

**Esperienze e prospettive di
cooperazione territoriale nell'arco
alpino:
la Convenzione delle Alpi e il
Programma Spazio Alpino**

Villa Cagnola, 26 Novembre 2013



AIM 2014+
Alpine Space in Movement

**AIM Alpine Space in Movement
targeted to water & energy capitalization**

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Project co-funded by the European Regional Development Fund in the frame of the European Territorial Cooperation Programme Alpine Space

Partners



RSE - Research on Energy Systems (Italy)



**BOKU – Institute of Hydrobiology and Aquatic
Ecosystem Management
University of Natural Resources & Life Science
Vienna (Austria)**



**IzVRS – Institute for Water of the Republic of
Slovenia (Slovenia)**

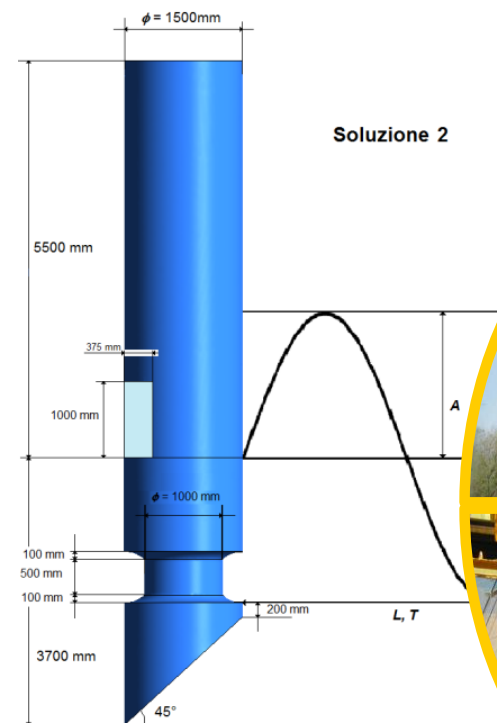


**AEM - European Association of elected
representatives from mountain regions (France)**

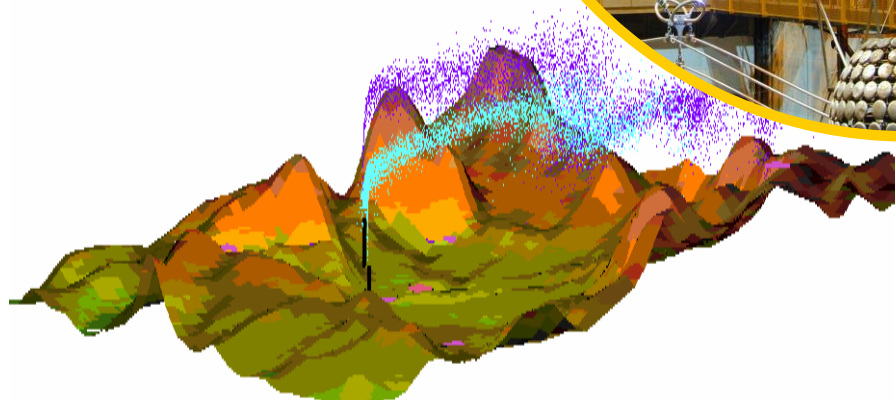
Coordinator



Research on Energetic Systems
Milan, Italy



- Established in 2005, 100% owned by the **GSE**, with staff from ENEL centers founded in the 50's
- The mission is to take over funded research programs and contract research at national and international level
- Research activities are centered on the electricity and energy sector with emphasis on experimental pilot applications



