

The LIFE PHOENIX information and statistical system

Gisella Pitter
Nadia Raccanello
Laura Tagliapietra



Working group

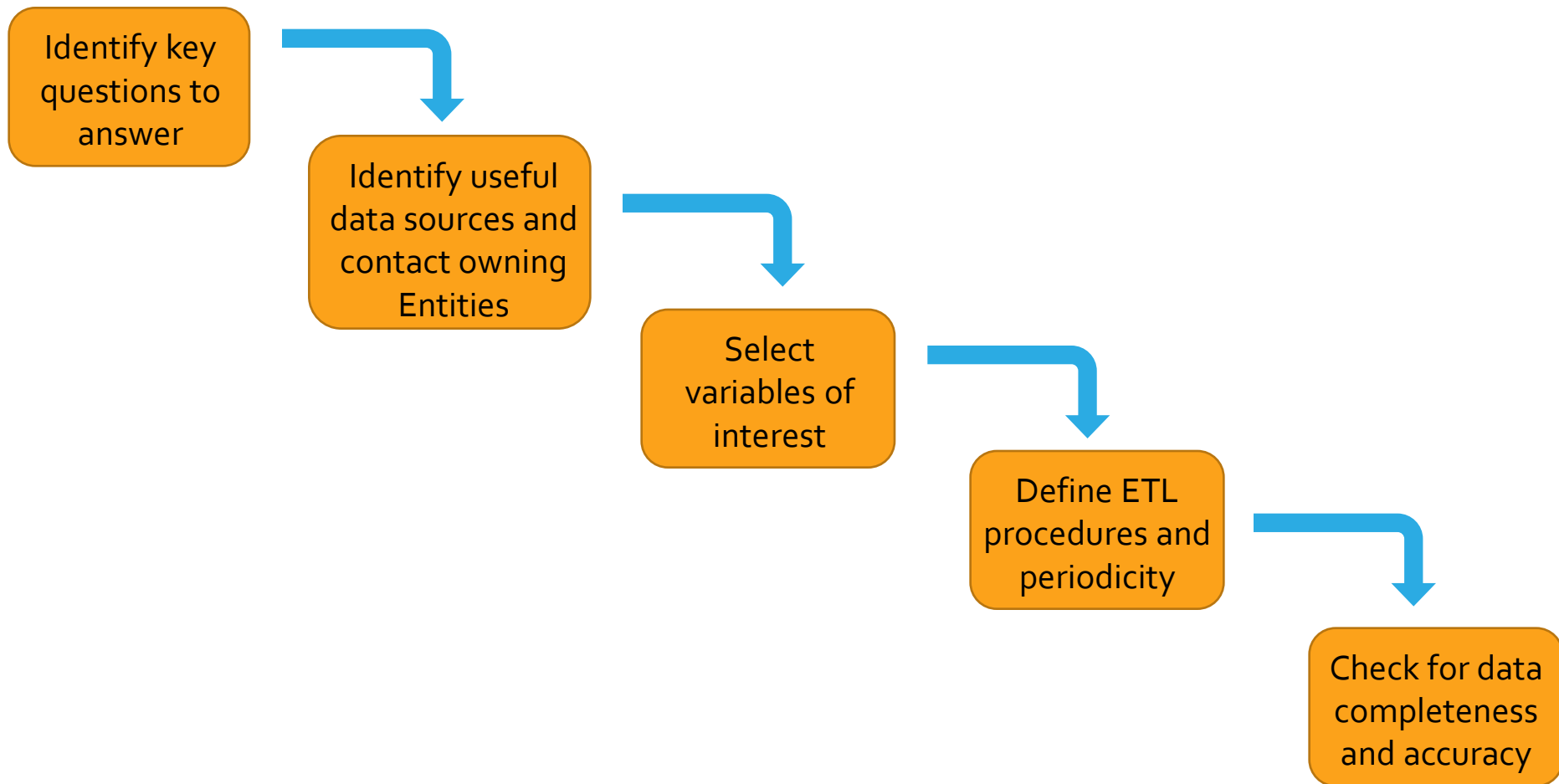
- Veneto Region: Nadia Raccanello, Matteo Chinellato, Laura Tagliapietra, Gisella Pitter, Vanessa Groppi, Paola Favaretto
- Regional Agency for Environmental Prevention and Protection (ARPAV): Roberto Lava, Massimo Mazzola, Giovanni Onofrio
- Water Research Institute (IRSA-CNR): Stefano Polesello, Claudia Ferrario
- University of Padua: Marco Bonato



Why an information system is needed?

- The assessment of risk for human health related to environmental factors implies putting together information from several data sources.
- Relevant data sources are often:
 - owned by different Entities
 - heterogeneous and not interoperable
 - lacking critical information.
- When facing an emergency, data should be:
 - immediately available in a single repository
 - already characterised in terms of completeness and quality
 - linkable with each other
 - easy to explore and use to produce reports and statistics.

