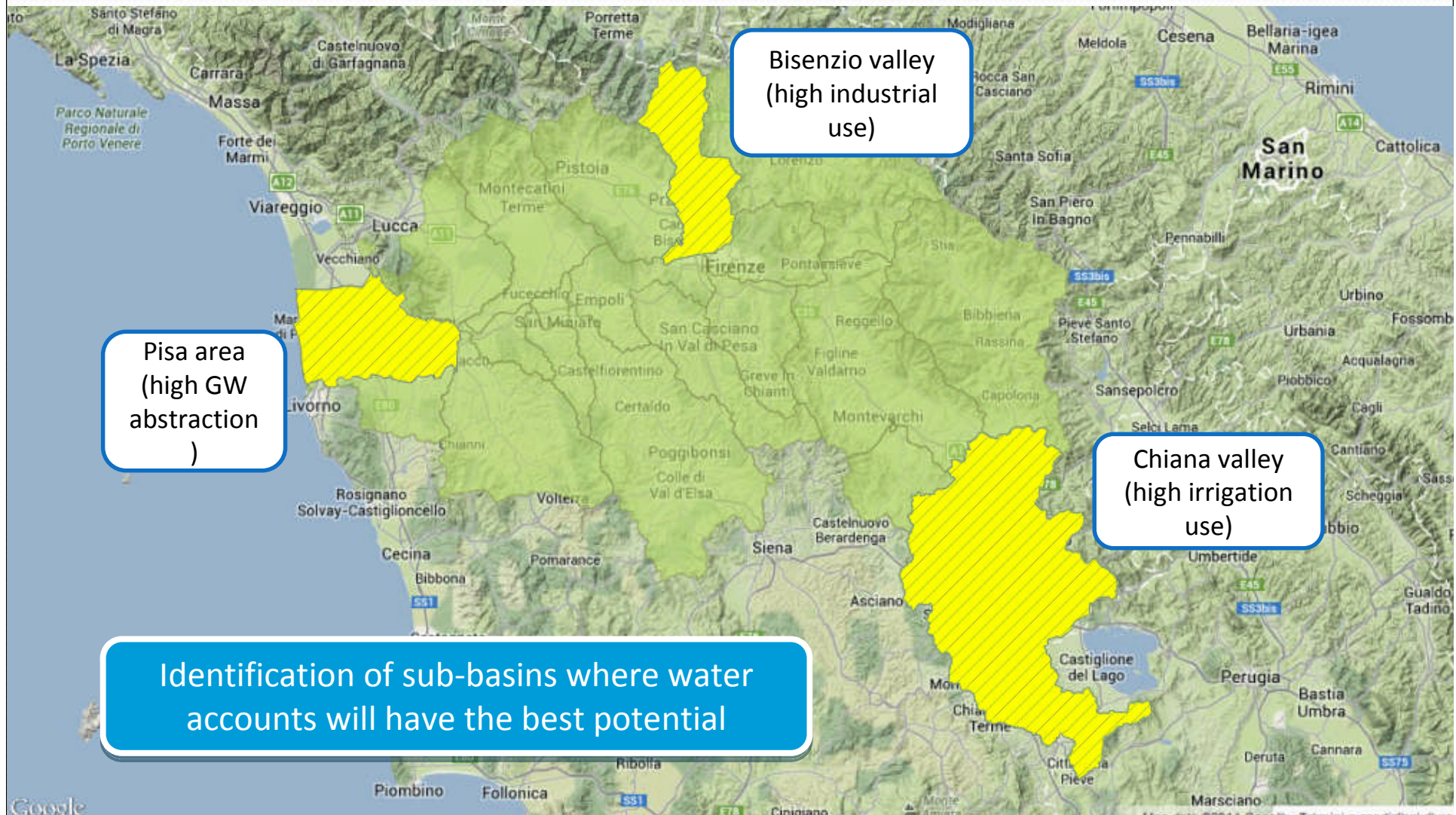


Distribution point  
Spatial and time extension  
Quality level  
Supplementary info  
...

Identification of sub-basins where water accounts will have the best potential



# 1. Setting the Scene at Arno RBD Level



## 2. Data Collection

Matching of the existing datasets  
with SEEA-W data structure

Repository of all necessary datasets and pre-  
processing of data

Metadata catalogue  
INSPIRE/ISO 19115 compliant

Two repositories on <ftp.isprambiente.it>  
one for internal use and one for public  
dissemination (pawapub / PUB38h76)

