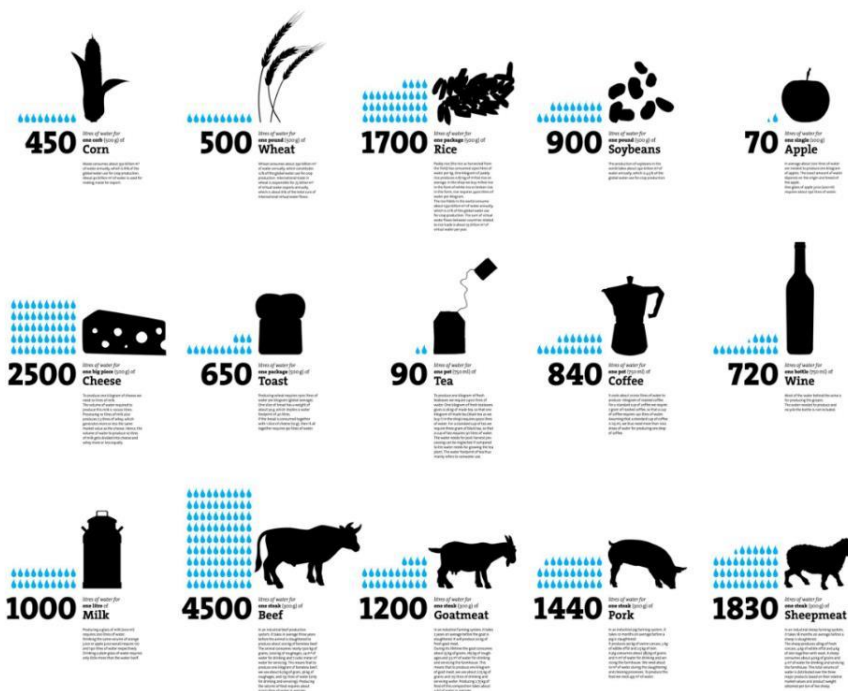


Climate change is a global phenomenon that is having a significant impact on water resources around the world. Rising temperatures, changing precipitation patterns, and more extreme weather events are all damaging water availability. Italy is particularly vulnerable to the impacts of climate change on water resources. The country is located in a Mediterranean climate zone, which is characterized by hot, dry summers and mild, wet winters. Climate change is exacerbating these conditions, leading to more frequent and severe droughts.

The concept of water footprint is a crucial tool for assessing water consumption. As defined by the Ministry of Environment and Energy Security, the water footprint is an indicator of the freshwater consumption of a company or an individual.



This image effectively illustrates the vast quantities of water required to produce various goods. Water plays an indispensable role in the creation of these products. For instance, the production of a mere 500 grams of rice demands a staggering 1700 liters of water.

The water footprint concept categorizes water consumption into three distinct sections:

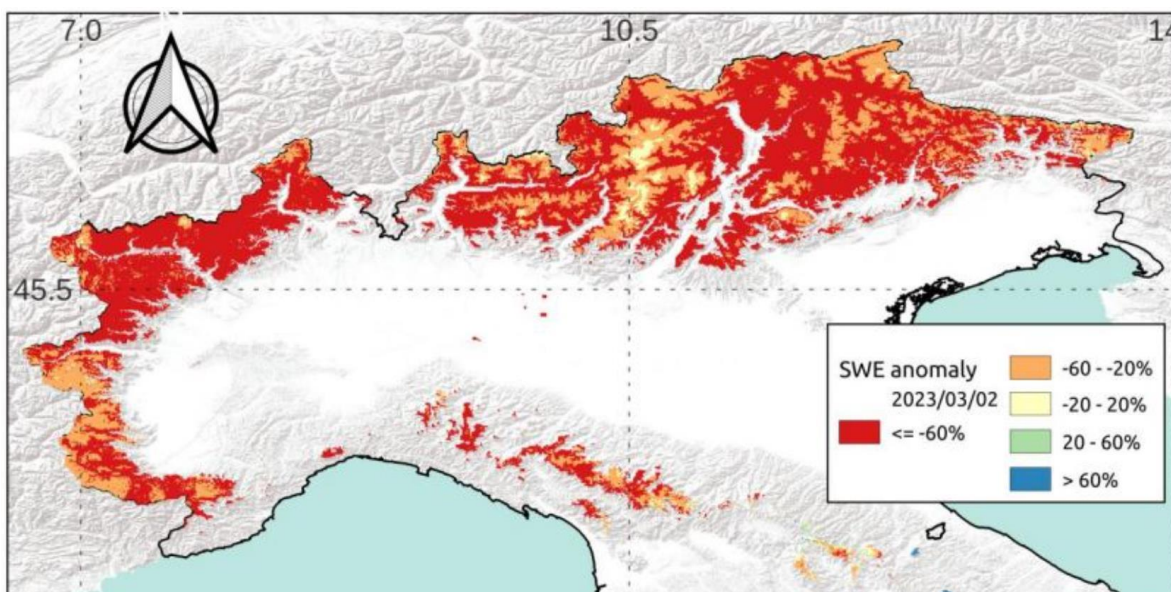
Blue Water: This category encompasses surface and groundwater resources utilized for agricultural, domestic, and industrial purposes.