Working method



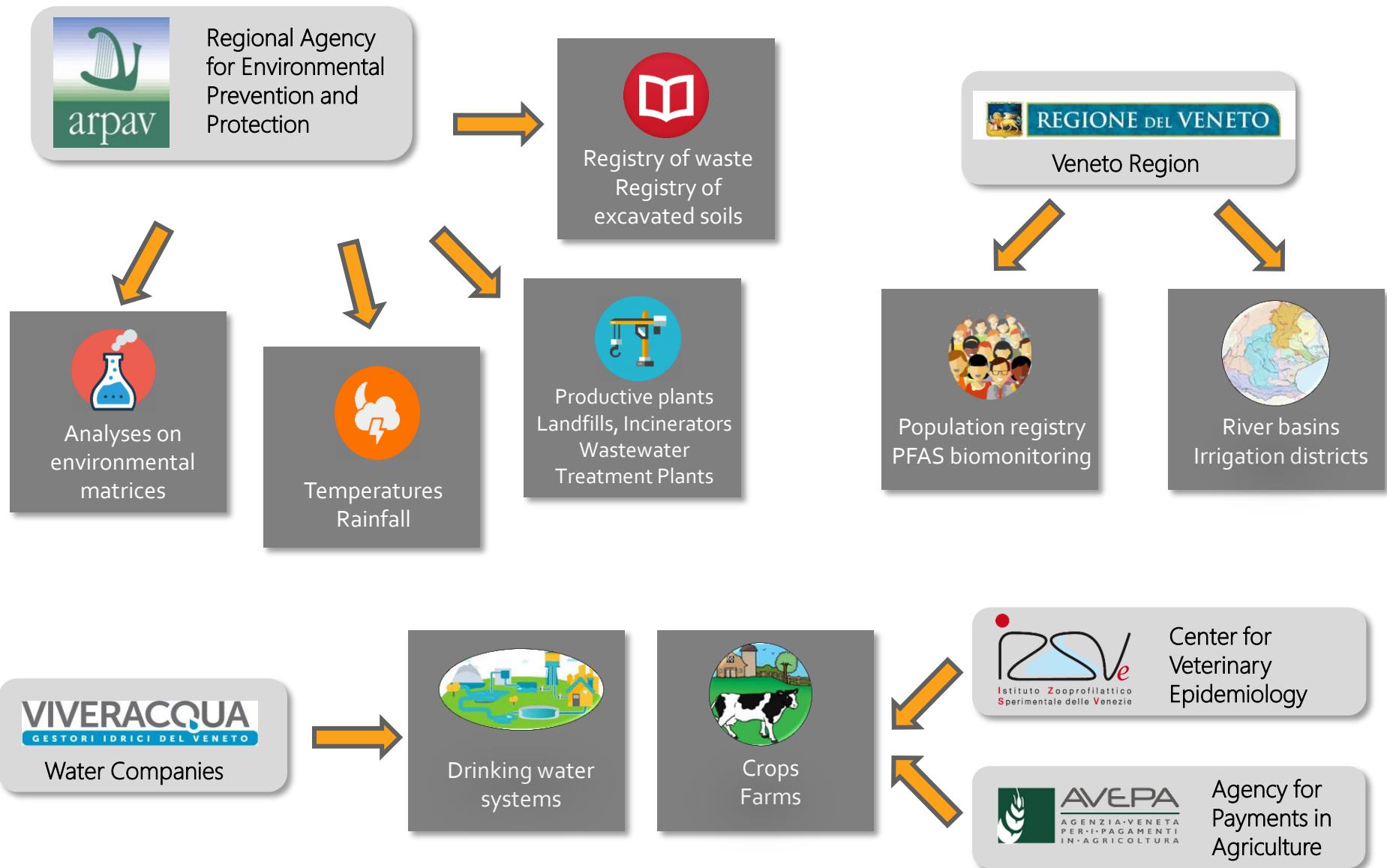
Questions the information system should be able to answer

- Which is the contaminant and how dangerous is it?
- Where does the contaminant come from?
- Is the contamination localised or widespread?
- How does the contaminant spread in the environment?
- Which is the area of impact?
- Which environmental compartments and matrices are involved?
- May the contaminant reach the drinking water system?
- May the contaminant reach the food network?
- Which is the potentially impacted population?

Contents of the Data Warehouse

- Basal **geographical layer**
- Polygonal **shapefile of municipalities**
- Polygonal **shapefile of river basins**
- Polygonal **shapefile of irrigation districts**
- **Geo-coded catchment points of irrigation water**
- **Geo-coded pollution sources** (productive facilities, incinerators, landfills, wastewater treatment plants, farms, etc)
- **Population size by municipality and drinking water companies** (population and municipalities served)
- **Geo-coded drinking water catchment points and treatment plants**
- **Weather monitoring data** (rainfall and temperature)
- Official **analyses on environmental matrices** (soil, sludge, surface water, groundwater, wastewater, leachate, drinking water) including **geo-coded sampling points**
- Aggregated **biomonitoring data on serum PFAS concentrations** in the population residing in the contaminated area, by municipality of residency

Owning Entities



Structure of the information system

- **Data warehouse (DWH):**

- collects data extracted from multiple institutional databanks owned by different Entities
- 54 data flows
- 6 geographical data sources
- 5-year historical depth