### A. Physical use table (*physical units*)

From the environment	<b>1. Total abstraction (= 1.a + 1.b = 1.i + 1.ii)</b> 1.a. Abstraction for own use 1.b. Abstraction for distribution 1.i. From Inland water resources: 1.i.1. Surface water 1.i.2. Groundwater 1.i.3. Soil water 1.ii. Collection of precipitation 1.iii. Abstraction from the sea
Within the economy	<b>2. Use of water received from other economic units of which:</b> 2.a. Reused water 2.b. Wastewater to sewerage
	<b>3. Total use of water (= 1 + 2)</b>

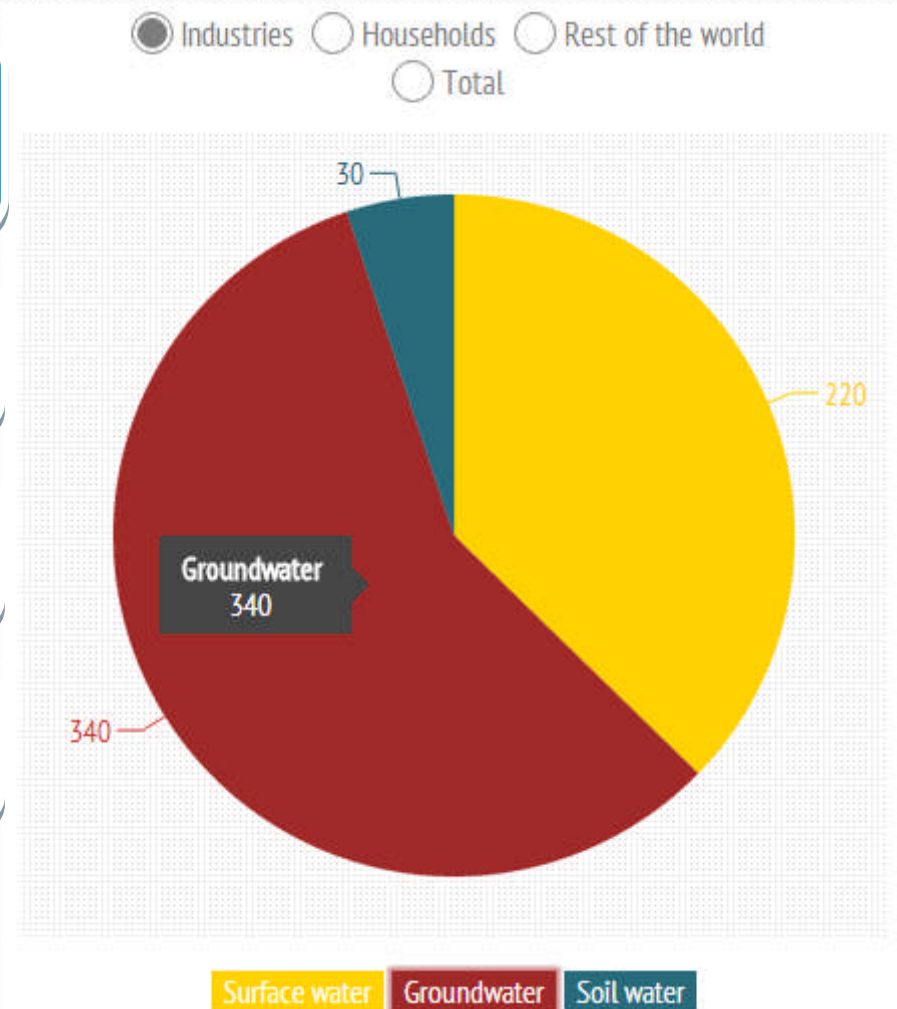
### 3. Building Water Accounts (SEEA-W)

Production of water flow diagrams for each sub-basin in cooperation with local stakeholders

Building a georeferenced database (water resource availability and use)

Processing SEEA-W visualization outputs

Computing and validating SEEA-W tables (1999-2013)



## 4. Optimisation of Measures

Identify suitable measures for the selected sub-basins and estimate water savings and implementing costs

Elaborate prospective *scenarii* based on various combinations of measures and preparing the visualization outputs for each scenario

Define water efficiency targets during a participatory workshop with local stakeholders using the output of proposed scenario

Reduction of licensed abstractions

Sustainable water use

Optimization of water allocation



## 5. Assessment and Reporting

Provision of water accounts tables  
computed

Preparation of progress reports

Preparation of the final reports

Comparison of water balanced developed at  
EU level with SEEA-W tables developed  
during the project



## 6. Dissemination

Leaflet

Dedicated web space on ARPA, ISPRA and EMWIS

Circulating information on activities & results using several communication channels

Coordination and concertation meetings organized by DG ENV

Attendance to national and international workshops

Compendium of good practices

<http://pawa.emwis.net>, plus pages on ISPRA & ARBA websites

- PRU€ bulletin on research for water protection (# 1/2014)
- PAWA @ facebook
- newsletters





**Thank you for your kind attention!**

**For any further details:**

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