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Introduction

Do Three Different Waterfront Make Rome a City of Water?

Rome is a very special city. Anyway, I know that every city is special...

But Rome is truly a special place where everything is superlative and lasting.

Centuries of history have so many layers and everything seems to exist even before it begins.

The traces of the past mix with the becoming, sometimes slow and in any case never hasty.

Aspirations for change appear indeterminate and are crushed by a present in which abandonment and lack of care seem to dominate.

But now, the *Eternal City* is called upon to find new declinations, although the permanence of the uses remains a constant in many spaces. The radial network of consular roads still draws the guidelines for urban development and is confirmed as the main road mobility network.

The Aurelian Walls keep their profile almost unchanged; the layout of the ancient Roman aqueducts still stands out in the Roman countryside and sometimes resurfaces even within the denser urban fabric. Contrary to the past, however, today water no longer plays an important role and often its presence is hidden by senseless landfill works. Water is no longer a resource, as it was in ancient Roman times, but more and more often it is proving to be a problem to be tackled with modest emergency solutions.

The main critical issues can be summarised in four broad categories, of which the first three pertain to environmental phenomena, while the fourth refers to spatial relationships with places.

Coastal erosion. The erosion is mainly concentrated near the mouth of the Tiber River between Ostia and Fiumicino, where the mainly sandy coast is subjected to natural and anthropic pressures. Winds and storms, the presence of currents, sea level rise and soil subsidence, solid supply, and flow rate of watercourses to the sea, are natural components that unfold their effects over the long term. Human interventions are responsible for important changes, a part of which dates to the remodelling of Rome, which became the capital of Italy in 1871. Such as, for example, the construction of the river embankments, the so-called "muraglioni", in the central urban area, about eight kilometres long between Ponte Margherita and Ponte Sublicio, to defend the city from the floods of the Tiber; or the riverbanks of the stretch of the Tiber towards the sea, built in the 1930s to protect the reclaimed land from flooding.

The most consistent and fast transformations, however, took place from the second half of XXth century.

The construction of residential buildings and accommodation facilities along the entire coast, the layout of new infrastructures, the development of tourist ports, have led to heavy “disorganic interferences” which have not respected the delicate balance of marine territories and have accentuated their fragility.

Added to these ones, there are a series of alterations that have modified the course of the Tiber, and therefore, the contribution of sediments, including the repeated withdrawals from the riverbed of huge inert used as construction material, the building of hydroelectric plants and dams upstream for flow regulation.

The floods. The hydrographic structure of Rome is characterised by a dense network of watercourses in which the two major rivers, the Tiber and the Aniene, and 12 short-length tributaries, called “fossi” are distinguished.

Only some of these watercourses are partially visible within environmental corridors, while most of them have undergone profound changes and are incorporated into sewage collectors because of intense and chaotic urban growth. As a result, the landscape suffers for discontinuous alternations of naturalistic stretches and artificial transformations. Green corridors often abandoned are cut by river alterations like fillings and covers, embankment works and captation plants, even illegal ones, which have deteriorated the entire system.

The sealing of the soil, the poor maintenance of the sewage system and the intensification of meteoric events make the city exposed to urban flooding phenomena, especially in the event of particularly intense rainfall, to which are added non-negligible risks deriving from pluvial flooding, or localised flooding caused by the difficult disposal of rainwater.

Water crisis. The effects of climate change, the growing use of water and the increase in water captations, the rise in temperatures combined with prolonged periods of drought, have led in recent years to a critical reduction in the availability of water resources, especially in the summer months.

The flow rates of surface water courses as well as the springs that supply the large aqueducts arriving in Rome, the most populous Italian municipality, are increasingly below the natural levels. Now they are reaching minimum values that do not guarantee the necessary water reserves.

The result is a growing difficulty in the availability of drinking water with important impacts that have repercussions not

only on civic, agricultural, and industrial uses, but also on biodiversity.

Loss of the relationships of perception and collective enjoyment with the sea and rivers. The transformation of the soil from a “natural” to an “artificial” use is a problem of great concern because it affects the fragmentation of the territory, the reduction of biodiversity, the alterations of the hydrogeological cycle and microclimatic modifications.

The coastline, which once represented the opening towards the Mediterranean, is today seriously compromised by kilometres of chaotic urbanisation. The predominantly tourist and residential purpose of the buildings, built above all from the 1960s onwards, completely block direct access to the sea and often also prevent its view.

In an urban context, the Tiber River is enclosed by high “muraglioni” which do not allow direct fruition near the water, but only make possible a broad monumental overview. Furthermore, access to water is practically closed upstream and downstream of the central urban area as the embankments are difficult to access. Industrial buildings and shipbuilding areas, private sports clubs, improper uses such as camps for nomad people and logistics areas, tourist and recreational facilities, alternate with residual open cultivated or uncultivated areas which effectively interrupt the ecological continuity of the river area.

Similarly, the banks of the Aniene are practically “hidden” from view and from pedestrian practicability due to a progressive and illegal privatisation which also negatively affects the quality of the water and the maintenance of the floodplain areas.

In the impossibility of dealing with the vast criticalities due to climate change, which is affecting the entire planet, we have therefore tried to summarize some more immediate problems by identifying three emblematic case studies for the Sustainable Open Solutions Climate Waterfront Workshop in Rome 2022.

The three case studies also correspond to the organization of the volume in three parts and refer to three main problems affecting the coastal area and the two river branches of the Tiber and Aniene.

The first case study is related to the coast, a long strip of sand with dunes, where elements of great environmental quality and large archaeological areas remain. These must live with chaotic urban development, with land consumption often caused by tourism and grey infrastructures, with degradation and lack of care.

Very often the sea is not visible from the hinterland or is difficult to reach. It is hidden by poor quality tourist facilities that have privatized the public use of the coast.

The main goal of the first case study is to re-establish the links between the presences of important archaeological ruins, the surrounding landscape, often disqualified, and the sea.

Green and blue infrastructures could be a good solution to systematize archaeological finds, get closer to the sea and implement landscape and hydrogeological interventions to counteract coastal erosion.

The second case study is in a dense urban space, and it relates to the Tiber River.

The construction of the embankments and the Lungotevere has changed the perception of the river, which has “moved away” from everyday life.

Some urban spaces, even very close to the river, have not been able to assume this presence as a design potential. Often, they even deny its presence...

The main objective of the second case study is to propose an urban project capable of rediscovering and structuring the urban landscape, the role of the river and, at the same time, protecting against floods.

The third case study concerns Aniene River, the hidden tributary of Tiber River. Despite having a very long history in the development of the city and its surroundings (just remember Villa d’Este in Tivoli), its presence goes completely unnoticed.

In the eastern part of the city, Aniene crosses the industrial district and is very compromised from an environmental and landscape point of view.

The main objective of the third case study is to make the Aniene River visible. We need to imagine green paths, open points of view, re-naturalize the smaller hydrographical network, and create a blue network to counteract floods and increasing rains. Climate change strongly interacts with a variety of problems deriving from urbanization, water and air pollution, biodiversity loss and degradation of land and marine ecosystems. Coastal areas as well as river edges are today among the priority places in which to tackle climate change with a design approach to create new landscapes, to reconfigure forms of naturalness, to implement the network of green and blue infrastructures to become more adaptive and resilient. That’s what our planet is calling us to do now!

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