- **Online geo-portal:**

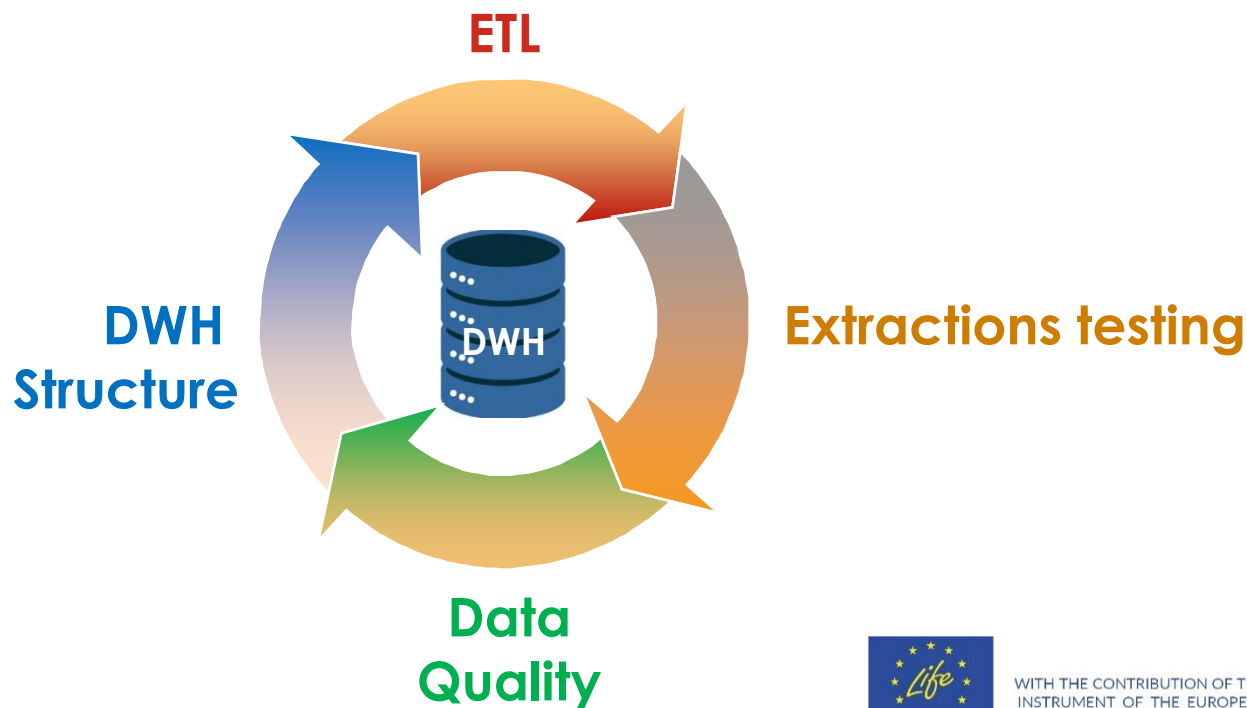
- multi-layer structure
- organised in several thematic areas
- allows integration of the different data sources and production of various types of reports (tables, graphs, maps)

Operative working method



Schedule meetings with each owning Entity in order to:

- understand their domain of expertise
- define detailed information
- define the feeding path and the extraction procedure
- evaluate Data Quality and data cleaning procedures



The tool

Strengths

- Web-based, cloud platform
- Integrated DWH and multi-layer reporting and predictive tools

Weakness

- Still unstable product
- Currently unable to manage linear shapefiles

Access rules

- Tool intended for use by experts belonging to Entities with competencies in the fields of environment and health
- Access allowed only to users formally identified by the Entities

Two levels of access

- **Basic level:** consultation of pre-defined reports
- **Advanced level:** consultation and extraction of raw data, development of customised reports

Two types of reports

- Territorial reports
- Analytical reports

Basal level

Territorial reports

Pollution sources and river basins

Irrigation sources and districts

Crops and irrigation districts

Drinking water companies and networks

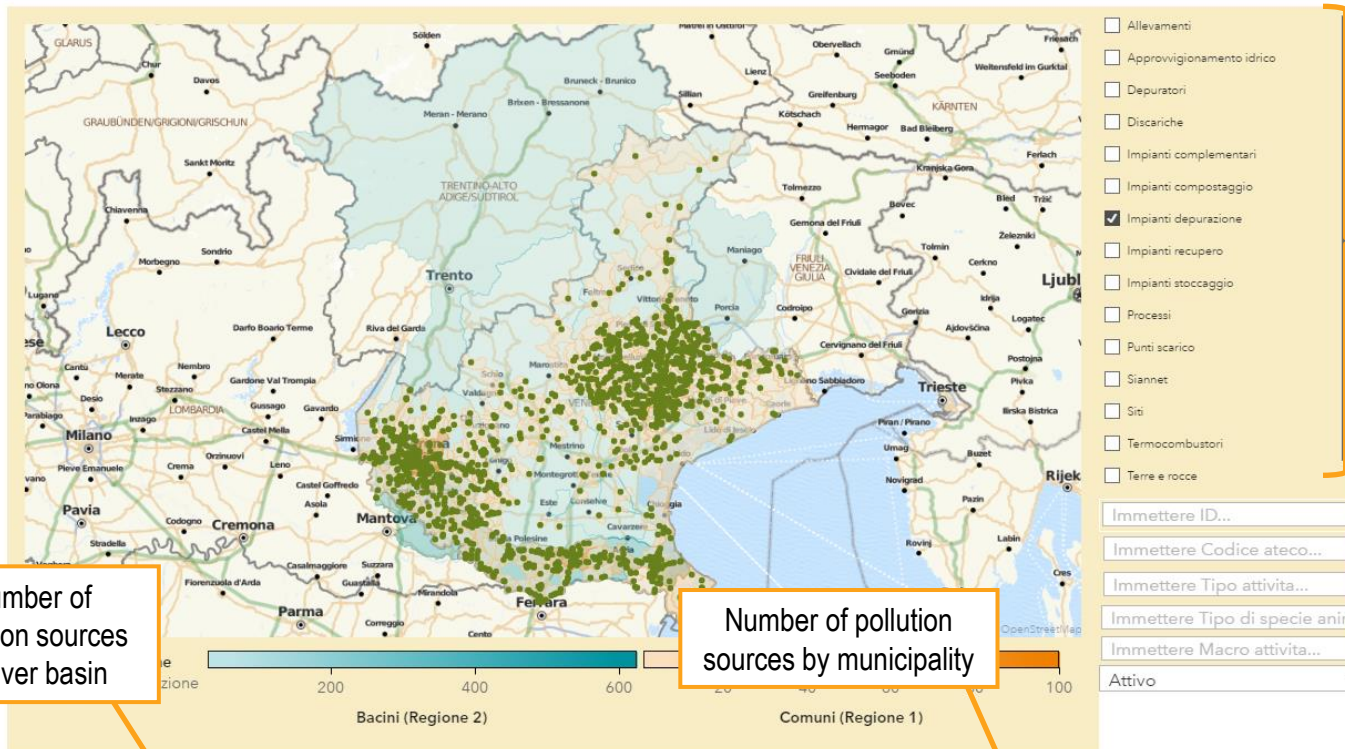
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Basal level – TERRITORIAL REPORTS

