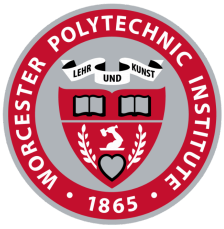

WPI

The BluNew Project In Venice

An Interactive Qualifying Project Proposal

submitted to the faculty of

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfilment of the requirements for the

degree of Bachelor of Science

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This report represents the work of one or more WPI undergraduate students submitted to the faculty as evidence of a degree requirement. WPI routinely publishes these reports on its website without editorial or peer review

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Abstract

This report explores the potential of the Blue Economy as a path toward sustainable economic revitalization in Venice, Italy. Amid growing ecological degradation, depopulation, and an overreliance on mass tourism, the city faces a critical need to redefine its economic future. Through a partnership with the Venetian organization SerenDPT and the EU-funded BLUNEW project, this study investigates how Blue Economy principles, centered on innovation, sustainability, and the regenerative use of aquatic resources, can be harnessed to support long-term economic resilience. The research combines literature reviews, policy analysis, and interviews with six startups operating in Venice's Blue Economy. These case studies reveal key challenges such as bureaucratic barriers, funding constraints, and infrastructural gaps, as well as success factors like network-building, ESG incentives, and alignment with EU policy frameworks. Deliverables include multimedia training modules, a guide for future entrepreneurs, and a handbook for visiting students, all designed to promote environmental stewardship and support the development of a viable, community-centered maritime economy in Venice.

1 INTRODUCTION

As the world's oceans cover more than 70% of the Earth's surface, they offer vast opportunities for industries such as fisheries, tourism, shipping, renewable energy, and biotechnology. However, traditional approaches to ocean-based industries have often prioritized short-term profits at the expense of long-term environmental stability. As the world deepens its understanding of the impacts of these decisions on the environment, some people have taken the responsibility of righting these wrongs before it is too late. Many stakeholders involved in business, government, and activism are now looking to shift away from the "growth at all costs" economic mindset that characterizes much of the world's economic policy by promoting practices that balance economic development with conservation, ensuring that marine environments remain productive and resilient for future generations (United Nations, 2014, p. vi).

Venice, Italy, is a city that has felt the impacts of the traditional approaches to ocean-based industry and economic growth profoundly. Today, Venice is often perceived strictly as a tourist destination, but it has a long history as an independent state and a thriving maritime economy. Since the Middle Ages, Venice has been a crucial middleman in the maritime trade route between the Middle East and Europe, a manufacturing hub for various products, and a thriving city on the sea (Whipple, 2023). Because of its deep historical and economic ties to the water, much of the city's future sustainability and livability are tightly bound to its aquatic ecosystems. This makes Venice what is called a "Blue Economy", a topic that we explore deeply during this project.

Presently, the city of Venice is feeling the repercussions of centuries of short-sighted exploitation of its aquatic resources. Overtourism, overfishing, pollution, the introduction of invasive species, and poor freshwater management have caused dirtier water, the loss of aquatic biodiversity, and rising salinity in formerly fresh water. Venice is also facing broader problems caused by the changing climate, like sea level rise. On top of this, the number of full-time Venetian residents has dropped sharply in the last century. Since its peak in 1951, the six districts of Venice have decreased in population year after year. Now, only around a third of Venice's peak population lives in the city as permanent residents (Bertocchi, 2019, p. 5). This number continues to dwindle, and each year the number of tourists continues to grow (Wenhai, 2019, p.

1). The fact that the environmental problems continue to worsen as the city's population of problem solvers shrinks makes Venice appear to many as a city destined to either succumb to its environment, sinking into the sea both physically and economically, or become an Italian Disneyland controlled by travel agencies and hotel owners, no longer viable for permanent residency by every-day Venetians.

When the COVID-19 pandemic shut down the tourism industry in Venice, the city suffered economically, but many Venetians saw a glimpse into a more sustainable future for their city. With the tourists gone, the water began to turn blue, and the jampacked streets of Piazza San Marco went quiet. This momentary rapture has further inspired many Venetians to look at economic options outside the tourism sector, in hopes of one day turning Venice into a city for Venetians, in which residents can create meaningful livelihoods that don't rely on the tourism industry. One way to achieve this goal is through the development of innovative, sustainable technology and ideas. What this project aims to do is understand how Venetians can use this type of growth to develop Venice into a robust economy that is viable in the long term. We want to understand how entrepreneurs in Venice can thrive in this landscape. To do this, our work analyzes how start-ups that work within the Venetian Blue Economy operate, what enables their success, and how this knowledge can support future entrepreneurs and policy.

We first assessed the current state of the Blue Economy, both in Venice and the broader European context, through a literature review and a series of interviews with startup founders and leaders of non-government organizations involved in sustainable innovation. Through literature, we studied the policy landscape that sets the foundation for environmental sustainability practices in the European Union as part of our partnership with our sponsor, SerenDPT, for their IPA Adrion project. This research helped SerenDPT's broader project with the EU, but also informed us about the policy landscape startups would be working in. We then analyzed the data collected from our interviews to determine any commonalities between the experiences of entrepreneurs in Venice. With this information, we made informative training material to educate current and future Venetian entrepreneurs about what they will need to know and do to thrive in the Venetian Blue Economy, as well as how they can contribute to the development of a more sustainable and economically vibrant city.

2 BACKGROUND

2.1 Venice's Struggle

In recent decades, the city of Venice has become one of the world's largest and most densely packed tourist hubs. On any given day, as many as 100,000 tourists could crowd its narrow streets. In contrast, the number of full-time Venetian residents has dropped sharply year after year. In 1951, the historical city reached its peak residency when almost 174,800 people were living in its six districts. In 2024, on the other hand, only 30% of that number remains,