Green Water: Green water refers to the volume of evaporated rainwater employed in agricultural practices.

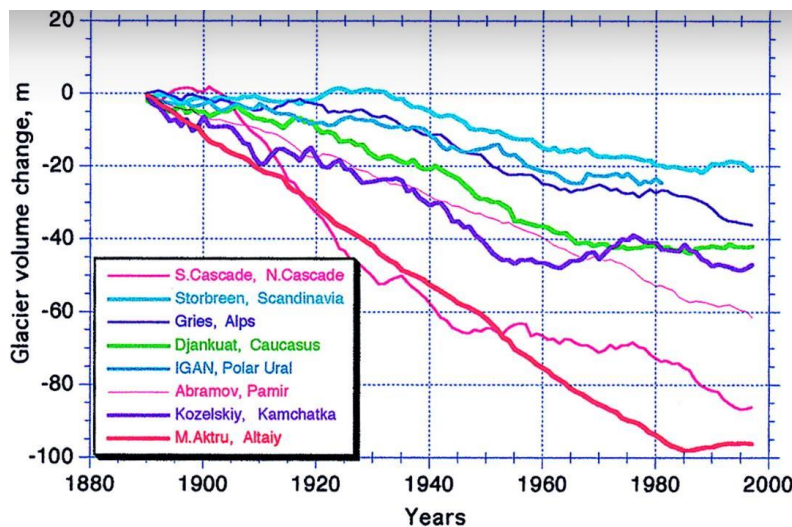
Greywater: This term represents the volume of wastewater generated.

Understanding the water footprint of various products and activities is essential for promoting sustainable water management practices. By adopting water-efficient measures and reducing overall consumption, we can collectively conserve this precious resource and ensure its availability for future generations.

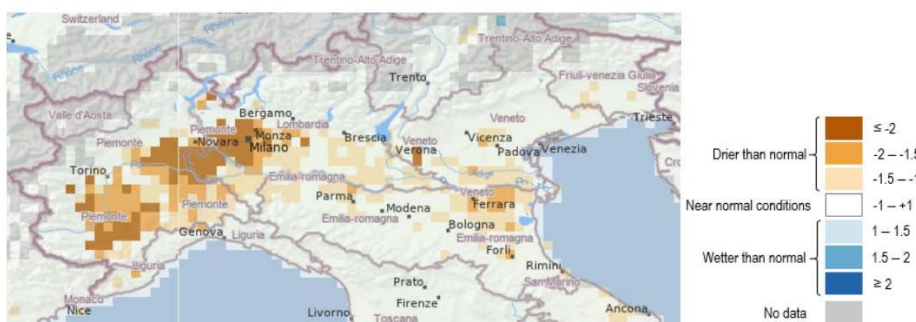
Northern Italy is particularly affected by climate change. The region is home to the Alps, which are a major source of water for the Po River, the longest river in Italy. However, the snow and ice in the Alps are also melting at an alarming rate, which is reducing the amount of water that slowly melts into the Po River and other rivers in the region.