Pollution sources and river basins

Territoriale - Report 1 :

Filtri: >

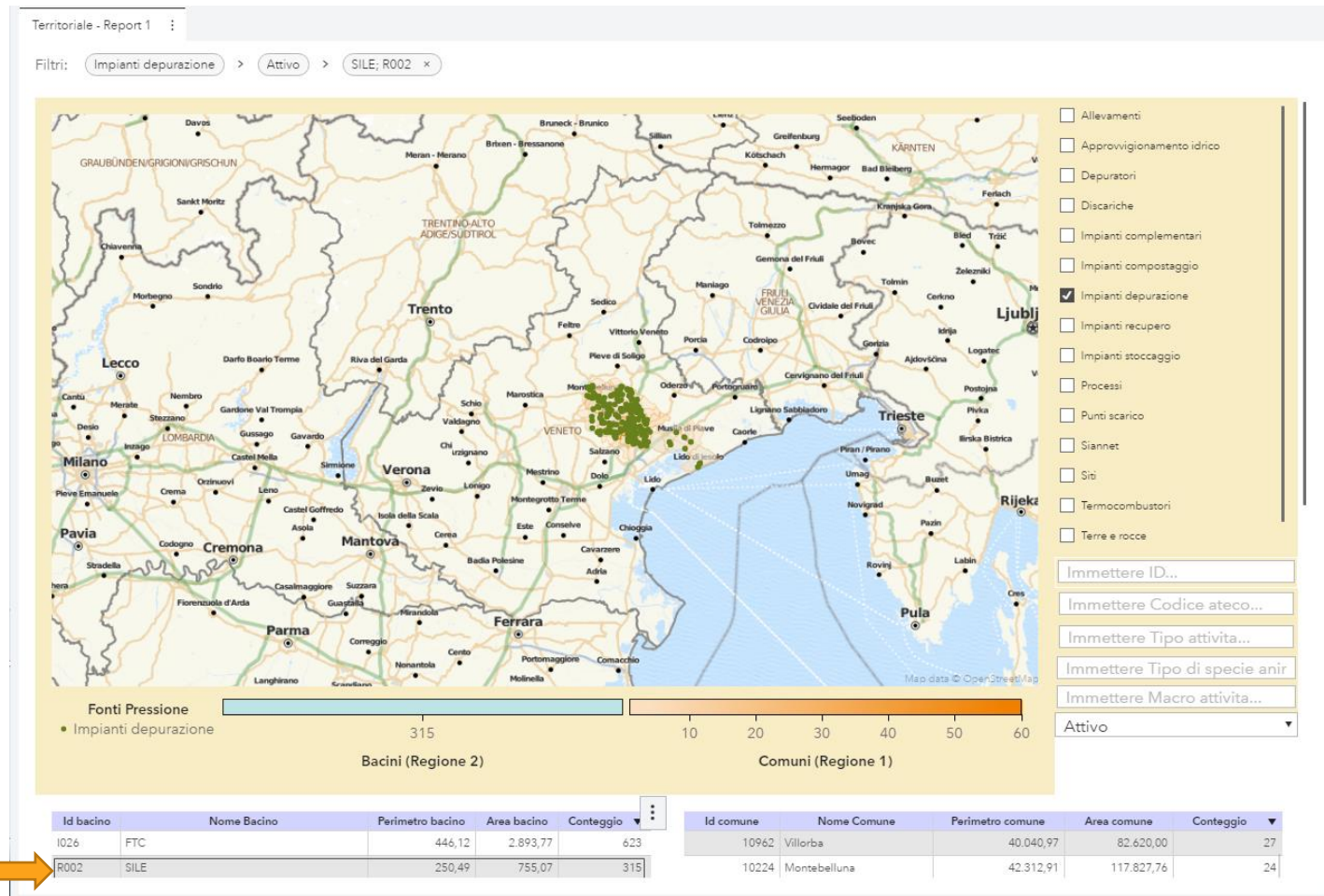


Id bacino	Nome Bacino	Perimetro bacino	Area bacino	Conteggio
1026	FTC	446,12	2.893,77	623
R002	SILE	250,49	755,07	315

Id comune	Nome Comune	Perimetro comune	Area comune	Conteggio
3136	Rovigo	75.956,87	694.595,84	64
21900	Treviso	55.147,51	333.090,00	60