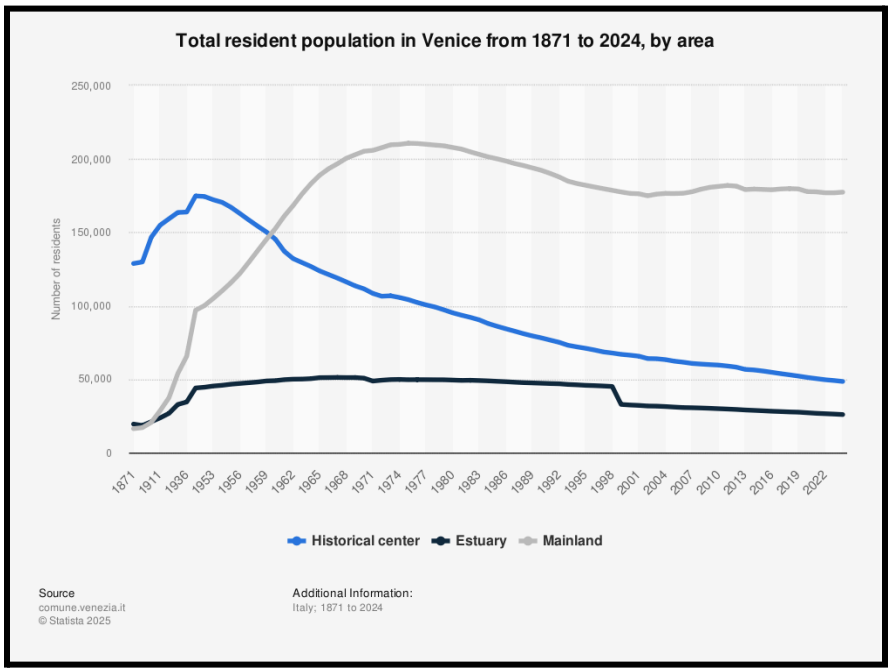

Fig B.1 A graph showing the population of Venice from 1871 to 2022

namely 48,489 inhabitants, shown by the blue line in Figure B.1 (Macchi, n.d.) (Bertocchi, 2019, p. 5). This number continues to dwindle by 0.5% each year (Wenhai, 2019, p. 1). The fact that nearly 60% of the people in Venice at any given time are tourists, many of whom are only staying for a single day, has led many Venetians to feel as though they are living in a sort of Italian Disneyland, a theme park for tourists hungry for Venetian culture to come, take in the sights, and leave behind a city no longer fit for permanent residency (Bertocchi, 2019, p. 5). This problem of over tourism has created a self-propagating cycle in which the tourism industry

outcompetes the other industries native to Venice, leading to an increase in tourism and a decrease in permanent residents, causing even more reliance on tourism.

Venice today is characterized by a significant number of shops dedicated to tourists and visitors, more than to residents and workers. There has been a visible increase in the number of restaurants, pizzerias, and, especially, gelato shops, many of which are now installed in refurbished inns and shops or small warehouses (normally located on the ground floor), and are a direct result of the need to address the demand of both tourists and work commuters. This phenomenon is not only dangerous because of the lack of diversification (think of what a global pandemic might do to an economy revolving solely around tourism), but also harmful to everyday Venetians. As stores, shops, and buildings once dedicated to the needs of the city's residents are turned into tourist traps, the quality of life for the everyday Venetian suffers as they can no longer get what they need where they once could, and now struggle to find jobs aside from low-paying work in hotels or restaurants. Housing costs have gone up, living costs have gone up, and it has become generally less possible to live a residential life in Venice. In a survey of Venetians in 2019, permanent residents rated the stress added to their lives from tourism on a scale of 1-5. The average answer was 4.3 (Bertocchi, 2019, p. 5). Over-tourism has clearly made the city of Venice an uncomfortable place to live full-time. To tackle this issue, Venice must further develop industries outside of this sector. This is the primary goal of our sponsor: SerenDPT.

2.2 Our Sponsor and Their Mission

SerenDPT, based in Venice on Giudecca Island, is a Benefit Corporation dedicated to revitalizing the historic city through innovation, sustainability, and job creation. Housed within the restored H3 Factory, formerly the Church of Saints Cosmas and Damian, SerenDPT offers purpose-driven coworking, event, and incubation spaces that bring together entrepreneurs, researchers, and cultural practitioners[OBJ]. In partnership with MITdesignX Venice, it hosts Italy's only equity-free, MIT-affiliated startup accelerator, fostering ventures that address urban and environmental challenges while remaining loyal to Venice's unique heritage[OBJ]. Founded in 2017, SerenDPT supports the development of "Made in Venice" tech-startups and supports research collaboration, advancing both local impact and global reach[OBJ].

To tackle both this issue of overtourism and ecological damage, SerenDPT believes that entrepreneurs should ensure that they are conducting business in a way that is most compatible with Venice as a Blue Economy. They need to consider how they can achieve economic success while sustainably managing the environmental assets of the city; they need to consider Blue Growth. Before we can understand how this can be done, we must first understand these terms.

2.3 Defining the Blue Economy and Blue Growth

A Blue Economy refers to an economy that is centered around aquatic or maritime resources, reliant on the water and its ecosystems. Blue Growth refers to the sustainable use of ocean resources for economic growth, improved livelihoods, and the health of marine ecosystems. This term originates as a derivative from another commonly known concept: green growth. Blue Economies and Blue Growth are both terms coined in 1994 by Belgian Economist Gunter Pauli when he launched the Zero Emissions Research and Initiatives network at the United Nations University in Tokyo. He later fully explained the idea in his book *The Blue Economy: 10 years, 100 innovations, 100 million jobs* (Pauli, G. A. 2010). While "the green economy" and "green growth" traditionally refer to the sustainable development of all economies, the introduction of the terms "Blue Economy" and "Blue Growth" is more specific regarding what kinds of sustainability projects they are referring to (Pauli, G. A. 2010). While those who specialize in green growth may focus much of their attention on projects relating to forest conservation, renewable energy, or sustainable agriculture practices, a focus on Blue Growth is primarily concerned with addressing the challenges faced by maritime economies posed by water pollution, overfishing, changing aquatic agriculture environments, and damaging maritime travel methods. By narrowing in on specifically marine environments, researchers and stakeholders can be more specific in the dialogue around environmental sustainability.

Pauli also sees a philosophical difference between the green and blue growth strategies. In his book, he states that the "green economy" is often expensive, exclusive, and reliant on subsidies. Blue Growth, in contrast, emphasizes affordable, inclusive, and scalable solutions inspired by nature. He claims that by applying simple, locally adapted innovations, communities can stimulate job-rich development without needing expensive high-tech solutions or imports. The Blue Economy and Blue Growth are not about doing "less bad" (as with green), but about creating a positive impact by regenerating ecosystems and strengthening communities (Pauli,

2010). Pauli poses the idea of an economic system that is not reliant on the exploitation of resources, but circular and regenerative, much like the natural cycle of the ocean.

Government agencies and academics have done much of the promotion of "sustainable blue growth" in recent decades. The term was adopted by the European Union in 2012 as part of the broader European 2020 strategy for smart, sustainable, and inclusive growth after the Rio+20 conference: a United Nations Conference on Sustainable Development held in Rio de Janeiro in June 2012 (United Nations, 2014, p. vi). Since then, the term has been expanded upon by many others in political and academic circles, leading to a new definition independent from the original, differing in a key way from Pauli's version. While Pauli criticized the entire idea of sustainability, arguing that it simply supports doing "less bad" instead of any real good, the EU has framed its version of Blue Growth around the idea of using aquatic resources in a sustainable manner (European Commission, 2021). Within this framework, innovative solutions are still a primary goal. In contrast to Pauli, the EU's version of a Blue Economy more closely resembles an aquatic or maritime version of a Green Economy, looking to minimize impacts while prioritizing growth, rather than a small-scale circular regenerative economic system applicable to any type of natural economy.