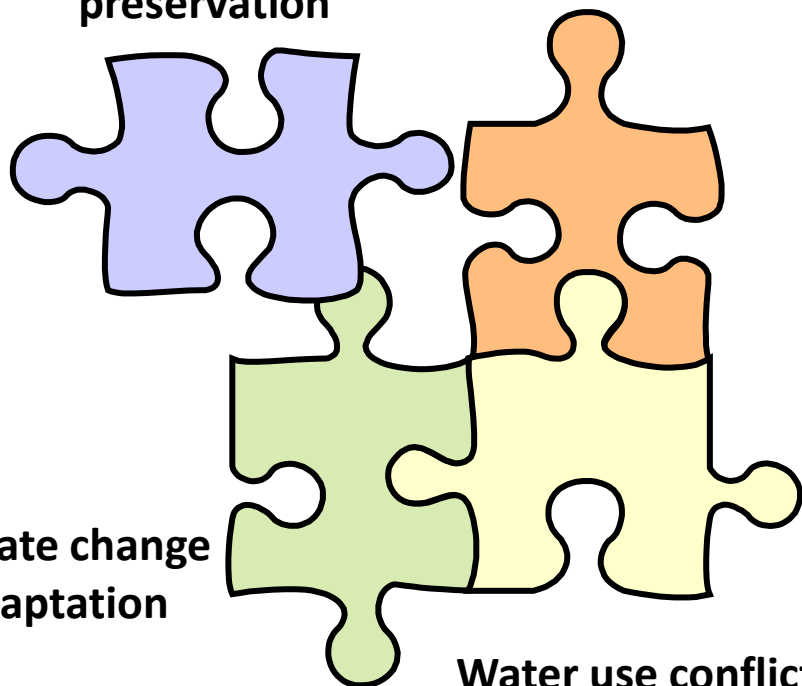
Issues

AIM 2014+

Alpine Space in Movement

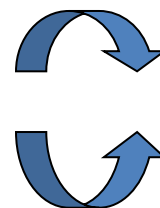
River quality
preservation

RES integration



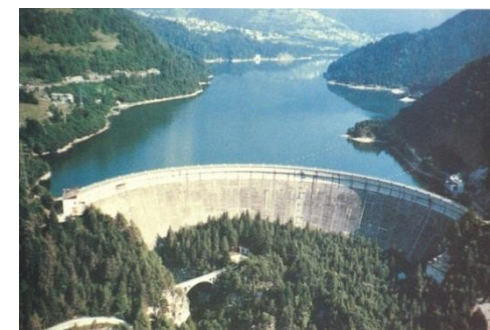
Energy

RES-e Directive



Environment

Water Framework Directive



Challenges

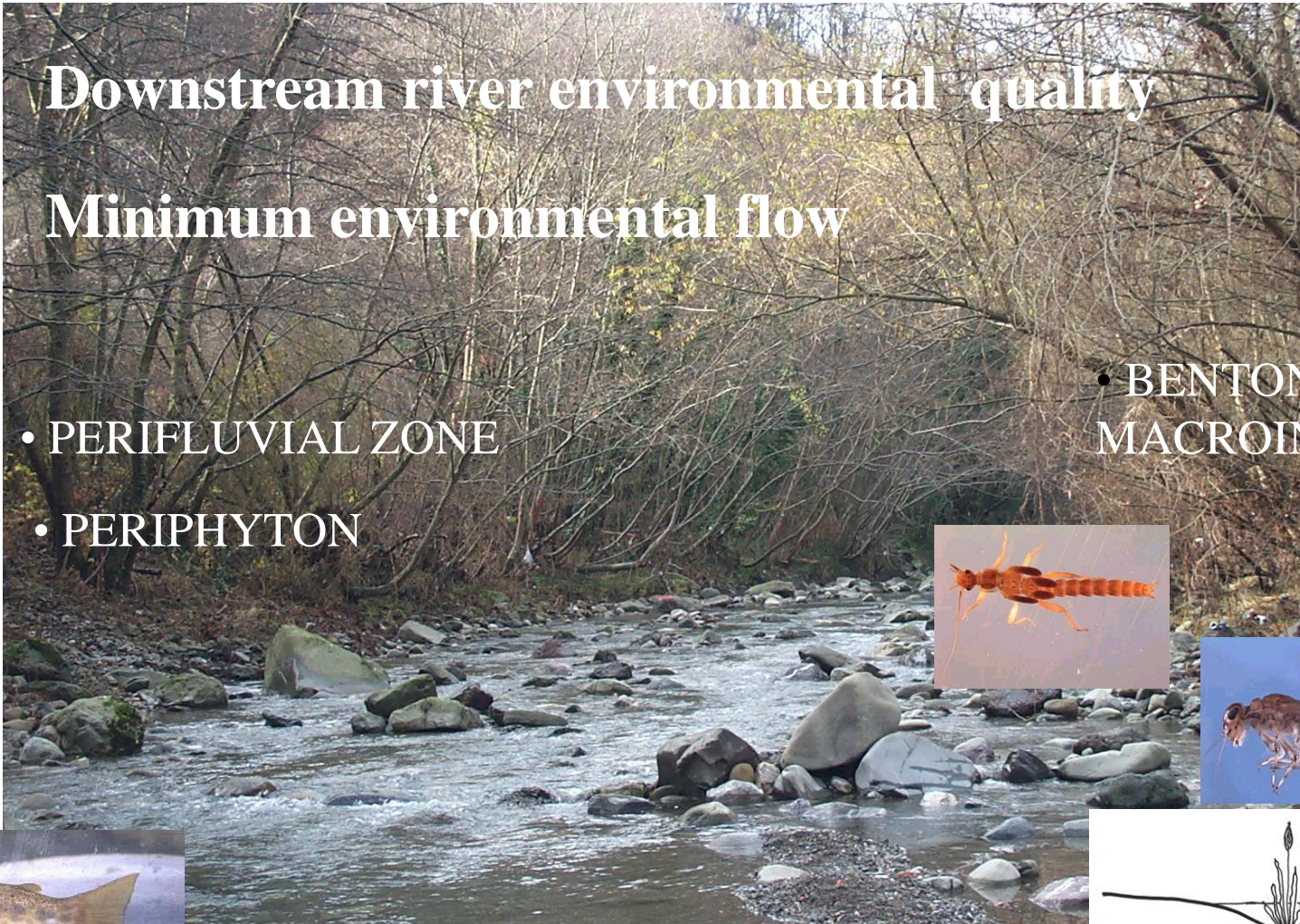
Water Framework Directive implementation issues

