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Tide control on Venice Lagoon

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The lagoon of Venice is the largest of the Mediterranean Sea, facing the North Adriatic Sea. It is about 55km2 wide and 1,5 m average deep. The astronomic tide maximum excursion is about ± 50 cm over the mean sea level. Tides force a water flush in the lagoon, carrying inside oxygenated and expelling de-oxygenated water, two times per day. This "breath"is essential to biological life and to connected ecosystem services. However, in some meteorological conditions, the level of the sea can be substantially higher (max registered + 2 m over the mean value in 1966). In these occasions, the historical city of Venice, located in the centre of the lagoon, is flooded. Climate changes and local anthropic pressures caused an intensification of flooding events in the last century. They can occur more than 20 times in a year, with different severity levels. Meteorological conditions can be forecast, with a precision which rises in the few hours before the event. The municipality operates an alert system and ensures services such as walkpaths.
However, the only way to protect Venice's from any flooding, including the most severe ones, is to temporarily close the entrance of sea water into the lagoon, when needed and as long as necessary, i.e. until the sea level will be back to a "safe"quote.
For this reason, a complex system of mobile barriers at the lagoon inlets (MOSE) is being constructed, funded by the Italian State and controlled by the Ministry of Infrastructure and Transport. Work began in 2003 and is continuing in parallel at the Lido, Malamocco and Chioggia inlets. Worksites are now in the final stage. The first barrier (North Lido) has been completed with the installation of the housing caissons and of the 21 gates. In the others barriers (South Lido, Malamocco and Chioggia) works will be concluded by the 2018. In that moment, the lagoon of Venice will become the first "regulated lagoon"in the world.

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