Both within the European Union and abroad, disagreement about the best practices involved in sustainability exists. There has been much debate as to which sustainability practices are the most effective, the most economically viable, and which can be most widely implemented. Included within this debate is the question of the role governments should play in blue economic regulation and intervention. How much regulation, investment, and policy making is necessary? How much of this is too much? There even exists disagreement within these circles on whether the idea of sustainable growth is an achievable goal. These are questions we will be looking to engage with in our research.

While still setting growth as a goal, sustainable economies understand that growth through outright exploitation is fundamentally detrimental to the long-term viability of any economy. Oftentimes, sustainability is framed as a morally correct choice between exploitation and the ethical use of one's natural resources. While the ethics involved are enough to justify sustainable practices for some, sustainable growth can also be the financially responsible choice.

Prioritizing short-term exponential growth over long-term linear sustainable growth may generate increased revenue in a quarter, a year, or even a decade, but on the scale of multiple decades or centuries, the revenue curve created by sustainable practices overtakes that of rapid exploitation, as the curve created by exploitation reaches zero. Even generous predictions of this phenomenon predict this to happen with the planet's natural resources before the end of the 21st century (Meadows, 1974, pp.126). This is due to a simple mathematical evaluation. If one has a finite amount of resources and takes more than can be replaced, eventually they cease to have any resources from which growth can be created (Meadows, 1974, p.126). To ensure that humanity can continue to grow the economies of the world, there must be a shift towards a manner of growth that does not render itself obsolete. The foundational insight at the heart of all sustainability practices is the fact that the earth and its natural resources are finite, and human society must ensure that complete depletion does not occur before new resources are generated. Our research aims to understand how Blue Growth can be an answer to this challenge.

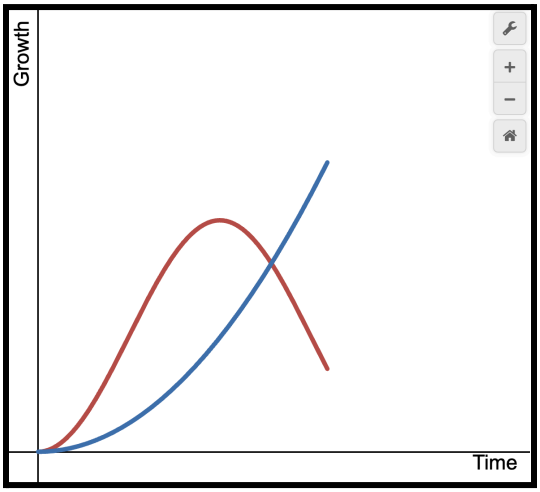

Fig B.2 A graph showing theoretical growth of two economic systems

Recently, efforts from government-funded organizations and private businesses have begun to put blue economics into practice. Around the world, academics are beginning to experiment with what is possible through the sustainable development of aquatic ecosystems. Some of these ventures have been more successful than others, but they all offer crucial insight into what the modern state of the Blue Economy is and what the future could look like.

2.4 Blue Economy in the EU

Globally, nations and cities with significant coastal activities face distinct challenges in managing local marine resources effectively. An examination of how different cities and regions have navigated their respective Blue Economy challenges provides valuable insights. The following sections explore specific cases from Europe, Asia, Australia, North America, South

America, and Africa, highlighting the challenges, policies, and successes, which can be used to develop recommendations for Venice.

2.4.1 EU

The blue economy is a significant component of the European Union's overall economic and sustainability agenda. According to the European Commission (2025), EU blue economy sectors employed about 4.82 million people in 2022 and generated nearly €250 billion in gross value added (GVA). This accounts for roughly 1.5% of the EU's GDP and about 2.3% of its employment. (European Commission, 2025). Coastal tourism is the largest blue economy sector, contributing approximately one-third of the EU's blue economy GVA and over half of blue economy jobs (European Commission, 2025). Other major sectors include marine transportation, shipbuilding, fisheries, and emerging industries like offshore wind energy. Equally important, the blue economy is seen as a platform for "smart, sustainable and inclusive growth" in line with the EU's broader goals (European Commission, 2021).

The European Union has developed a comprehensive policy framework to govern and sustainable blue economy across its Member States. At the core is the Integrated Maritime Policy, which fosters a holistic approach to marine issues. One foundational piece is the Marine Strategy Framework Directive (MSFD) (2008/56/EC), the EU's marine environmental law aimed at achieving "Good Environmental Status" (GES) in all European marine waters. The MSFD requires Member States to develop and implement marine strategies so that, by 2020, marine ecosystems are "clean, healthy, and productive". Complementing the MSFD's environmental focus is the Maritime Spatial Planning (MSP) Directive (2014/89/EU), which requires all coastal EU countries to establish maritime spatial plans by 2021 to coordinate the various uses of marine space. The EU's Blue Growth Strategy, updated in 2021 as the "Sustainable Blue Economy Strategy", provides a policy vision for investing in marine and coastal sectors responsibly (European Commission, 2021).

Despite the comprehensive policy framework, the EU faces several challenges in achieving a sustainable blue economy. One major challenge is the implementation and effectiveness of these policies. Not all Member States met the initial goals or timelines set by EU policies. For instance, by the 2020 target year, many European sea regions had not attained Good Environmental Status on all MSFD indicators, reflecting persistent problems like biodiversity

loss and pollution. A related challenge is the balance between economic growth and environmental protection. By design, EU policy seeks to integrate the two, yet in practice, there can be tensions. For example, pressure to expand sectors like offshore aquaculture or coastal tourism can conflict with habitat conservation or water quality goals. Another challenge is climate change, which is already impacting European seas (through warming, acidification, and rising sea levels) and necessitates adaptive measures in all maritime sectors. Additionally, governance complexity poses challenges. The EU's multi-level system means that policies are implemented by national and subnational authorities, which can lead to variability in enforcement.

2.4.2 Adriatic-Ionian Region

The Adriatic-Ionian region, which encompasses the Adriatic Sea and the Ionian Sea and the surrounding countries, highly depends on the blue economy for its socio-economic well-being. This macro-region includes four EU Member States (Italy, Slovenia, Croatia, Greece) and four non-EU Balkan countries (Albania, Montenegro, Bosnia and Herzegovina, Serbia). A relatively enclosed sea characterizes the region's geography, with a long, indented coastline dotted by islands. For many of them, the marine and coastal sector is a significant source of income, employment, and growth. Key industries include coastal and maritime tourism, fisheries and aquaculture, maritime transport, shipbuilding, and energy (including emerging offshore renewables). Ports such as Trieste, Venice, Koper, Rijeka, and Durres serve as gateways for trade between central/southeast Europe and the world. Culturally, the maritime heritage is also strong, such as Italy's and Croatia's historic seafaring towns and Greece's Ionian Islands, meaning that maintaining a healthy sea is vital not just for income but for preserving ways of life.