Downstream river environmental quality

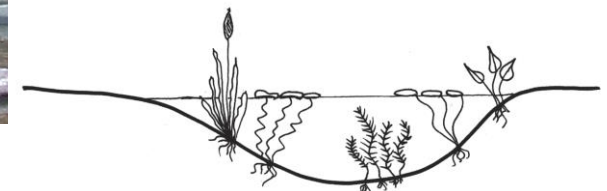
Minimum environmental flow

- PERIFLUVIAL ZONE
- PERIPHYTON

- BENTONICS
MACROINVERTEBRATES

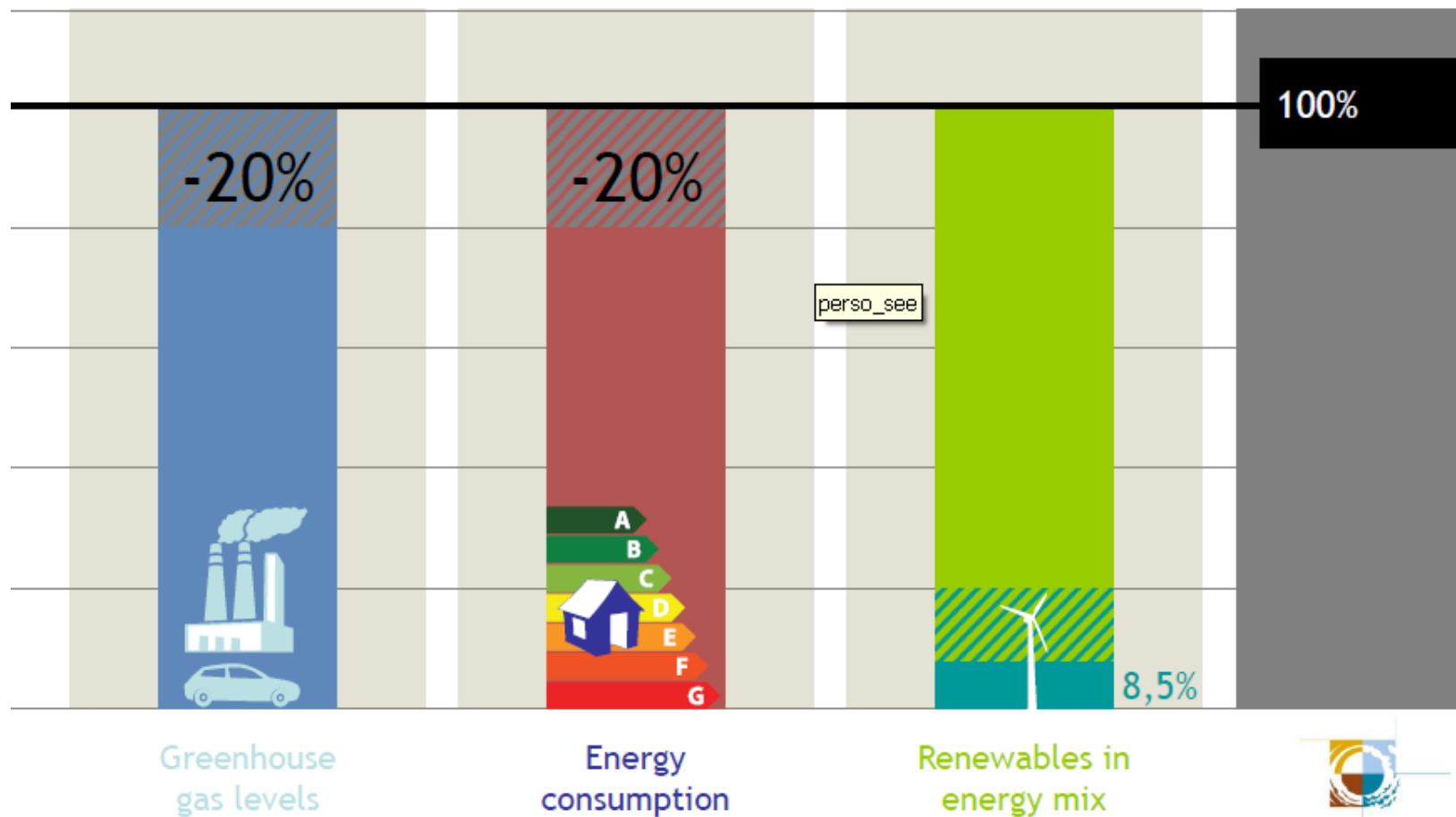


- AQUATIC MACROFITS



Challenges

The 20-20-20 EU policy by 2020



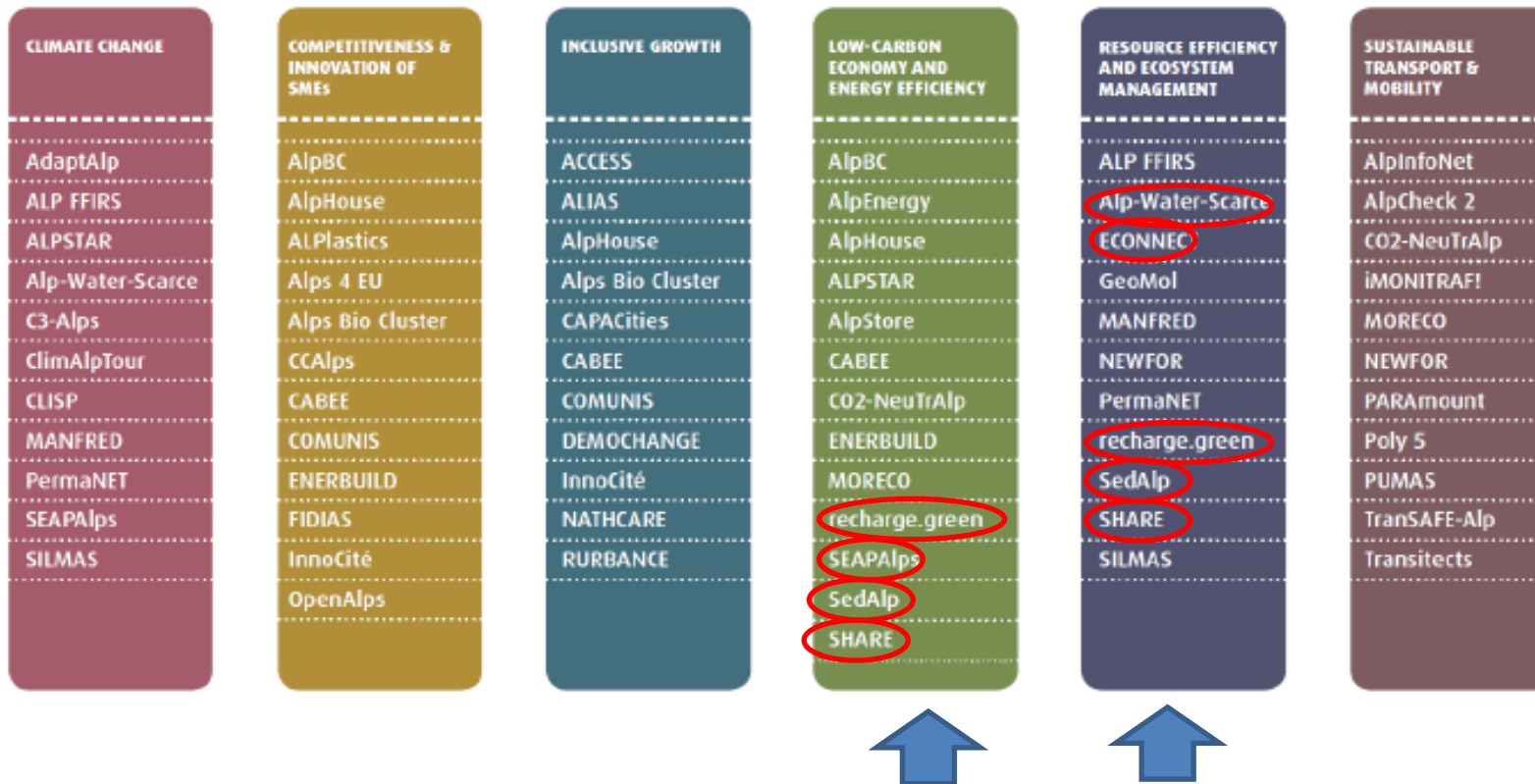
Objectives

AIM

Alpine Space in Movement **2014⁺**

SOLUTIONS to harmonize Water and Energy !

The Alpine Space projects per thematic field



RSE is Lead Partner

+ 4 Partners
+ 18 Observers

Duration:
1 September 2013
31 December 2014

AIM Alpine Space in Movement
targeted to water & energy capitalization

Objectives

- Track the **accomplished results** of the Alpine Space Programme projects (2007-2013), in the thematic field of water & energy harmonization; and **identify the transnational needs** of the entire Alpine Space Region.
- **Valorize and capitalize** the selected ASP project's achievements in terms of policy & management development, into effective/massive **dissemination** and targeting **the relevant policy level/actors** to impact on national/regional policies.
- Setting the **scene for the 2014+** project generation, by identifying key relevant policy actors and institutional competences, **crossing** the achieved **results with beneficiaries needs**, and mapping the European/regional/trans boundary/national programs with possible synergies.

Observer partners + target actors

