

# Preface

The Firenze 2016 Committee was established in 2013 on the impetus of the Rector of the University of Florence Alberto Tesi, who suggested that Florence Council, the Tuscan Region and scientific and cultural institutions collaborate in the preparation of the fiftieth anniversary of the 1966 Florence Flood.

All main Institutions both political and cultural have participated in the Committee, as well as very numerous national and international Public and Private Associations. A complete list of the over 100 participants of the Committee can be found on the Project's website <[www.firenze2016.it](http://www.firenze2016.it)>.

In the period 2013-2014, the Committee was presided over by Mario Primicerio, former mayor of the Florence Municipality and from 2014 by the Mayor of Florence, Dario Nardella. As from 2015, the President of the Tuscan Region, Enrico Rossi, has taken on the charge of co-President.

The Committee Secretary is prof. Giorgio Valentino Federici of the University of Florence.

Since the foundation of the Committee, we have established an International Technical and Scientific Committee (ITSC) for an independent evaluation of what had been and what could still be done to reduce the flood risk for Florence. I wish to emphasize the importance and the innovative character of this initiative for our Country where the practice of accountability, common in the Anglo-Saxon world, seems to be considerably less present. It is indeed the case that, to help solve Venice's problems, an international scientific committee was set up. This, however, operated under the aegis of the Consortium of companies responsible for the planning and realisation of the works, and therefore followed procedures which cannot be seen as an example of 'accountability'. It is also important to observe that, with regard to Venice's problem, the Italian Government adopted, even amongst a thousand difficulties, quite a different strategy from that adopted for Florence. The special law for Venice has allowed the city of Venice to enjoy enormous funding for its defence and the safeguarding of the lagoon, funding of an order of magnitude higher than that allocated to the defence of the city of Florence.

How was such a different treatment possible? The flood risk "has been removed", as we say in Florence. Many people believe that the risk still remains.

For this reason, about three years ago, together with Mario Primicerio, former Mayor of Florence, we decided to set up the institution of an International Scientific

Committee (ITSC). We were aware that a Fellow of the Accademia dei Lincei, prof. Giovanni Seminara, was an expert of water engineering very much involved in the scientific problems related to the safeguard of Venice and its lagoon. He had never been professionally involved in the management of the Arno flood risk but, together with his high qualifications, he was the ideal candidate for the ITSC. So we asked him to extend the efforts he had devoted to protecting Venice to supporting the equally important aim of protecting Florence from the flooding of the Arno River. With his help, we then identified a possible composition of the Committee, inspired by the strict principle of independence that had guided us from the beginning. The choice of Gerry Galloway as Chair of the ITSC is also in line with the objective of seeking a guide of great authority and, at the same time, of total independence.

And so the ITSC experience began. We wish to extend many thanks, also on behalf of the co -chairs of the Firenze 2016 Committee, Dario Nardella the Mayor of Florence and Enrico Rossi President of the Tuscany Region, to the members of the ITSC, and in particular to Gerry Galloway and to Giovanni Seminara, for their generous and hard-working commitment. Note that the principle of accountability was also applied to ITSC. Indeed, the final Report was sent for review to two anonymous referees, who wished their identities to be disclosed, namely Prof. Murugesu Sivapalan (University of Illinois at Urbana-Champaign) and Prof. Demetris Koutsoyiannis (Technical University of Athens). The manuscript was also submitted for comments to the three former Secretaries of the Arno Basin Authorities, Prof. Angelo Nardi, Prof. Giovanni Menduni and Dr. Gaia Checcucci.

Finally, let us thank the Rector of the University of Florence, Luigi Dei, for supporting the publication of this report printed by the FUP – Firenze University Press.

The Secretary of the Firenze 2016 Committee  
Giorgio Valentino Federici

# Executive Summary

Florence, Italy, is recognized as one of the world's great treasures in art, culture, and Renaissance history. It is a UNESCO heritage site and an internationally visited tourist attraction. The importance of its legacy cannot be understated and its preservation is important to the citizens of Florence, Italy, and the world population. The tragic flooding of Florence in 1966 caused 38 deaths, severe damage to many of its most precious art works and threatened the economic and social viability of the city and its residents. In the aftermath of this event, people from around the world gathered to help the city recover and restore damaged works and the strength of the city. Governmental bodies argued that such flood tragedies should not be repeated. In the 50 years since the flood, the cultural and societal relevance of Florence has grown further world-wide and has produced a marked increase in the economic value of tourism.

In January 2014, Progetto Firenze 2016, a regional body convened by the University of Florence and now chaired by the mayor of Florence and the president of the Tuscany Region, invited six engineers and scientists from Europe and the United States to form an International Technical Scientific Committee (ITSC) to examine the current status of flood protection for Florence and to identify steps that might be taken to reduce any identified risks facing the city. The ITSC met as a body in June 2014, October 2015, and in October 2016 and was in communication throughout the period. In October 2016, the ITSC presented its report to Progetto Firenze 2016 for further transmission to the governments of Florence, Tuscany and Italy. The ITSC concluded that Florence remains at risk to significant flooding and this risk grows each day. It is not a question of whether a flood of the magnitude of 1966 or greater will occur, but when. In fact, the level of protection that exists in Florence now does not yet provide the risk reduction needed for the city and is not on a level appropriate to the citizens and treasures that rest within the city. If, under current conditions, a 1966-like flood occurred, the consequences to human lives, treasures, other properties and community infrastructure could be much more catastrophic than they were in 1966.

Since 1966, some actions have been taken to reduce the risk to flooding, however, these actions have not been sufficient to provide the standards that one would expect for a city like Florence. Because of the changes that have occurred throughout the

river basin, there are still threats to human lives and property. In 1996, an Arno River Basin Plan was issued by the Arno River Basin authority and described the actions deemed necessary to deal with the flooding as it was perceived at the time of the plan. Unfortunately, resources to support implementation of the plan have been slow in coming and thus most of the proposed projects have not been resourced and actions initiated. Some actions that are proceeding are underfunded. In fact, several of the measures that have been planned in 1996 were proposed again in the Hydro-Geological Plan (PAI) issued in 2005 and are again proposed by the Management Plan of Flood Risk (PGRA) that was approved in 2016 by the Arno River Basin Authority in compliance with the European Flood Directive.

At the current pace of activity, ongoing flood risk reduction efforts will not ensure the safety of the city and its patrimony for many decades to come.

The ITSC believes that, while the citizens of Florence and Tuscany may be aware of some potential flooding from the Arno River, it does not believe that they have adequate understanding of the magnitude and significance of this flooding. It is critical that national, regional, and local governments work together to communicate these risks to the public and develop an integrated plan to deal with the hydrologic risks they face.

The protection of Florence is a problem of national and international relevance. The ITSC suggests that the Italian Government should urge the appropriate Institutions (Florence, Municipality, Tuscany Region, Arno River Basin Authority and National Civil Protection), to prepare, on an accelerated time-schedule, and submit to its attention a comprehensive plan, which integrates structural and non-structural measures for protection of Florence. The plan should be structured to maximize the coordination among mitigation measures being employed therefore resolving the current fragmentation among responsible bodies. It should be detailed enough to define what further interventions are needed, with their feasibility based on a cost benefit analysis and a realistic time scale for their implementation. The plan should also include a comprehensive assessment of the socio-economic impact of a flood similar to the 1966 event on Florence and its cultural heritage. The ITSC suggests that the Italian Government should appoint an independent international committee (including no member of the ITSC) to serve as an advisory body in the preparation of the comprehensive plan.

Florence (Italy), December 2016