Governing the blue economy in the Adriatic-Ionian region requires coordination across multiple countries and alignment with EU frameworks. A cornerstone of this regional cooperation is the EU Strategy for the Adriatic and Ionian Region (EUSAIR), launched in 2014 as an EU-backed macro-regional strategy. Its purpose is to align national and sub-national efforts and promote joint projects in areas of mutual interest, notably the sustainable blue economy, environmental quality, connectivity, and tourism. Beyond EUSAIR, each country in the region has its own policies, but they increasingly reflect common principles. All four EU members are

bound by EU directives mentioned above, like the MSFD and MSP Directive, and their implementation in the Adriatic context has enhanced cross-border cooperation.

While progress has been made, the Adriatic-Ionian region faces several challenges in implementing blue economy initiatives. A fundamental challenge is the coordination across diverse countries and institutional capacities. The region's mix of EU and non-EU states means varying levels of resources, legal alignment, and administrative capability. Another major challenge is the environmental and ecological vulnerability of the Adriatic-Ionian seas. The Adriatic Sea is a semi-enclosed basin with relatively shallow northern waters, which makes it particularly sensitive to human impacts (Savina et al., 2022). Financial challenges also have to be noted. Some Adriatic-Ionian countries face fiscal constraints that make such investments difficult without external support.

2.4.3 Italy

Italy's extensive coastline, stretching over 9100 kilometers, accounts for nearly 9% of the European Union's total coastal length. The country plays a significant role in European maritime logistics, with five of its ports ranking among the EU's top 30 by cargo volume as of 2021 (European Commission, 2021). Core blue economy industries in Italy provided direct employment to more than 400,000 individuals and generated an estimated 18.2 billion euros in gross value added (GVA) in 2021. Coastal tourism stands out as the leading blue economy sector, accounting for over 30% of the sector's GVA and employing nearly half its workforce. However, it is also heavily sensitive to external disruptions, such as those caused by the COVID-19 pandemic and subsequent energy crises.

Italy's blue economy is governed by a layered policy framework aligned with European Union directives and national strategies. At the EU level, Italy is a signatory and implementer of core frameworks including the Marine Strategy Framework Directive (MSFD), the Water Framework Directive (WFD), and the Maritime Spatial Planning (MSP) Directive. On a national level, Italy has advanced the "Piano del Mare" (Sea Plan), a strategic plan launched in 2022 by

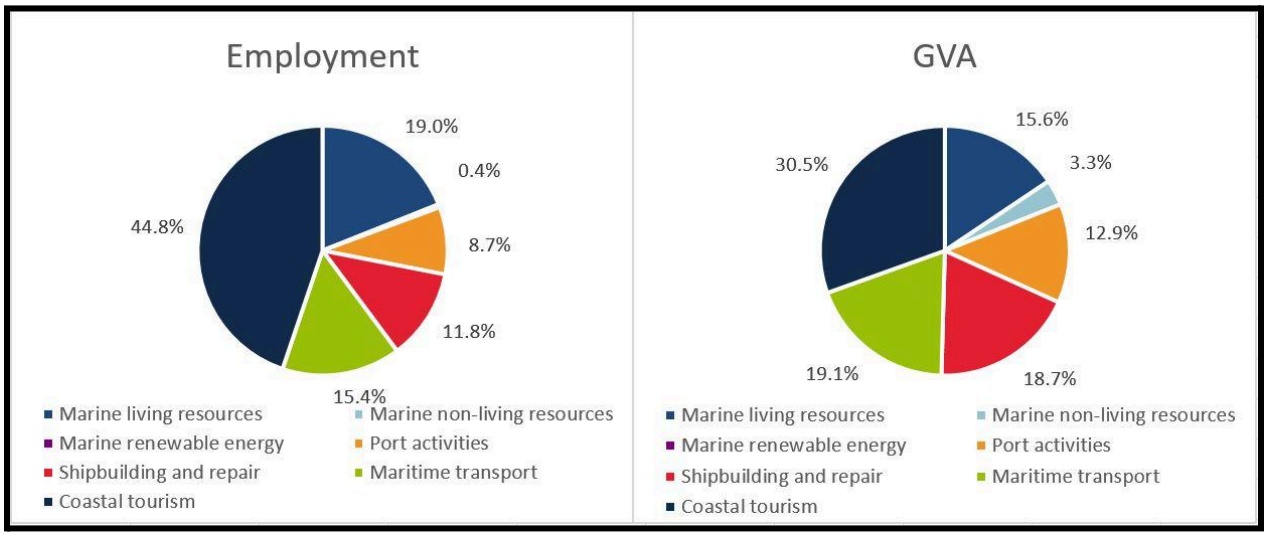

Fig B.3 Evolution of the Blue Economy established sectors (2021)

the Ministry of Infrastructure and Sustainable Mobility. The plan aims to modernize port infrastructure, enhance the maritime workforce, and promote environmental sustainability across all blue economy sectors. Moreover, the Italian National Recovery and Resilience Plan (NRRP), funded by the EU's NextGenerationEU initiative, allocates significant resources to blue economy-related projects.

Italy faces several persistent challenges in implementing a truly sustainable blue economy. A central issue is the environmental degradation of marine and coastal ecosystems, driven by historical overexploitation, land-based pollution, urbanization, and climate impacts. Despite progress under EU directives, Italy has not achieved full compliance with "Good Environmental Status" for several MSFD descriptors, including contaminants in seafood and seafloor integrity (European Commission, 2022). Another key issue is regional inequality. While northern Italy's ports and industries are relatively advanced, southern regions and islands often face underinvestment, limited research capacity, and infrastructure gaps. For instance, fishing communities in Calabria or Sicily may lack the resources to transition to sustainable practices or access innovation programs.

2.4.4 Venice

The city of Venice has historically been one of the world's great maritime powers and today remains an example of a local economy tied to the sea. Venice's port and marine industries continue to be pillars of the local economy, and its cultural heritage as a "city on water" drives a

massive tourism industry. The Port of Venice is a key commercial hub on the Adriatic Sea. It handles containerized cargo (over 600,000 TEUs in 2018) and numerous bulk shipments, supporting industries in the Veneto and northern Italy (Statista, 2025). In recent years, Venice has also become a focal point for marine research and innovation projects, often EU-funded, such as initiatives to combat plastic pollution in the lagoon or pilot sustainable boating technologies.

Several frameworks and measures are in place to promote the sustainable use of the lagoon's resources and to protect the city from environmental risks. One important aspect is the heritage and environmental management regime stemming from Venice's status as a UNESCO World Heritage site. Italian authorities have developed a comprehensive Management Plan for Venice and its Lagoon, which includes strategies for balancing preservation with economic activity. A key priority of this plan is the implementation of a sustainable tourism strategy to address the pressures of mass tourism (UNESCO, n.d.). In terms of marine environmental governance, the lagoon's water bodies fall under the EU Water Framework Directive and MSFD monitoring. On a regional level, the city and region participate in projects under the EUSAIR mentioned above and benefit from EU funds aimed at sustainable urban coastal development.