Observers	Institution	Country
1	Permanent Secretariat of the Alpine Convention	Austria - Alpine Region
2	Schneider & Jorde Ecological Engineering	Germany
3	University of Stuttgart	Germany
4	European Commission Joint Research Centre – Institute for Environment and Sustainability (Ispra)	Italy - Europe
5	UNESCO-IHE Institute for water education	Europe
6	Compagnie Nationale du Rhône	France
7	Association of Renewable Energy Producers	Italy
8	ARPAV Regional Land Safety Department	Italy
9	Veneto Region	Italy
10	Italian National Committee on Large Dams	Italy
11	Soča Valley Development Centre	Slovenia
12	Soške Elektrarne Nova Gorica, Hydropower producer on the Soča River	Slovenia
13	Institute of the Republic of Slovenia for Nature Conservation	Slovenia
14	Fisheries Research institute of Slovenia	Slovenia
15	Ministry of the Environment, Territory & Sea Preservation	Italy
16	ASCONIT Consultants on environmental issues	France
17	International Commission for the Protection of the Danube River	Austria - Danube region
18	Kyoto Club	Italy
19	Torino Province	Italy
20	Arpa Valle d'Aosta	Italy
21	POLE4 Municipality of 18th District of Budapest, Thematic Pole Low Carbon Communities	South East Europe
22	WWF Austria	Austria
23	University of Veterinary Medicine Vienna, Research Institute of Wildlife Ecology	Austria
24	Austrian Federal Ministry for Agriculture, Forestry, Environment and Water Management	Austria