Basal level – TERRITORIAL REPORTS

Pollution sources and river basins

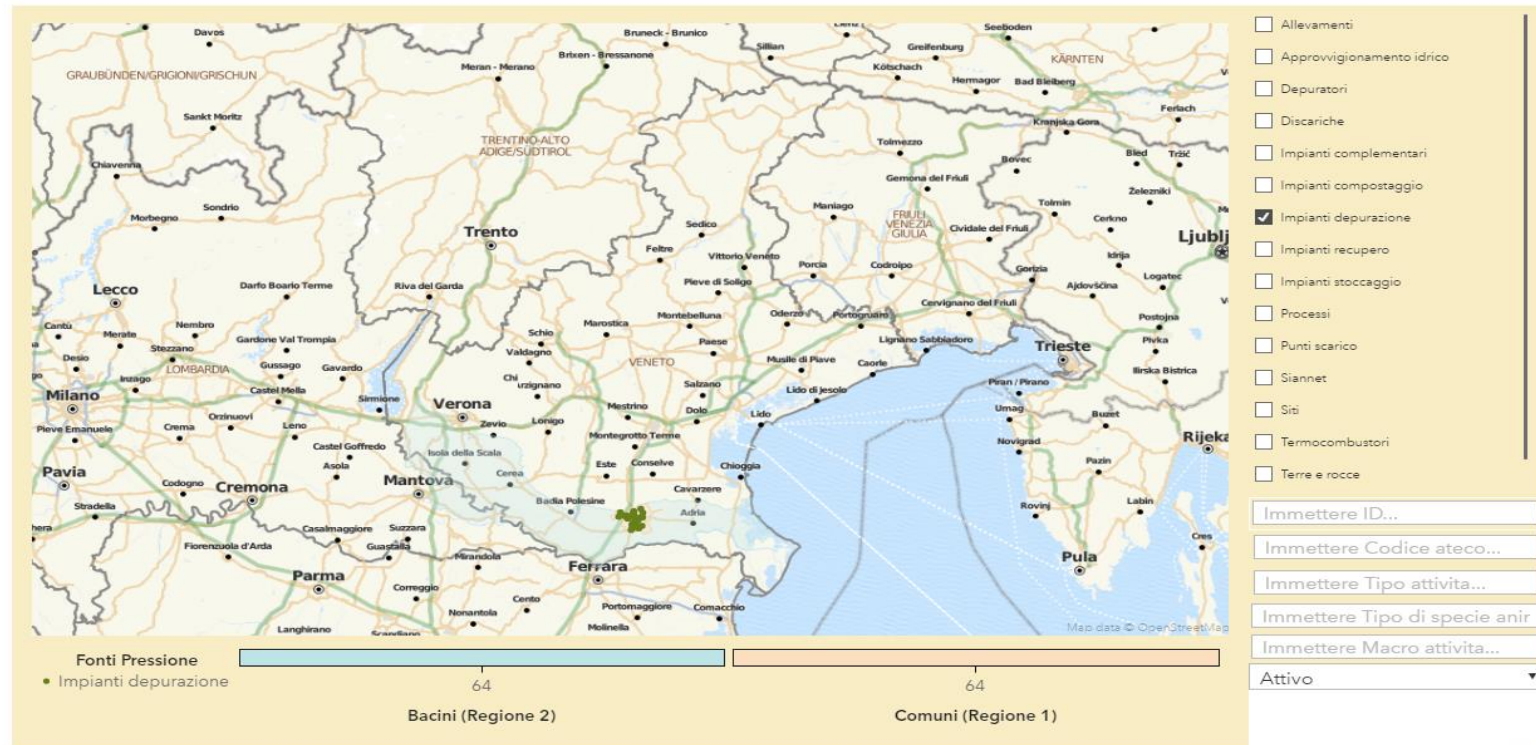


Basal level – TERRITORIAL REPORTS

Pollution sources and river basins

Territoriale - Report 1 :

Filtri: Impianti depurazione > Attivo > Rovigo x



Id bacino	Nome Bacino	Perimetro bacino	Area bacino	Conteggio
1026	FTC	446,12	2.893,77	64

Id comune	Nome Comune	Perimetro comune	Area comune	Conteggio
3136	Rovigo	75.956,87	694.595,84	64
21900	Treviso	55.147,51	333.090,00	60

Filter on
municipality
«Rovigo»

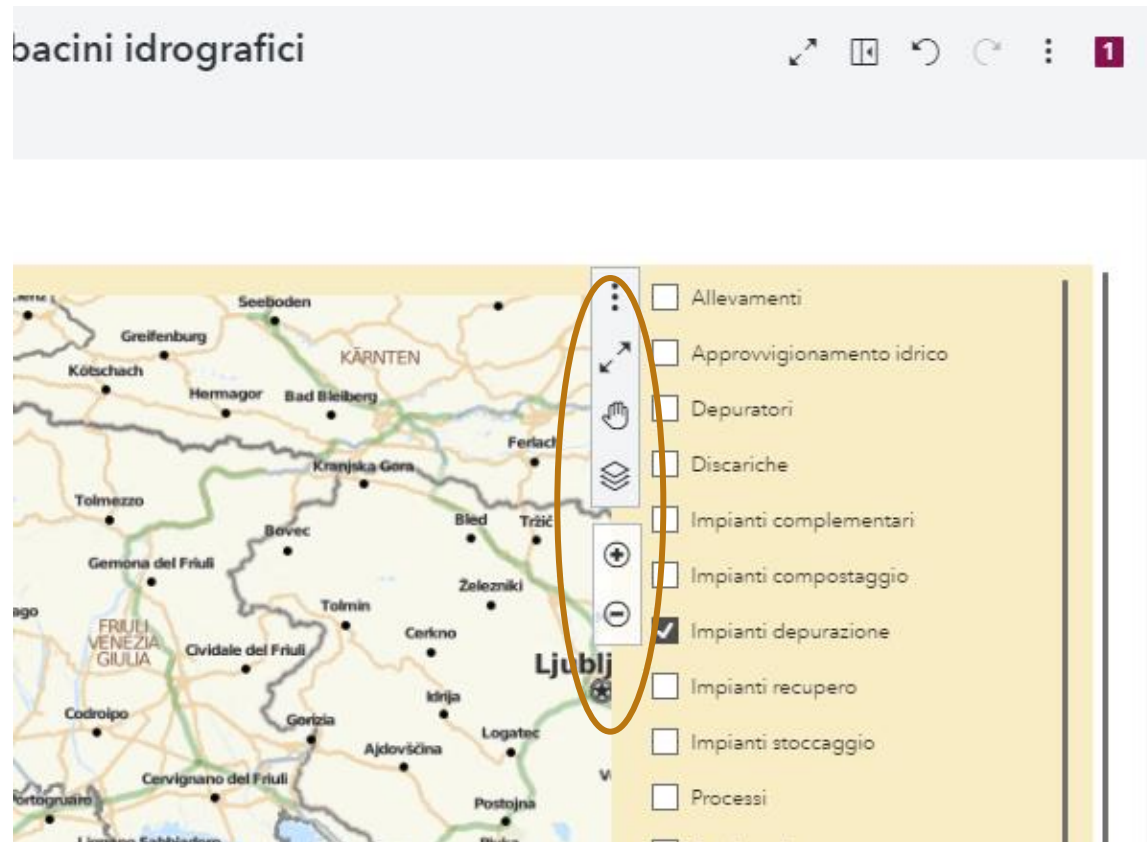


Perfluorinated compounds
HOlistic ENvironmental
Interinstitutional eXperience



WITH THE CONTRIBUTION OF THE LIFE FINANCIAL
INSTRUMENT OF THE EUROPEAN UNION
LIFE16ENV/IT/000488 - LIFE PHOENIX

Basal level



Standard functions:

