UNIVERSITÀ DEGLI STUDI DI MILANO

Tourism effects on water management in mountain areas
The case of an Italian Alpine Valley

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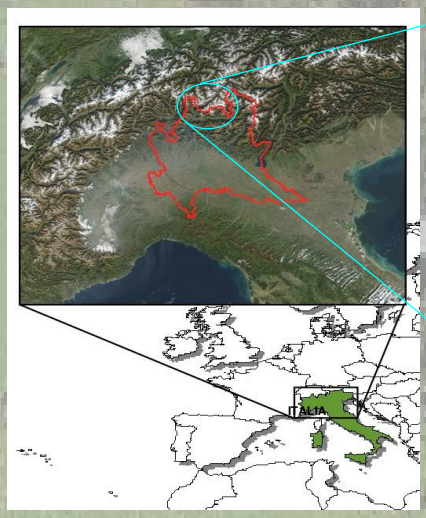
STUDY AREA



Adda River basin is one the greatest in Lombardy and the fourth in Italy for surface. In the upper part of the basin the river flows through a glacial alpine valley, Valtellina. In the centre of the basin Adda flows into Lake Como, one of deepest lakes in Europe. Water management in the upper part of the basin has to be well regulated to ensure intensive agriculture and industrial activities in Padana Plain, which generate a great demand of water because it's one of the most productive areas in Italy. The regulation is due to a sluice in Olginate.

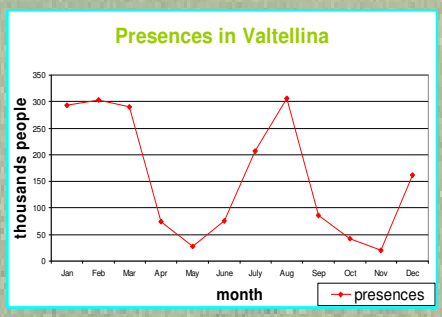
The annual overall tourist presence has been estimated around *2 millions* for Valtellina and *2,3 millions* for the lake area, which is almost ten fold the resident population.

The work is part of RICLIC project (Regional Impact of Climatic Change in Lombardy Water Resources: Modelling and applications), funded by Lombardy Region to develop a scientific methodology to assess climatic impacts on water resources.

RICLIC

Scientific Research Units → Regional Public Authority

VALTELLINA

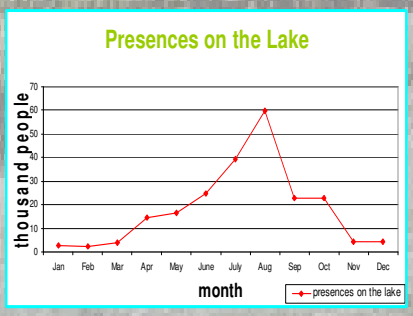


Tourist demand in Valtellina shows two peaks corresponding to winter and summer seasons. Water consumption in tourism oriented municipalities, for the months of January, March and August exceeds *4 Mm³*, for an annual overall amount of *25 Mm³*. The comparison with *1,2 Mm³* for water demand by resident population in the same area (about 16.800 people), expresses the size of tourist impact on the area. Even the comparison with the overall demand of water for Valtellina is remarkable: *12 Mm³*.

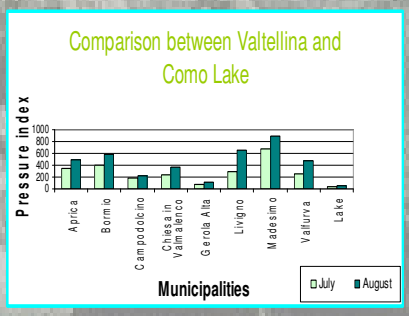
Water consumption during tourist months

2005	presences	Mm³/month
Jan	254.884	4,19
Feb	263.432	3,91
July	161.407	2,65
Aug	246.651	4,05
Dec	137.131	2,25

COMO LAKE



On the lake demand shows one peak corresponding to August. Water range in Como Lake has to be maintained between +120 cm and -40 of hydrometric level. Under this level many problems arise for lake environment and leisure activities: limitation of landing wharf availability, deterioration of water quality, that brings limitations in bathing and in derivation for civil uses.
In tourism oriented municipalities live 30.700 inhabitants and their water consumption is estimated about 2,2 Mm³/year. 218.000 tourists in 2006 determined a water consumption of about 4 Mm³/year.



TOURISM INTENSITY = presences * days per month * 1.000/ inhabitants (source: APAT)

CONCLUSIONS

- This study is a preliminary description of the impacts due to tourism on water supply during the year;
- tourism in Valtellina represents not only the most important economic driver, but also the main impact factor for water consumption;
- tourism on Como Lake doesn't represent a strong impact on water resources, but the level of water in the lake has to be preserved;
- summer season is a critical period of the year, because of the greater demand of all the competing users: tourism, agriculture and hydroelectric power production;
- RICLIC project aims to analyze the dynamics for every different water use and to provide a support to water management decision makers.