Venice faces numerous challenges in making its blue economy sustainable for the future, with the most visible being overtourism. The UNESCO World Heritage Centre has warned that "exceptionally high tourism pressure" in Venice has led to a partial economic and social transformation of the city, where everyday residences and shops give way to tourism-related businesses (UNESCO, n.d). Another challenge is climate change and environmental degradation. Venice is at risk from sea-level rise and more frequent extreme high tides. Over the past century, local relative sea level has risen about 26 cm, due to a combination of global sea rise and local land subsidence (Davide et al., 2023). A further challenge lies in the fragmented nature of governance and institutions. For instance, the management of the lagoon's hydraulic engineering (like MOSE) was long administered by a special magistrate and consortia, separate from city government, leading to issues of accountability (Vianello, 2021).

2.5 Ecological Issues in Venice

Venice's culture, economy, society, and industry are all connected to its lagoon environment. Understanding the environmental impacts that unsustainable practices utilizing the

lagoon's assets have caused as well as the vital ecosystem services, benefits such as carbon storage or coastal protection from flooding that humans derive from lagoon ecosystems as Venetians do with the Venetian Lagoon, is essential for protecting these environments and for the development of Blue Economy practices in Venice.

Erosion, attributable to the history of human intervention in Venice's marine environment, is a major environmental issue threatening both the Venetian Lagoon ecosystem and the city of Venice. For example, in the 15th century the Serenissima Republic of Venice, in an attempt to solve the issue of sediment buildup that made the canals more difficult to navigate by boat, diverted major rivers that previously connected to the lagoon to be connected to the Adriatic Sea instead (D'Alpaos and D'Alpaos, 2021, p. 2). Because this action halted the natural process where these rivers would deposit sand into the lagoon, a negative sediment budget was formed by the imbalance of too little sediment accumulation from the rivers to counteract the natural erosion that occurs in a body of water. This cycle of erosion washing away sediment but not being replaced with new sediment from the rivers contributed to the process of subsidence, "the lowering of ground level", to where it lies below sea level. (Coulling, 2024). A ground level below sea level makes an environment more vulnerable to flooding, which has thus contributed to increases in flooding events in the city of Venice known as *acqua alta,* an issue still occurring frequently today (Coulling, 2024).

Processes for boosting the economy in Venice, such as tourism, a main economic driver of the city, also generate similar changes to the lagoon environment worsen with increasing population pressures (Suman, Guerzoni, & Molinaroli, 2005 as cited in Lee, 2021, p. 68). Though tourism is "a key source of financial input for the region [of Venice] and those that live within it", the impacts of the industry are harmful for both residents of the city and the city's vital lagoon ecosystem (Suman, Guerzoni, & Molinaroli, 2005, as cited in Lee, 2021 p. 68). Major detrimental environmental and physical impacts that tourism has on the city and environment of Venice include "vandalism, pollution (visual, plastic, fuel, chemical contaminants), air emissions, sewage releases, [and] destruction of historical sites" (Cecchi, 2021 as cited in Lee, 2021, p. 68). Microplastics from plastic pollution, a very common impact of tourism observed throughout the city, are "fully capable of leaching into…waterways and are an increasing concern for environmental health" (Seraphin, Sheeran, & Pilato, 2018, as cited in Lee, 2021, p. 68). The impacts of this process were especially noticeable when the Covid-19

pandemic caused a halt for tourism, as a 2021 study found that “over 40% of volatile contaminants that were identified in a high tourist season in 2019 had disappeared from the Venice Lagoon after the lockdown period” (Cecchi, 2021 as cited in Lee, 2021 p. 68)).

Other economic drivers in Venice, such as fishing and clamming, also continue to damage the lagoon’s structure and marine ecosystems. With more than 120 fish farms in the lagoon, cultivating clams and mussels is an important practice for both the sustenance of locals and tourists as well as the economy, as the aquaculture industry generates around six million euros a year (Suman, 2005 as cited in Lee, 2021, p. 6). However, both the construction of facilities for this practice, which required canals to be dammed, and the dredging process to retrieve these organisms have created structural damage in the lagoon by disrupting natural sediment patterns that support the lagoon ecosystem (Lee, 2021, p. 6). The displacement of sediment that occurs during these processes, including the way it disrupts the distribution of carbon in this sediment, can also contribute to the death of bottom-dwelling organisms, which affects the lagoon’s wildlife(Lee, 2021, pp. 27-28).

The dredging of canals and channels for navigation purposes also contributes to the “loss of topographic complexity on the lagoon floor” (Mosto et al., 2020, p. 6), in terms of flatness, shape, and elevation. Agriculture required the draining of mudflats to create environments suitable for growing crops, while shipping at Venice’s popular port required channel dredging; therefore, adapting the environment for both of these industries has also disrupted the natural flow and exchange of tides and sediment between the lagoon and the sea, and created sources of water pollution (Lee, 2021, p. 21). The wakes from boats and ships, as well as the way they displace large amounts of water, also contribute to this land degradation and cause damage to the foundations of buildings (Mosto et al., 2020, p. 6). In addition, breakwaters “breaking the force of the sea” and jetties “structures that aim to influence currents or tides” have contributed to sediment disturbance and morphological changes (Lee, 2021, p. 11). Another man-made structure affecting morphology is the mobile gates known as the MOSE project. Though these mobile barriers aim to reduce the effects of flooding events in the city of Venice, recent studies show that “the MOSE system might decrease sediment accumulation on marshes by about 30%, thus challenging salt-marsh future survival in the Venice Lagoon” (Tognin et. al, as cited in D’Alpaos and D’Alpaos, 2021, p. 11).

The combination of erosion issues and morphological changes the Venetian lagoon has experienced, including loss in “morphological heterogeneity”, or diverse elevation levels and shape, greatly impacts the function of the lagoon’s biogeomorphic patterns, and thus the habitats and lives of the lagoon’s marine life. As shown in the figure below, the Venetian Lagoon ecosystem is made up of a variety of wetland ecosystems, including tidal flats, salt marshes, and seagrass beds, that provide vital habitats and resources for the aquatic life residing there