- Export:
 - Data
 - Images
- Scrolling
- Enable/Disable layers
- Zoom

Basal level – Data export

The screenshot displays the SAS Visual Analytics interface for the report '01T_Fonti di pressione e bacini idrografici'. The interface includes a map of the region, a table of data, and an 'Esportazione dei dati' (Data Export) dialog box. The dialog box shows the 'Tipo di file' (File type) dropdown set to 'Cartella di lavoro di Excel (.xlsx)' and the 'Salva come' (Save as) field set to 'Foglio di lavoro di Microsoft Excel'. A file explorer window is open, showing the 'Raccolta Documenti' (Documents Collection) folder, with an arrow pointing to the 'List table - Id bacino 1' file. A text box with the text 'Choose folder' is overlaid on the file explorer window.

Click here to download Table

Choose folder

Id bacino	Nome Bacino	Perimetro bacino	Area bacino	Conteggio
1026	FTC	446,12	2.893,77	62
R002	SILE	250,49	755,07	315

Id comune	Nome Comune	Perimetro comune	Area comune	Conteggio
10962	Villorba	40.040,97	82.620,00	27
10224	Montebelluna	42.312,91	117.827,76	24

Basal level

Analytical reports

Temporal series of
environmental
analytical data

Serum PFAS in the
exposed
population

Esplorazione e visualizzazione

Esplora i dati, applica analisi predittive e crea report interattivi con SAS Visual Analytics.

Nuovo report **Inizia con i dati**

Cerca

Recenti
Preferiti
My Folder
Condivisi con me
Tutti i report

<-port > LifePhoenix > Reporting > Primo Livello > Analitici >

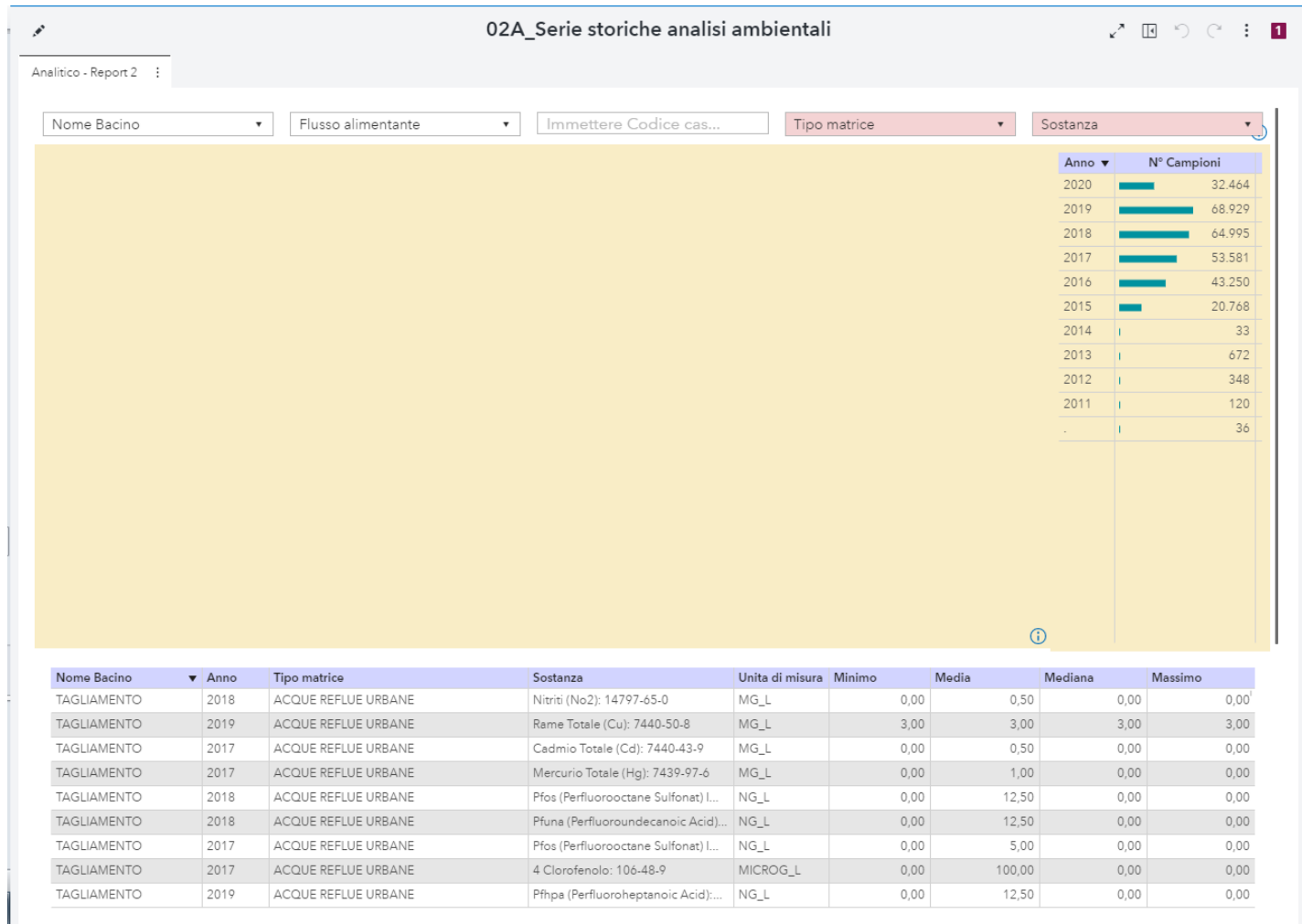
Nome	Data ...
02A_Serie storiche analisi ambientali	15/0...
04A_PFAS sierici nella popolazione esposta	11/1...