According to the ANBI Water Resources Observatory, the melting of the limited snowpack in mountainous regions is causing a rise in lake water levels. Simultaneously, with the rise in temperatures, there is an extended period of precipitation scarcity, leading to prolonged droughts. Glaciers play a pivotal role in regulating the seasonal water cycle and providing water during dry periods. However, as evident from the graph below, there has been a general decline in the size of some glaciers worldwide.



Clearly, the decrease in rainfall has a negative impact on the presence of water in the soil. In this graphic, we can see how the north Italian soil, is more arid, than the center and south of Italy



The impacts of climate change on water resources in Northern Italy have an impact on:

Decreased water availability: Climate change is reducing the amount of water available in Northern Italy. This is due to a number of factors, including:

Decreased snowfall: Snowfall in the Alps has been declining for decades. This is due to rising temperatures, which are causing snow to melt earlier in the year and at higher elevations.

Increased evaporation: Rising temperatures are also leading to increased evaporation, which is further reducing water availability.

More extreme weather events: Climate change is also leading to more extreme weather events, such as droughts and floods. These events can further disrupt water supplies.

Degraded water quality: Climate change is also degrading water quality in Northern Italy. This is due to a number of factors, including:

Increased pollution: Rising temperatures and extreme weather events can increase pollution levels in waterways.

Saline intrusion: Rising sea levels are causing saltwater to intrude into freshwater aquifers in coastal areas.

Increased demand for water: Demand for water is increasing in Northern Italy due to a number of factors, including:

Population growth: The population of Northern Italy is growing, which is putting additional strain on water resources.

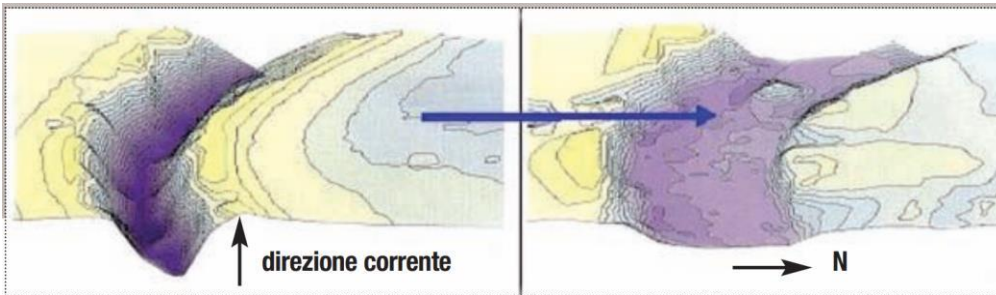
Economic development: Economic development is also increasing demand for water, as industries and businesses require more water to operate.

In this photo, we can see the intrusion of sea water, inside the Po river, for the cause of drought



In 2012, the European Commission presented the plan for the safeguard of European water resources. This plan provides for cooperation between Member States, accounting for water resources and water efficiency targets. At the same time, people need to be more aware and implement policies on the use and management of water resources in an adaptation and sustainability perspective, and focus, for example, on less water-demanding crops, improve resource management systems in agriculture and industry, promote mitigation and adaptation policies to climate change. A strategy that promotes the reduction of domestic water consumption is the use of non-potable water for uses such as washing machines and toilet flushing, in order to bring the average value of domestic consumption of drinking water to no more than 150 l/ab/day. To restore the aquifers, the Italian government could allocate 2 billion euros a year for 10 years to morphological and ecological requalification interventions of watercourses. Some examples include:

Widening of the section: This can be achieved through excavation to reduce the flow velocity, restore natural banks, or create a habitat for aquatic fauna;



Given that water resource management is a global issue, it can be helpful to understand the strategies of other countries in safeguarding water resources:

-Israel is a world leader in seawater desalination, integrating desalinated water into its water supply network.



-The Netherlands is recognized for its flood management and is investing in flood defense systems and implementing land-use planning measures.



Climate change is a serious threat to water resources in Northern Italy. However, there are many solutions that can be taken to address this challenge. By working together, Italy can adapt to a changing climate and ensure a sustainable water future for all.