PRESS RELEASE

(Venice, Thursday, February 8, 2024) - Today, February 8, 2024, at 12:00 PM, the Eni Enrico Mattei Foundation (FEEM) is organizing the webinar "Contrasting Sea Level Rise in Venice by Seawater Injection Below Its Lagoon," presented by speaker Pietro Teatini, Associate Professor of Hydrology and Hydraulic Engineering at the University of Padua. The event, promoted as part of the activities of the FEEM research program "Climate Change Adaptation (Adapt@VE)" coordinated by Prof. Carlo Giupponi, kicks off a series of seminars organized by the Foundation in partnership with Ca' Foscari University, focusing on the most promising adaptation solutions to counteract the impacts of climate change on the ecosystem of the Venice lagoon. Today's seminar addresses the persistent problem of high waters in Venice, a phenomenon exacerbated by the subsidence of the lagoon floor. The current MoSE barriers are effective in protecting the city and its lagoon from high tides, but only as long as the relative sea-level rise does not exceed 50-60 cm. This rise is mainly due to two causes: eustasy, or the global increase in the average sea level, and subsidence, a local phenomenon that involves the lowering of the ground. Regarding eustasy, in a scenario of balance between the use of fossil fuels and renewable sources, the IPCC predicts a global sea-level rise of about 53 cm by 2100. Subsidence, on the other hand, caused a ground lowering of 15-20 cm in the last century, with a greater intensity between 1930 and 1970, during which large quantities of water were extracted to support mainland industries. The interaction of these phenomena puts the MoSE protection system under pressure, anticipating the need for alternative and complementary solutions to safeguard the lagoon from flooding well before the end of the century.

In response to this challenge, an ambitious project aimed at raising the entire area on which the city of Venice rests was proposed twenty years ago. The idea involves injecting seawater into the (saline) aquifers located at a depth of 600-1,000 meters beneath the lagoon. This process would be carried out using 12 injection wells, arranged in a circle with a radius of 10 km around the city. Using a large set of data related to the hydro-geo-mechanical characteristics of the Upper Adriatic sedimentary basin, advanced mathematical modeling techniques were applied to assess the impact of the uplift, confirming the feasibility of uniformly raising Venice and the surrounding areas by 25-30 cm compared to the current level. This process is expected to take place over ten years, followed by constant maintenance of the achieved level through continuous pumping. Simultaneously, the option of injecting additives capable of preventing water dispersion in the aquifer is being explored, in order to support a stable pressure that would allow pumping to be stopped.

Today's seminar speaker, Prof. Teatini, is President of the UNESCO International Initiative on Land Subsidence, Vice-Director of the second academic committee of the Key Lab of Land Subsidence Monitoring and Prevention, Shanghai, China, and a member of the academic

committee "Groundwater Dynamic Monitoring Network and Subsidence National Field Scientific Observation and Research Station," Ministry of Science and Technology, China. His research interests include modeling flow in confined/unconfined aquifer systems and the geomechanical processes related to the extraction/injection of fluids from and into the subsoil. He is the author and co-author of over 150 publications in international scientific journals and the book "Venice Shall Rise Again. Engineered Uplift of Venice through Seawater Injection," published by Elsevier. He has been included in the top 2% of the most influential scientists globally according to the Stanford University "World Ranking Top 2% Scientists." This event also marks the inauguration of FEEM's new Venetian headquarters at Corte Lucatello, San Marco.