Stakeholder Panel

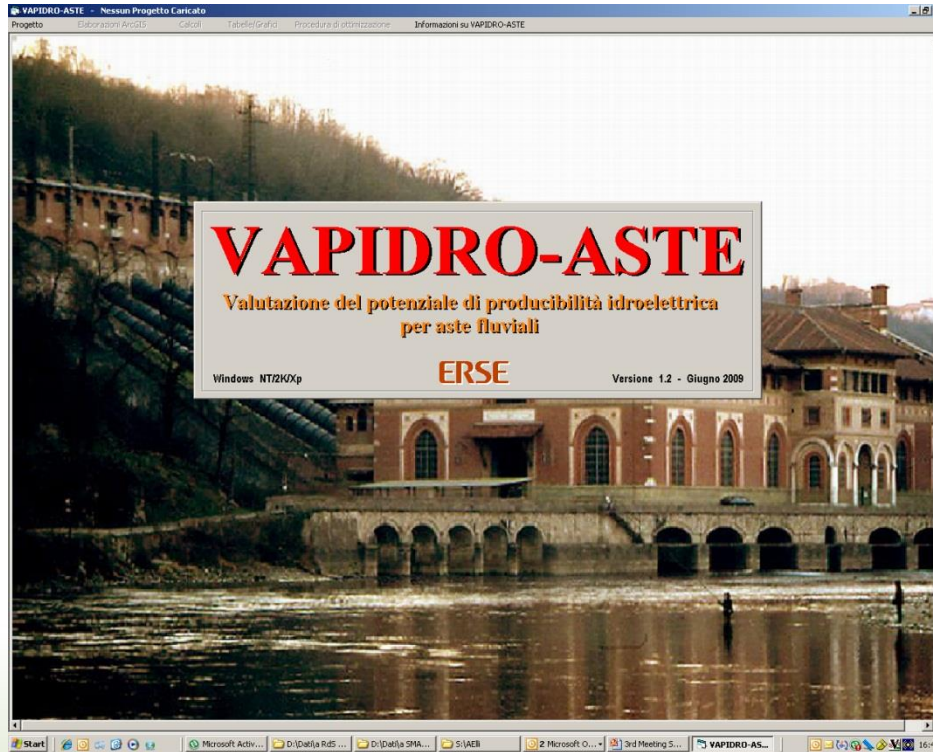


Stakeholders Brainstorming Seminar

Ministry of the Environment
Vienna, 21st – 22nd November 2013

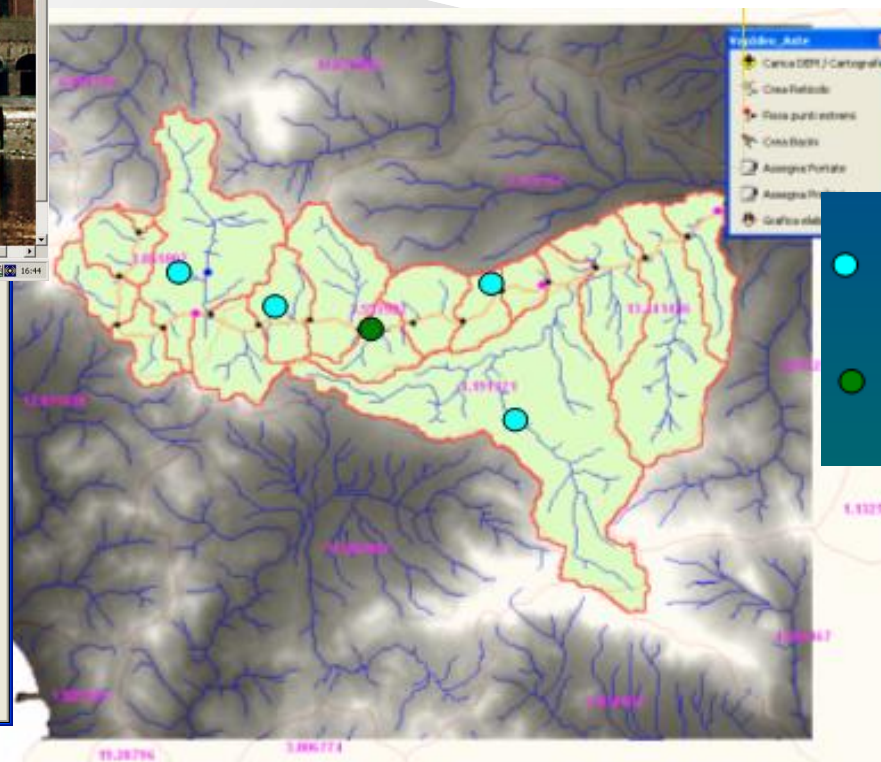
Projects involved in AIM capitalization



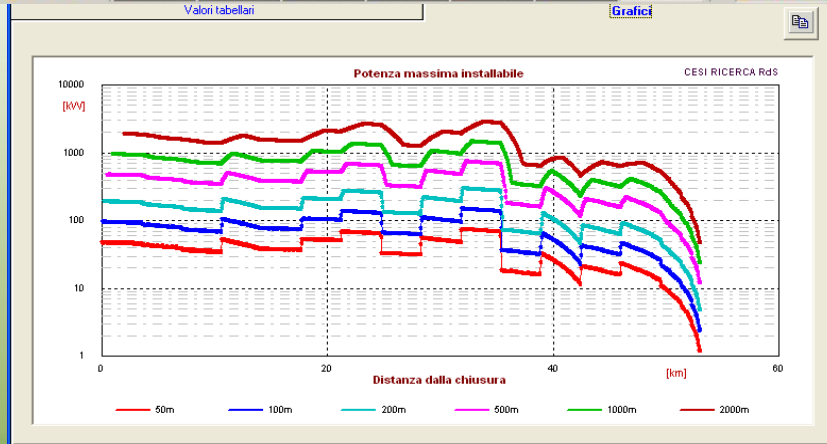


Model to determine the **optimal small hydropower exploitation** scheme and most **suitable sites**

Residual potential hydropower

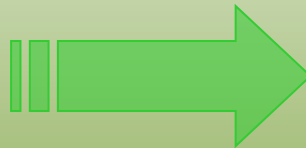
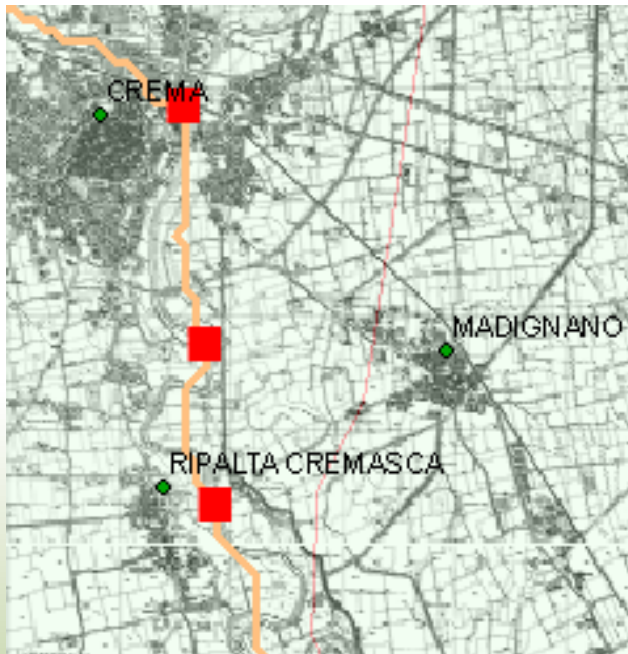