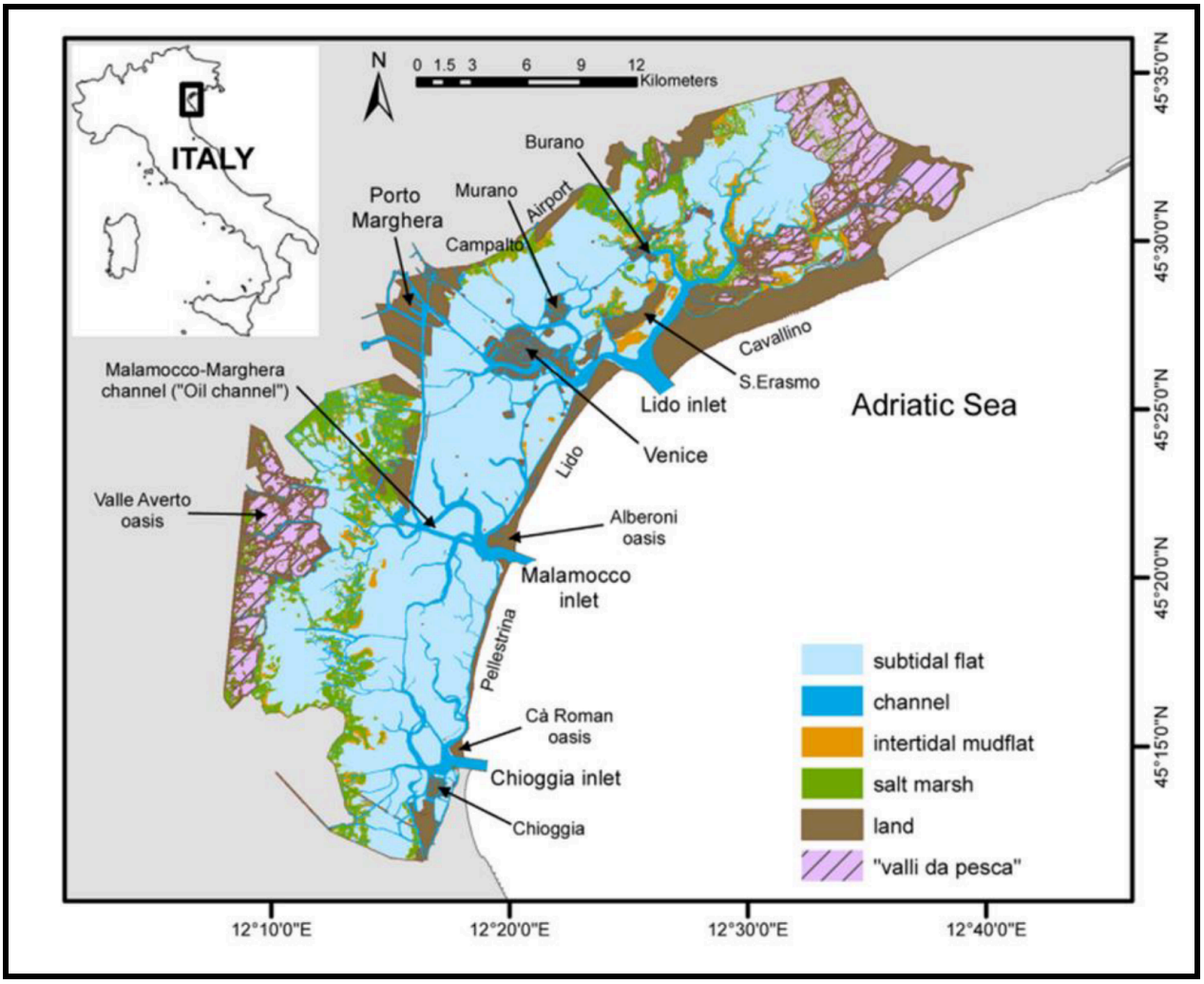

Fig B.4 Map of the geographical features and habitat types along the venetian lagoon (Lee, 2021)

(D’Alpaos and D’Alpaos, 2021, p. 3). Over 70% of the salt marshes have disappeared or decreased in size due to the increasing erosion, and tidal flats that support seagrass bed habitats have increased in depth from 0.5m to 1.5m between 1810 and today (D’Alpaos and D’Alpaos, 2021, p. 3). This is extremely important for the lagoon’s plant life as the structures of channels

in these marshlands that influence these elevation patterns also directly influence patterns of vegetation distribution (D'Alpaos and D'Alpaos, 2021, p. 3).

This habitat loss has contributed to one of the biggest environmental issues in Venice currently: biodiversity loss. The decrease in wetlands that once bordered the lagoon and acted as a "green belt" has led to both a decrease in the lagoon's ability to regulate its nutrient levels, as well as a decrease in wildlife and vegetation species (Lee, 2021, p. 22). Biodiversity loss of species of fish and other wildlife can be detrimental to an economy and society that relies heavily on its maritime industry, as Venice does. A loss of biodiversity also disrupts food chains, making ecosystems much more vulnerable to environmental threats because of the disruption of their natural order and processes.

Climate change will exacerbate many of the environmental threats and impacts to Venice's lagoon. For example, climate change will further the biodiversity loss issue because of how it will impact the lagoon's nutrient levels, as rising sea levels associated with climate change "can also lead to light limitation which in turn would degrade a lagoon's microphytobenthos community, increase nitrogen fluxes and trigger eutrophication" (Lee, 2021, p. 29). Eutrophication, or an excess amount of nutrients such as phosphorus and nitrogen in a body of water, will lead to excess algal growth that, upon going through the decaying process, will remove oxygen from the water in all the areas where this algae has grown; this will deprive other aquatic organisms of vital oxygen causing many to die off.

In addition to making habitats less viable for many aquatic organisms and thus contributing to biodiversity loss in the Venetian lagoon, climate change will also affect the physical environment and climate of Venice. The increases in temperature due to climate change will further contribute to environmental changes in Venice, including altering weather patterns; "Extreme events such as storms are also predicted to increase in severity and regularity as a result of climate change. Coastal communities globally can expect to be exposed to multiple climate-related hazards such as: tropical cyclones, extreme sea levels and flooding, marine heatwaves, extreme waves, coastal erosion, acidification, salinity intrusion, loss of coastal infrastructure, and loss of biodiversity" (Lee, 2021, p. 29). Increased storms would change the shape of the lagoon to the point where sections could become completely filled in by this heavy sedimentation; because "Storm events can cause lagoon entrances to close by pushing sand in

from the sea" (Chapman, 2012), the lagoon will fill with sediment in a similar fashion to how this happens due to "excessive sediment deposits from tributaries" (Lee, 2021, p. 35) Thus, climate change will worsen existing erosion issues through an increase in frequency and severity of storms, which will further the issues of structural changes in the lagoon that lead to habitat and biodiversity loss.

2.6 Policy/Governmental Background

In the modern struggle to combat the ever-shifting climate landscape, national authority holds the power to support and protect its citizens' livelihoods and futures. The Venetian lagoon region embodies the importance of a symbiotic relationship between humans and nature, but also represents the pressure placed on citizens and authorities to adapt to rising sea levels, salinity, and pollution. Many locations around the world experience varying degrees of the climate crisis; however, for coastline and island communities, their experiences of this same crisis become increasingly more concerning and have drastic impacts on their day-to-day lives. The historic city of Venice is a case study of government involvement in adaptive climate change policy.

For the majority of European countries, political and economic treaties, regulations, and restrictions are a collaborative process through the European Commission and the European Union. General policies and guidelines are implemented as an umbrella for member states to then tailor their own regional policies for the specific needs of their citizens.

