Abstract: "The Island of Lakes" is the title and topic of the Master in Land Design which took place from April to December 2014 at the Istituto Europeo di Design, Cagliari. The research and design project concerned Sardinia’s artificial lakes. This topic is closely tied to issues of sustainability and focuses on the theme of water as the main resource for a new vision of the world’s development. The analysis began from the study of the little-known history of these lakes which completely and definitively altered the region’s physical, economic and social geography. Today they represent a significant untapped resource for the entire island of Sardinia.

Key words: water, lakes, dams, Sardinia, island.

1. Introduction
The Master in Land Design “The Island of Lakes” centred on a 1924 Regional Reconstruction Plan for the creation of artificial bodies of water in Sardinia. The Plan, drafted by the engineer Lombardo Angelo Omedeo, brought to the creation of around 38 artificial lakes with various purposes, all of which are currently under-used. The Master wanted to put the visionary plan of Omedeo back at the centre of strategic territorial development plans. The identification and integration of the areas around these enormous hydraulic infrastructures was regarded as a valuable resource and occasion for the understanding and valorisation of the territory though the outlining of new possible scenarios.

2. The Island of the Lakes and the New Horizons
In 1924, the Lombard engineer Angelo Omedeo presented a lecture entitled “L’isola dei laghi” (The Island of the Lakes) at the twelfth Italian Geographic Congress. (fig.1) The talk described a plan for the creation of regional dams on the Tirso, Coghinas, Flumini Mannu, Temo, Flumendosa and Cedrino rivers. (fig. 2,3)
But Omodeo’s theoretical and empirical exploration of the project had begun long before. In 1901, the first of three texts he wrote on the subject, “Le forze idrauliche in Italia” (The Hydraulic Power of Italy), was published in the socialist periodical Critica sociale. Here Omodeo’s thinking became immediately apparent: he argued for the need to produce hydroelectric power in order to break free from the British coal market, to provide sixty-year concessions to private investors for the construction of high-voltage power lines, power plants and dams, and to create natural state monopolies. Omodeo’s connection to the scientific and positivist socialism of the time was very strong, but even more important is the nature of the researcher’s approach. His proposal drew upon technical and scientific knowledge to yield political and economic strategies. His talent for synthesis, abstraction and foresight is powerfully evident in his creation of development scenarios that were at once visionary and practical, and that had the purpose of advancing Italy’s development with an understanding of the historical processes taking place around the world. Omodeo’s theory of the modernization of Italy is extensively addressed in a 1920 pamphlet entitled “I nuovi orizzonti dell’idraulica italiana” (The New Horizons of Italian Hydraulics) a document that powerfully inspired Filippo Turati and the socialist party. This text, published a few years prior to the 1924 conference held in Sardinia, is the one that best represents the power of Omodeo’s theoretical and empirical work. The proposal viewed the question of the development of hydraulic systems as the key element of a programme for Italy’s future development. The combination of land drainage, the creation of artificial reservoirs and electrification were the essential elements of Omodeo’s programme for the nation’s development and industrialization. These horizons were not only imagined and declared but tangible: they were depended upon an understanding of the area in its particular characteristics and they were aimed at serving the interests of the community. Without this broader vision, which defines the territory of operation not according to administrative or geographic boundaries but in terms of environmental areas, there can be no progress. In his “Nuovi orizzonti” plan, Omodeo describes planning regulations and river plans for entire regions, and here the engineer’s expertise on a global scale emerge clearly. His celebrated reputation allowed him to expand the horizons of his day, both in a figurative sense and in terms of physical geographic boundaries. Omodeo, in fact, worked on huge hydroelectric projects not only in Italy, especially the south, but also in Spain, France, Belgium, Scotland, the USSR, the American plains China, India and Northeast Africa. Among these, one of the works most characteristic of Omodeo is the “Island of the Lakes” project in Sardinia. The creation of artificial reservoirs there for the production of electricity aimed at effecting a transition from a rural and archaic economy to a modern and industrial one,
and it involved the entire territory of Sardinia. As Omodeo put it, “We have to rebuild what has been destroyed.” Starting with the island’s use as a Carthaginian “barn”, Omodeo traced the history of the island, determining that deforestation had been the main cause of the region’s environmental destruction. He did not believe that reforestation - which he defined in his writings as a straightforward, unsophisticated act of manual labour - was the solution to the larger issues at hand, and therefore it was not part of his proposal for renewal. Instead, the project proposed recreating the island’s rivers by identifying their catchments in order to create a constant water flow and avoid dispersion. The creation of these reservoirs, which were located downstream to exploit the height difference to produce electricity, was a “big deal”, not only for Sardinia but for all of Italy. In addition to producing energy for “a natural industry of Sardinia”, the primary aim was to create progressive agriculture through electro-irrigation in order to facilitate the repopulation of the plains and make them productive and healthy, and also to provide for the defense and enhancement of the island’s mountainous areas, which comprise two thirds of the island. Migration to the mountains, in fact, had led to their savage deforestation in the creation of pasture areas. Omodeo’s plan showed the best deal in terms of implementation and performance both technically and economically, not only compared to the other regions of Italy, but also in relation to other cases studied by Omodeo in Europe and the rest of the world. The geographical conditions of Sardinia, which is also known as “il Microcontinent” (the Micro-continent), were perfect for the creation of these huge artificial systems thanks to an almost total absence of permeable soil. As a result of Omodeo’s studies and proposals, about thirty-eight artificial lakes were created between 1941 and 1992. (Unfortunately, the lakes’ multiple potential uses are under-exploited today.) The Micro-continent, nicknamed for the remarkable ecosystemic wealth concentrated on the island, was thus shaped by man as if it were a huge sculpture by Costantino Nivola.