- User withdrawal points
- User restitution points



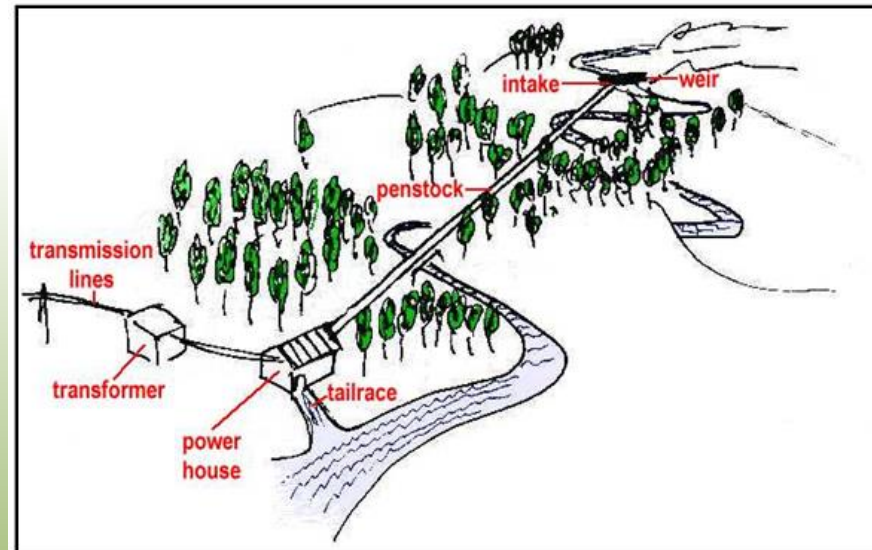
Installable power of potential mini hydro plants

SHP Cost / Benefit detailed analysis



SMART Mini-Idro

Software for the technical-economic feasibility analysis of small hydropower plants in fluent water courses



WORKING MODULES:



[1. Discharge](#)



[2. Turbine](#)



[3. Energy](#)



[4. Costs](#)



[5. Financial Analysis](#)

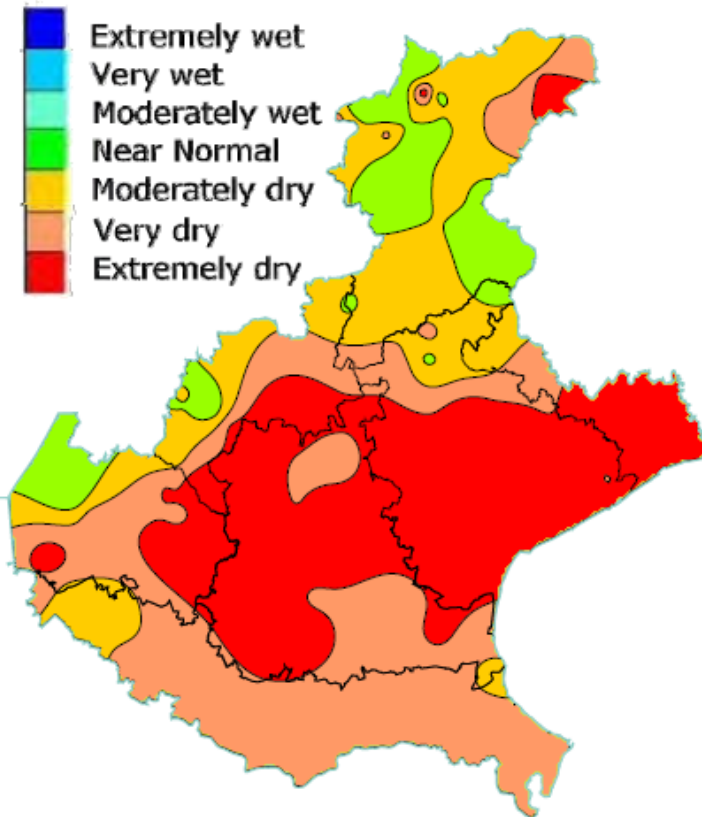
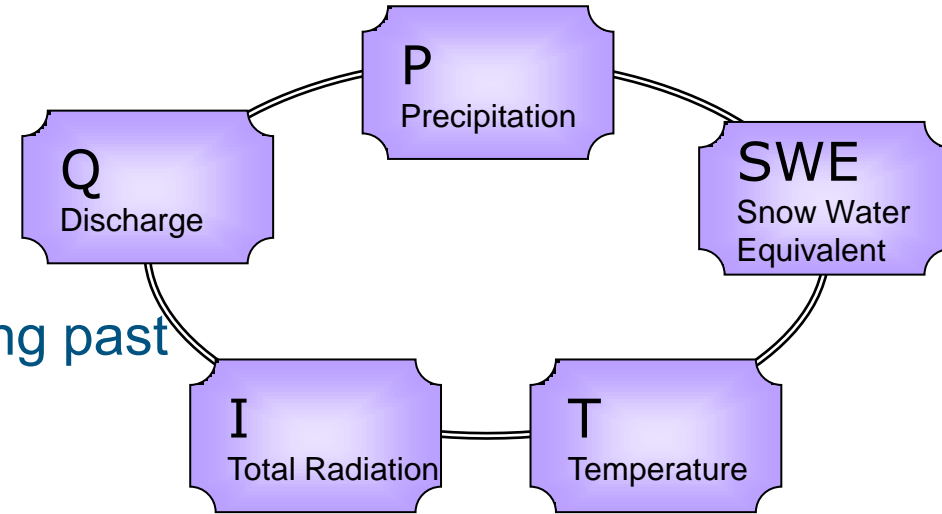


[User Guide](#)

Optimized B/C solution

EWS – Water Scarcity Index (WSI)