Implementation of climate policy begins with the UN and the EU, where sustainable development goals are prescribed and then interpreted at the national level through the National Strategy for Sustainable Development of 2017. The European Spatial Development Perspective (ESDP) was agreed upon by the Ministers responsible for Spatial Planning in Potsdam in May of 1999, and is built upon three fundamental goals of European policy that must be simultaneously pursued across all regions for a more balanced development (European Commission 1999). These goals entail the following:

1. The Development of a polycentric and balanced urban system and a new urban-rural relationship.
2. Securing equal access to infrastructure and knowledge.
3. Sustainable development, prudent management, and the protection of natural and cultural heritage. (European Commission 1999)

The ESDP is meant to be utilized as a tool for optimising community policy coordination, and allows for frequent discussions of the spatial impacts on citizens. Climate policy, in particular, utilizes spatial planning for the variety of ecosystem changes that occur on a regional basis, and entails the methods and processes used by public authorities at national, regional, and local levels to influence the future distribution of development and land uses across a territory. While the EU itself doesn't have direct influence on spatial planning, its policies and funding significantly influence how Member States integrate climate objectives into their spatial plans. Sectoral directives passed by the EU prioritize thematic goals such as sustainable development, Biodiversity, Energy, Capacity building, and Urban Agendas.

Effective implementation, however, requires horizontal cooperation among sectoral political authorities and vertical cooperation between the community, transnational, regional, and local levels. Nationally, policies are assigned to several different authorities within the same horizontal management, and authorities assume their sole jurisdiction over environmental policies. “Spatial planning is defined by the Italian Constitution as governance and planning concerning all conceptual, regulatory, and management aspects regarding safeguarding and transforming the land and environment (Booth 2024, p. 12).” Italian spatial planning has become a “highly multi-level activity”, despite the intention that government authority groups would collaborate on the implementation of specific policy, the delegation of tasks has become scattered and has created a fractured platform for environmental authority. There exists a high level of knowledge production from academic and research institutions; however, without concrete application of this knowledge and the sharing of data between government authorities, Venetian climate policy remains predominantly stagnant. The municipal authority of the people in Venice, specifically the lack of transparency in sanctioning laws for the general public, adds an additional dimension to the issue, since the average Venetian does not have easy access to the information determined by government agencies (Munaretto 2011, p. 81).

Venice as a region can be categorized into different geographical groupings enclosed within the Veneto Region of Northern Italy. Regions, as per Italian law, have autonomous decision-making power in several different spheres, including water, ecosystems, and environmental management. The creation of Metropolitan cities as governing bodies is a rather recent development, having only been implemented in 2015, but these government entities are all

given their own powers and functions through the decree of the Italian Constitution. For environmental policy, this structure has the capability to address smaller-scale climate concerns by city or region, where local authorities could take charge in analysing and offsetting changes to the regional environment.

Within the Veneto region, there are two other distinct bodies of governance: the Municipality of Venice (MV) and the Metropolitan City of Venice (MCV). Within the MCV lies the Historical City of Venice (HCV), comprising several islands in the Venetian Lagoon. The Veneto Region has proven to be the most effective at linking academic and government-funded project groups together for direct initiatives such as BLUNEW and SerenDPT.

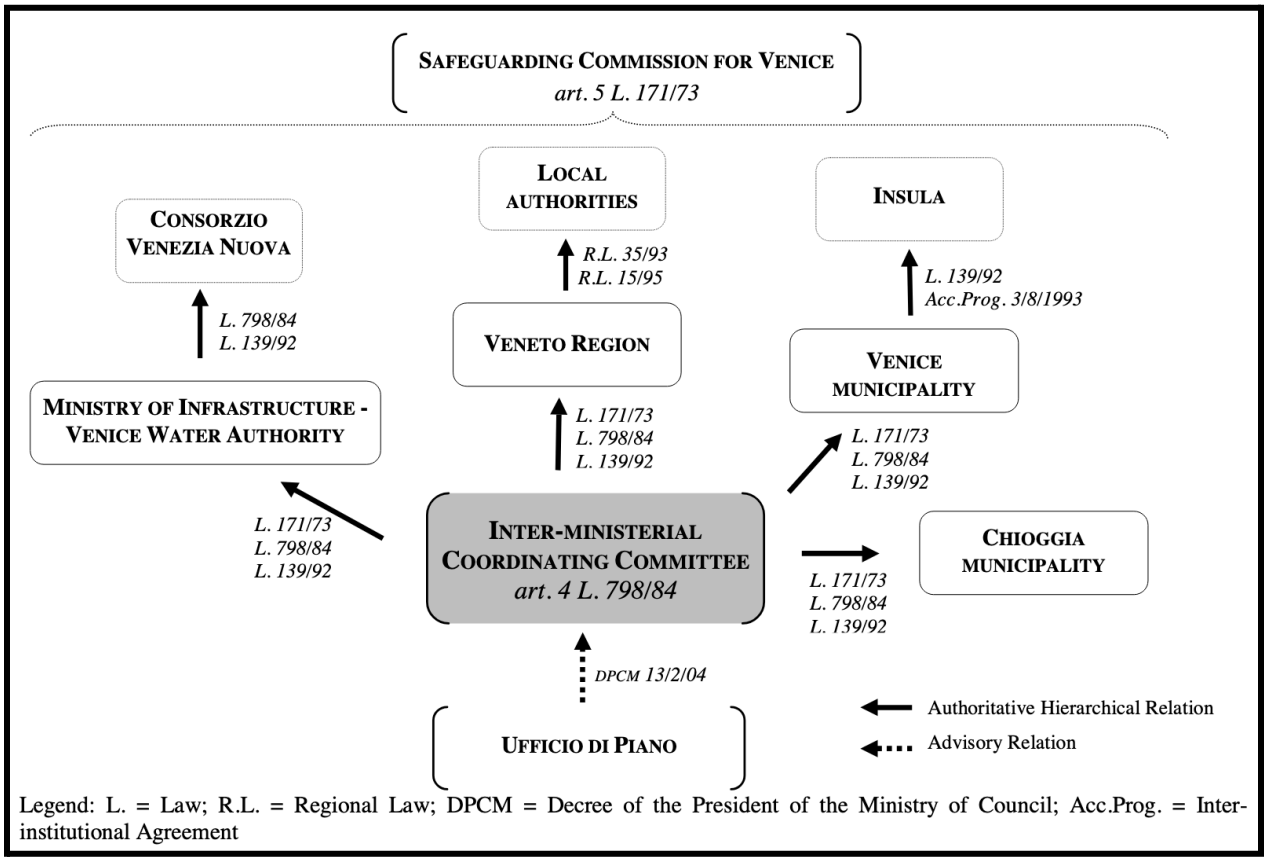

Fig B.5 Governance structure in Venice (Munaretto 2011, p. 52)

The Italian government began to take distinct action to protect the HCV after the flood of 1966, which caused extensive damage to historical buildings and the general economic activities of the city, all while directly impacting the environmental health of the lagoon itself. Between 1973 and 1992, a Special Law for Venice was established and regularly funded, with main laws

that set the objectives, responsibilities, measures, and economic resources, intended to be utilized for Venetian safeguarding actions. Specifically, the Special Law for Venice had several main objectives:

1. Protection of Urban Centers from high water levels
2. Protection of Coastal Strips from erosion and sea storms
3. Re-establishment of the hydro-geo-morphological equilibrium of the lagoon
4. Safeguarding both natural and human-built environments
5. Abatement of pollution both in the catchment basin and the lagoon basin
6. Promotion of socio-economic development of the historical lagoon settlements (Venice Project Center, n.d.)