Today, the miniatruristic geographic context of Sardinia presents a completely exceptional landscape in which the extensive presence of the lakes and the territory’s topography create a unique panorama that combines the landscape image of glacial lakes with that of the Mediterranean maquis. (fig. 4,5)

Sardinia’s reshaping by Omodeo represents a precise phase in the earth’s history that we have come to call the Anthropocene, an era characterized by massive human intervention on the planet’s surface from the middle of the 19th century. If Omodeo’s plan was proposed in a historical period when the rehabilitation and development of Italian territory was related to national planning revolving around the Questione Meridionale, or “Southern Question”, today the geopolitical context is very different. The largely ignored
case of Sardinia’s artificial lakes opens the door for new reflection. The combination of
the specific geographic conditions of the Micro-continent, the massive and monumental
ecological system created there created by the Sardinian reservoirs and the island’s low
population density has generated the ideal context in which to reconsider Omodeo’s
visionary project as a resource for today’s strategic interventions and territorial
development. The identification, understanding and development of such important
environmental areas and the new geographies they have generated, each one shaped by
its own specific environmental, economic and social issues, offers the means with which to
seek out - and plan - new horizons.

3. The research experience
During the Master, students developed an Atlas of the lakes at a regional scale
subsequently focusing their research on the vast area around Cagliari and the Sarrabus
Gerrei region. They identified a strong relationship between these two territories, with
deep correspondences among the green and hard-landscape man-made areas. The two
territorial systems are connected by the agricultural landscape, which further enhances
their duplicity. The wetlands of the Molentargius, the Simbirizzi and Mulargia lakes
become three new geographical centres of the entire system. The region is thus examined
and re-thought with these bodies of water, and the great environmental areas that
generated it, as a starting point. The Molentargius swamp, with its flamingos and salt
works, sits right at the centre of the Metropolitan Area and acts as a connector between
Cagliari and the surrounding towns. The Simbirizzi lake, the city’s water reservoir, lies in
the middle of the agricultural land connecting the urban landscape to the hills. Finally the
Mulargia lake, with its extra-terrestrial environment, not only represents the geographical
centre of the Sarrabus Gerrei but also creates a system that allows us to read a millenary
history whose traits are drawn by lines and circles, incredible landmarks. Here we can see
in rapid succession the alternate rhythm of constellations of nuraghi’s and modern wind
turbines, the pedras fittas - or menhir - of the Oziei civilization and the futuristic Sardinia
Radio Telescope in San Basilio. (fig. 6,7)

The continuous efforts by the local population to discover the history of every
stone in the region live side by side with thousands of tranquil and serene animals, which
speak to us of a generally disappearing condition, preserved here thanks to Odomeo’s
visionary project. The students investigated the territory through direct experiences and
experimental research instruments. (fig. 8,9)
All of this, from a simple proposition, became reality: it is possible, in the Sardinian microcontinent, to easily establish relationships with both the single inhabitants as well as with the public and private local institutions.

4. Conclusion
These bodies of water, unknown to most, not only represent a fundamental resource for Sardinia but are, for proximity and number, a globally unique case study. It is thus a great opportunity to consider the implementation of experimental projects in this area, which could then be replicated on similar landscapes around the world. Omodeo himself built dams and lakes in very different geographical contexts. There are several questions worth asking regarding both the history of these enormous infrastructures and their possible uses today. On one hand, the aim is to consider these artificial lakes as a symbol of new territorial identities on which a sustainable development strategy, coherent with the resources at our disposal, can be developed. On the other, we have to keep in mind that these lakes are enormous containers of water, the most important natural resource, a fact which cannot be forgotten only because they no longer function as part of the hydro-electric energy production system.
Figure 1  The Island of the lakes and the New Horizons. Illustration Francesca Benedetto, published in San Rocco 10, Ecology
Figure 2 A hydraulic model. Photo Sardegna Digital Library

Figure 3 Works on Cuga Dam. Photo Elio Poddighe. Sardegna Digital Library
Figure 4 Works on Mulargia Dam. Photo Sardegna Digital Library

Figure 5 Mulargia Lake. Photo Francesca Benedetto
Figure 6 A Cow in Sarrabus Gerrei Landscape. Photo Francesca Benedetto

Figure 7 Funtana Coberta, Ballao. Photo Francesca Benedetto
Figure 8 Lake Simbirizzi Agricultural Landscape. Thesis Elisa Scussolin

Figure 9 Lake Simbirizzi Agricultural Landscape. Thesis Elisa Scussolin
References