1.7K 5.4K

Sales of Product Lines grouped by Store Types

Basal level – ANALYTICAL REPORTS

Temporal series of analytical data



Temporal series of analytical data

Select compound

▼

Sostanza
▼

Cancella filtro

(Escluso N-Esano) Espresi Com...

1-Cloro-2-Nitrobenzene: 88-73-3

1-Cloro-3-Nitrobenzene: 121-73-3

1-Cloro-4-Nitrobenzene: 100-00-5

1,1-Dicloroetano: 75-34-3

1,1-Dicloroetilene: 75-35-4

1,1,1-Tricloroetano: 71-55-6

1,1,2-Tricloroetano: 79-00-5

1,1,2,2-Tetracloroetano: 79-34-5

1,2-Diclorobenzene: 95-50-1

1,2-Dibromoetano: 106-93-4

1,2-Diclorobenzene: 95-50-1

1,2-Dicloroetano: 107-06-2

1,2-Dicloroetilene Cis: 156-59-2

1,2-Dicloroetilene Trans: 156-60-5

1,2-Dicloropropano: 78-87-5

1,2,3-Triclorobenzene: 87-61-6

1,2,3-Triclorobenzene: 87-61-6

1,2,3-Tricloropropano: 96-18-4

1,2,3,4 Tetraclorobenzene: 634-...

1,2,3,4,6,7,8-Hpcdd: 35822-46-9

1,2,3,4,6,7,8-Hpcdf: 67562-39-4

1,2,3,4,6,7,8,9-Ocdd: 3268-87-9

1,2,3,4,6,7,8,9-Ocdf: 39001-02-0

1,2,3,4,7,8-Hxcd: 39227-28-6

1,2,3,4,7,8-Hxcd: 70648-26-9

1,2,3,4,7,8,9-Hpcdf: 55673-89-7

1,2,3,6,7,8-Hxcd: 57653-85-7

Misura	Minimo	Media	
	0,00	0,50	
	3,00	3,00	
	0,00	0,50	
	0,00	1,00	
	0,00	12,50	
	0,00	12,50	

Basal level – ANALYTICAL REPORTS

Temporal series of analytical data

02A_Serie storiche analitiche

Analitico - Report 2

Nome Bacino

- Cancella filtro (valori mancanti)
- ADIGE
- BACINO SCOLANTE IN LAGUNA DI ...
- BRENTA-BACCHIGLIONE
- FTC
- LEMENE
- LIVENZA
- PIANURA TRA LIVENZA E PIAVE
- PIAVE
- PO
- SILE
- TAGLIAMENTO

Flusso alimentante

Immettere Codice cas.