- Evaluation of the percentiles of P, SWE, T, I, Q
- Applications of weights and WSI calculation
- Weights and threshold value are calibrated using past data (critical years)



situation at: 31 January 2013													
Hydrological year (1 Oct - 30 Sep)	percentiles									WSI	Predicted water scarcity (Yes / No)	Real situation of water scarcity (Yes / No)	Indicator reliability
	rainfall		discharge			temperature		snow					
	cumulated rainfall from 1 Oct	cumulated rainfall from 1 Dec	mean discharge from 1 Oct	mean discharge till now	cumulated water volume drained from 1 Jan	mean temperature from 1 Oct	mean temperature from 1 Mar	snow pack - mean value of 10 days before now	cumulated snowfall till now				
<i>weight:</i>	<i>0.05</i>	<i>0.15</i>	<i>0.20</i>	<i>0.10</i>	<i>0.10</i>	<i>0.05</i>	<i>0.10</i>	<i>0.15</i>	<i>0.10</i>	<i>0.50</i>	<i>WSI threshold</i>		
1990 - 1991	0.82	0.67	0.41	0.69	0.59	0.00		1.00	0.87	0.74	N	?	-
1991 - 1992	0.52	0.52	0.61	0.39	0.49	0.35		0.69	0.54	0.60	N	?	-
1992 - 1993	0.50	0.12	0.56	0.43	0.51	0.58		0.30	0.74	0.49	Y	?	-
1993 - 1994	0.75	0.50	0.94	0.69	0.71	0.37		0.19	0.37	0.64	N	Y	failed alarm
1994 - 1995	0.05	0.33	0.59	0.61	0.58	0.55		0.61	0.41	0.54	N	Y	failed alarm
1995 - 1996	0.00	0.20	0.38	0.15	0.18	0.23		0.11	0.00	0.29	Y	N	false alarm
1996 - 1997	0.72	0.03	0.78	0.75	0.74	0.83		0.57	0.20	0.56	N	N	OK
1997 - 1998	0.25	0.57	0.28	0.65	0.57	0.80		0.65	0.49	0.53	N	Y	failed alarm
1998 - 1999	0.62	0.75	0.54	0.48	0.38	0.17		0.34	0.66	0.60	N	N	OK
1999 - 2000	0.10	0.30	0.64	0.66	0.63	0.52		0.00	0.04	0.44	Y	N	false alarm
2000 - 2001	1.00	0.87	0.93	0.93	0.97	0.85		0.92	0.91	0.89	N	N	OK
2001 - 2002	0.38	0.93	0.16	0.18	0.13	0.92		0.15	0.08	0.36	Y	N	false alarm
2002 - 2003	0.88	0.02	0.81	0.90	0.87	0.67		0.07	0.29	0.54	N	Y	failed alarm
2003 - 2004	0.80	0.52	0.33	0.39	0.41	0.13		0.96	0.95	0.65	N	N	OK
2004 - 2005	0.22	0.15	0.36	0.38	0.35	0.38		0.53	0.25	0.41	Y	Y	OK
2005 - 2006	0.37	0.28	0.47	0.16	0.14	0.07		0.42	0.62	0.46	Y	Y	OK
2006 - 2007	0.15	0.83	0.05	0.12	0.09	1.00		0.03	0.16	0.28	Y	N	false alarm
2007 - 2008	0.35	0.75	0.15	0.29	0.22	0.67		0.73	0.70	0.51	N	N	OK
2008 - 2009	0.95	1.00	0.65	0.76	0.72	0.60		0.88	1.00	0.83	N	N	OK
2009 - 2010	0.53	0.72	0.32	0.46	0.66	0.15		0.84	0.83	0.66	N	N	OK
2010 - 2011	0.55	0.45	0.72	0.82	0.88	0.67		0.50	0.79	0.68	N	N	OK
2011 - 2012	0.08	0.15	0.38	0.21	0.25	0.93		0.23	0.45	0.33	Y	Y	OK
2012 - 2013	0.77	0.39	0.96	0.89	0.86	0.72		0.92	0.95	0.81	N	N	OK

SEAP_Alps Action Tool

Action Tool






- ☞ **A1 municipal buildings**
 - ☞ A1.1 building envelope
 - 🔍  **PS-5-municipal-contracting-2013-06-25.doc**
 - ☞ A1.1.1 procurement - general guideline
 - ☞ A1.1.2 building standards in refurbishment
 - 🔍  **PS-4-municipal-refurbishment-2013-06-25.doc**
 - ☞ A1.1.3 building standards in new construction
 - 🔍  **PS-3-municipal-new_construction-2013-06-25.doc**
 - ☞ A1.2 renewable energy for heating
 - ☞ A1.3 energy efficiency in heating
 - ☞ A1.4 lighting
 - ☞ A1.5 electrical appliances
 - ☞ A1.6 integrated action
 - ☞ A1.7 IT technologies
 - ☞ A1.8 behavioural changes
 - ☞ A1.9 other
- ☞ **B1 tertiary buildings**
- ☞ **C1 residential buildings**
- ☞ **D2 public lighting**
- ☞ **E3 Industry**
- ☞ **F4 Transport**
- ☞ **G5 local electricity production**
- ☞ **H6 local heat/cold production**
- ☞ **K7 Other**




SEAP_Alps Action Tool

In order to support Alpine Space municipalities in selecting actions that suit their individual requirements and capabilities, SEAP Alps offers an Action Tool with detailed project sheets. Actions that are referring to adaptation are marked with an umbrella. For more information refer to the [Action Tool Description](#).

Features:

-  **-06-25.doc** Select actions and open project sheets by clicking on the attachments
-  Open a preview of the selected project sheet
-  Add project sheet to Action Basket for later downloading
-  Delete project sheet from Action Basket
-  Projects with adaptation topics are marked by an umbrella

Search for keywords

After collection of several project sheets, go to the [Action Basket](#). 
To see the updated list in the right navigation, refresh the view (button F5).