02A_Serie storiche analitiche

Analitico - Report 2

Nome Bacino

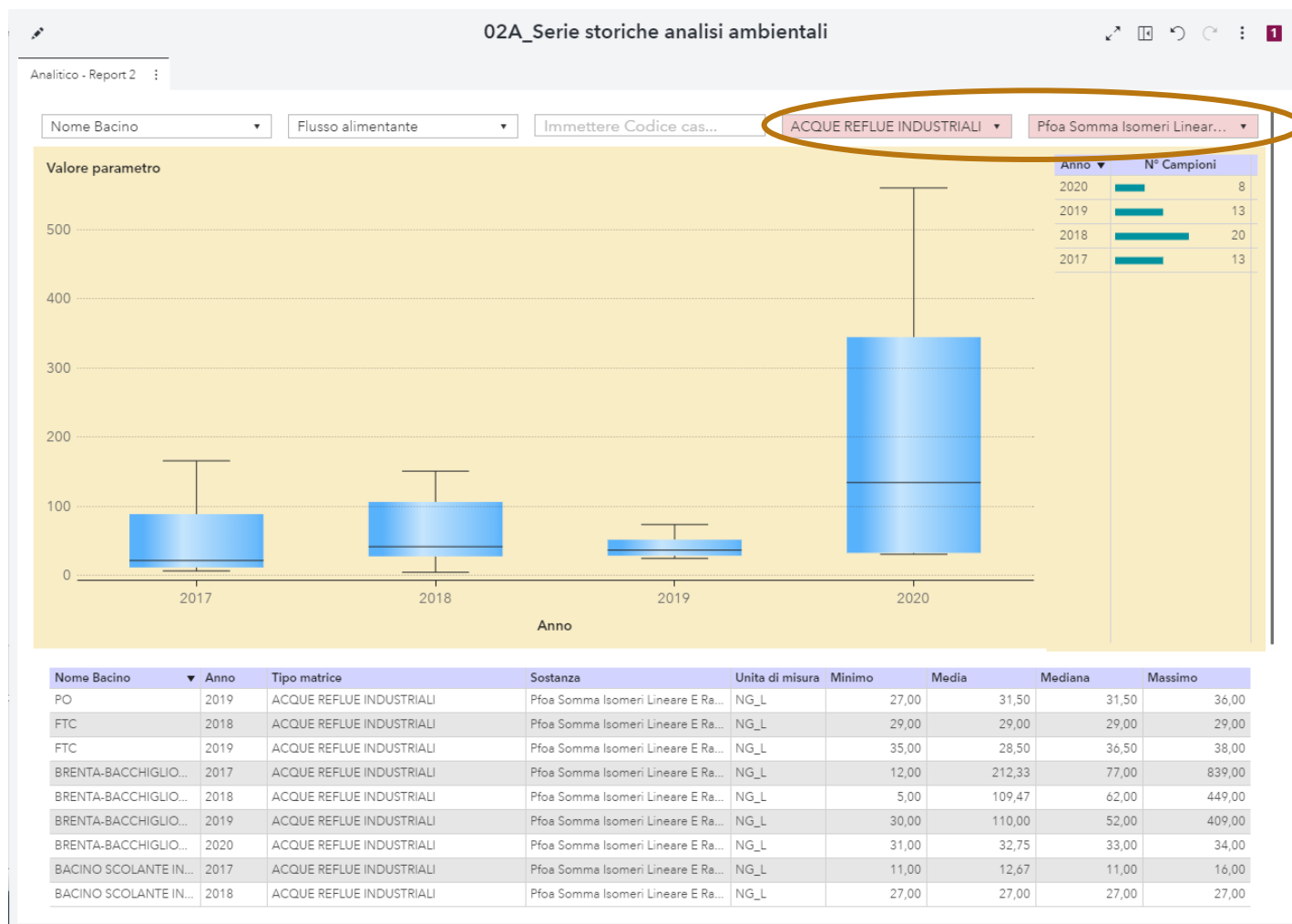
Flusso alimentante

Immettere

- Cancella filtro
- 1. Camp. ambientali arpav
- 2. Camp. acque irsa-cnr
- 3. Camp. prog. phoenix

Basal level – ANALYTICAL REPORTS

PFOA concentrations in industrial wastewater



Basal level

Analytical reports

Temporal series of environmental analytical data

Serum PFAS in the exposed population

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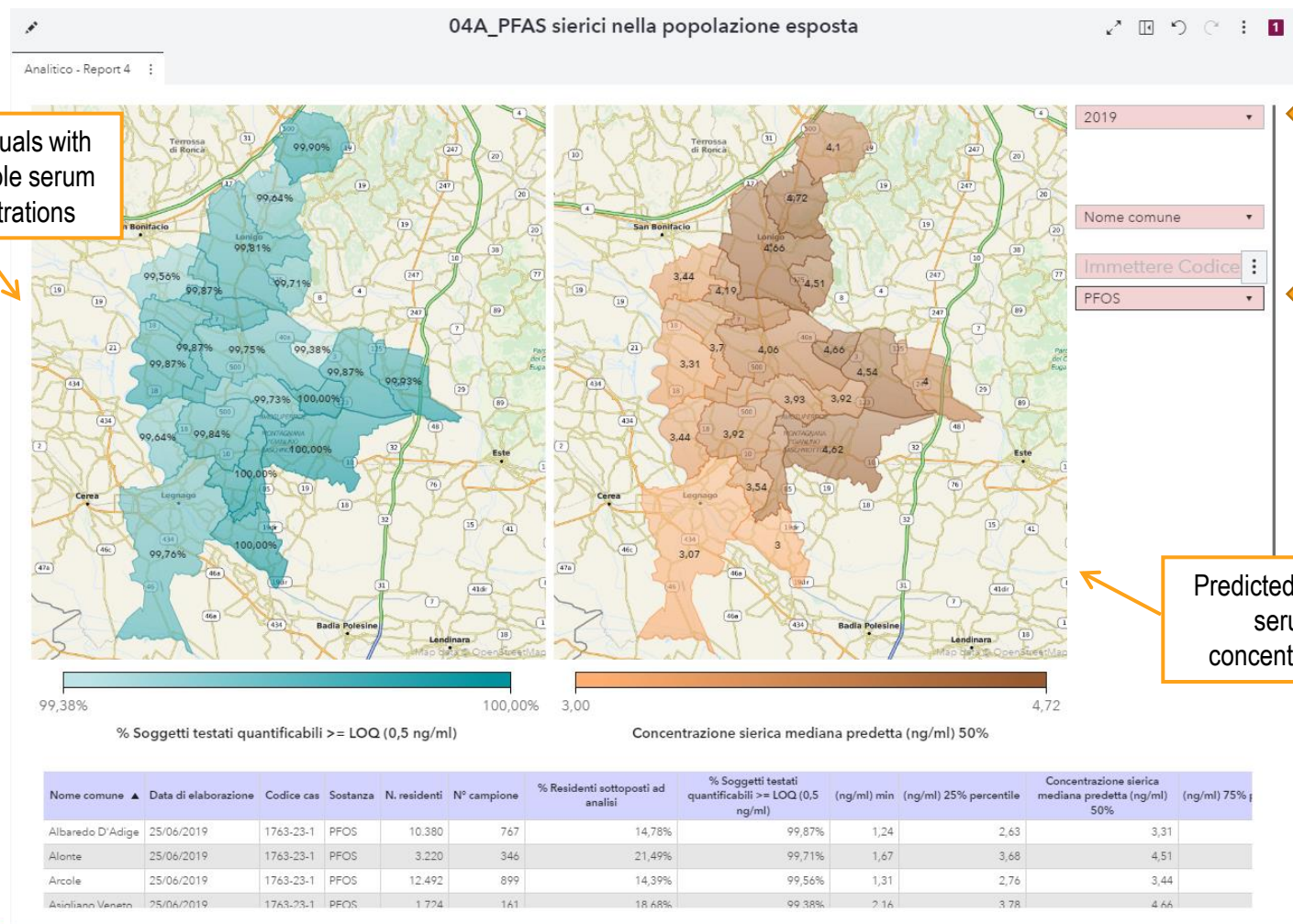
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1.7K 5.4K

Sales of Product Lines grouped by Store Types

Basal level – ANALYTICAL REPORTS

Serum PFAS in the exposed population



Next developments

- Linear shapefiles (rivers, drinking water networks)
- Integration of more health data and statistics (i.e. maps of mortality rates and incidence rates)
- Integration of outputs from hydrogeological forecast models

An integrated approach for the effective
management of water pollution risks from
emerging contaminants



Perfluorinated compounds
HOlistic ENvironmental
Interinstitutional eXperience

Thank you for your attention

Preventing, Ensuring, Promoting

LIFE PHOENIX Project

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COORDINATOR



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