Action Tool

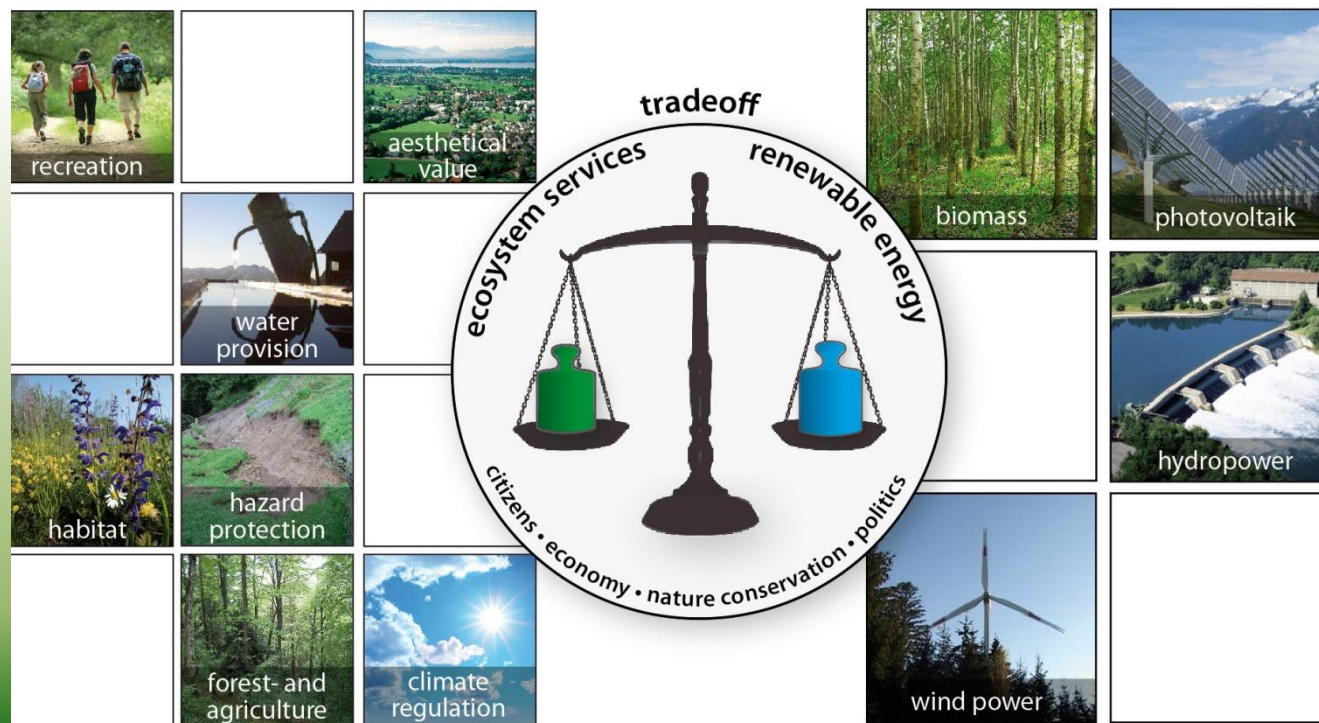
- ☞ A1 municipal buildings
- ☞ B1 tertiary buildings
- ☞ C1 residential buildings
- ☞ D2 public lighting
- ☞ E3 Industry
- ☞ F4 Transport
- ☞ G5 local electricity production
- ☞ H6 local heat/cold production
- ☞ K7 Other

Assessment of the **status quo of Alpine renewable energy production** and of potential (with maps)

A set of **qualitative indicators** to compare legal frameworks, stakeholders, processes, energy market drivers, avenues of cooperation

A **trade-off analysis** (renewable energy production vs. biodiversity conservation/ecosystem services)

A **decision-support system** for renewable energy development considering ecological trade-offs and economic dimensions



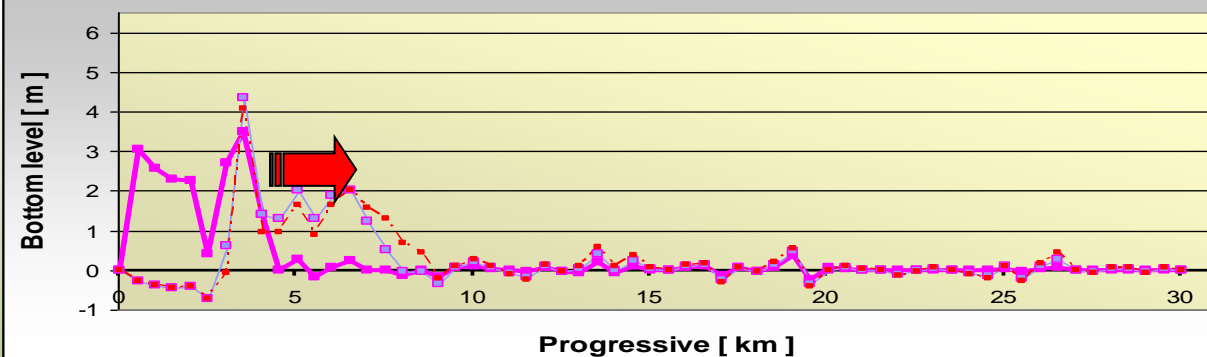
Sediment transport and river morphology

Mathematical model GIS integrated

Controlled FLUSHING OPERATION of HP reservoirs



Bottom level evolution



- Suspended concentration
- Embeddedness
- Aggradation level



Expected results

- **Seminars & Panel discussions**
 - with key stakeholders in *Austria, Slovenia, Germany, France and Switzerland*
 - Transnational Seminar of AIM in *Italy*
 - Synergies with the *SEE Capitalization* – Polo 4 Low Carbon Community
- **Database**
 - *Stakeholder Database*: AS 2007-2013 and AS 2014+
 - *Key relevant policy actors* and specific competence
- **Assessments**
 - *ASP needs* regarding renewable energy
 - Project *results & achievements*
 - Project results in terms of *economic valorization* & ecosystem services
 - *Weak points* from the *interconnection* between project results & ASR targets
 - Cross table with *achieved results / beneficiaries* (stakeholders)
 - Regional Web GIS Database
- **Guideline**
 - Recommendations for setting the *scene for the Project Generation 2014+*

AIM 2014+

Alpine Space in Movement

Be part of our community !

Thanks for your attention

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andrea.danelli@rse-web.it