To achieve these objectives, the Italian national, regional, and local government authorities have developed plans and programs for the lagoon's various ecosystems. These plans are usually implemented through joint actions between different local administrations, as demonstrated by the figure above. In total, €10.2 billion has been allocated through the government since 1984, but about €6.1 billion is still needed to safeguard all objectives encompassed in the Special Law (Munaretto 2011, p. 111).

Other legislative guidelines initiated by the EU and localized by the Italian government include the following:

The Venetian lagoon has been terraformed and adjusted by human interactions for centuries, but many of the smaller, unique ecosystems that are foundational to wildlife and bioregional stability are the first to be affected by climate change and therefore are at risk of being eliminated entirely. The Nature Conservation Law n. 395, established in 1991, defines 6 types of protected ecosystems with 3 levels of protection identified for each protected area. Depending on the level of protection, varying restrictions for economic uses of the area are applied. Protection of nature from development is essential for climate change mitigation and adaptation, as these protected "buffer zones" in coastal areas protect from flooding. Governmental authorities are generally reluctant to designate new protected ecosystems due to the strict limitations on how these protected areas can be used for economic growth, and the possibility that natural resources available in these regions will not be accessed to contribute to capital or business (Munaretto 2011, p.26).

Governmental Legislative Decree n. 152, implemented on the 3rd of April 2006, focuses on Italian water regulation. Decree n. 152 addresses water security of the region, the protection of waters from pollution, and the management of water resources. The law requires regions to develop a Regional Water Protection Plan, including environmental objectives with specific uses of waters that must comply with water quality objectives identified by the Water Framework Directive management plans. For a blue economy to develop and maintain itself sustainably in Venice, the protection of water bodies holds the highest priority as it prevents mistreatment of resources and any further deterioration of these vital systems. Venetians depend on the lagoon for their livelihood, as they have since migrants first settled in the region.

The effects of climate change can be seen drastically changing the environmental stability of the Venetian lagoon, and these changes impact this ecosystem at a much faster pace than many other locations in the world, making it ground zero for experimental solutions to marine climate change and a sustainable blue economy. It is for this reason that government entities are experiencing the pressure and demand to integrate adaptive climate protection policy. Now, having addressed this essential background, we can discuss how we planned to utilize our research in developing the methods of our project application for the creation of informational material centered around the Blue Economy, Blue Growth, and environmental policy.

3 METHODS

3.1 Project Goals and Objectives

The BluNew research project intends to expand the scope of knowledge and awareness around blue economic growth and policy across the globe. Our BluNew IQP project is meant to contribute to this ongoing goal. To do this, we divided our work into three different deliverables: one for a European audience, one for young people and startups looking to work in Venice, and one for future Venice IQP students at WPI.

First, our team is partnering with SerenDPT to assist with the Interreg IPA Adrion project BLUNEW (BLUe economy NEtWork for sustainable innovation). We helped create two educational modules of mixed virtual media, including an interactive slide deck and a documentary-style video essay. The first module contains information on the concept, actors,

numbers, and functioning of the Blue Economy in the IPA region. The second module focuses on EU policy-making for Blue Growth and environmental preservation of marine ecosystems and freshwater basins. The primary objective of these training modules is to educate a broad audience, including policy-makers, young people, and the general public, on the fundamentals of the Blue Economy and its importance for sustainability and innovation in coastal regions. The modules aim to make complex topics like ecosystem governance, resource management, and policy-making accessible and engaging for non-experts.

We then created a report on the Venetian Blue economy. This report contains a broad analysis of blue economies around the world and a case study analysis of Venice. We focused on startups in the blue economy and analysed their approaches to the challenge of setting up a company in the Venetian Blue Economy. We looked at what has worked, what hasn't, and what challenges they've faced along the way to get a better understanding of what starting a sustainable company in the Venetian Blue Economy is like.

Lastly, we created an informative video documentary for future Worcester Polytechnic Institute students traveling to the Venice Project Center. We aim to inform students how they can be more environmentally sustainable and overall better neighbors to the local people of Venice.

3.2 Multimedia Strategies for Slide Deck Improvement:

The current format for the training module is a presentation with a voiceover. The guidelines are set by the coordinator for the specific Activity and will be relayed to us by SerenDPT.

To improve the training content developed by SerenDPT for Module 1 of the BLUNEW initiative, our team focused on enhancing the visual design and delivery of the material to increase multimedia engagement. Although we did not contribute to the original content creation, we are responsible for evaluating the effectiveness of various presentation formats (e.g., slide layouts, visual elements, embedded media, and interactive components). Our method involved experimenting with different stylistic adjustments to identify which edits make the content more engaging, interactive, and accessible for a diverse audience. This work is limited to content refinement.

We will apply similar multimedia strategies to Module 3, ensuring visual and thematic consistency across both modules. As we designed the new content for Module 3, we incorporated

lessons learned from Module 1's format testing by adapting layout styles, testing engagement techniques, and integrating dynamic media to support understanding of complex policy topics.

3.3 Research and Analysis of the Blue Economy:

The desk research component of Module 3 focused on providing an overview of policy frameworks relevant to Blue Growth across the EU and IPA countries. We focused on how governance and policy-making impact marine and freshwater conservation, helping to demystify these systems and encourage civic engagement in environmental planning. We reviewed key documents such as the European Green Deal, the EU Marine Strategy Framework Directive, the Biodiversity Strategy, the Blue Growth Strategy, and region-specific governance reports. The purpose of this review was to identify how policy frameworks are structured, what governance challenges exist, and what support programs are available for Blue Economy innovation.

Additionally, in line with Module 3 goals, we explored radical and alternative approaches to systems of water and resource management, such as Adaptive Co-Management and post-growth frameworks. These models will be analyzed for their potential applicability to the Adriatic-Ionian region and their capacity to address the challenges posed by climate change and the ongoing polycrisis. By analysing unconventional methods, we gained new perspectives that yielded insights which informed our report and training module content.

3.4 Startup Interviews

To better understand the challenges blue economy startups face as well as the opportunities they can take advantage of in Venice, we interviewed several existing startups. In doing this, we wanted to analyse what early-stage businesses are doing in Venice to tackle the city's problems related to environmental sustainability, as well as understand what these businesses are doing to sustain themselves economically. The goal of this process was to find where there is, or could be, a cross-section between being sustainable or environmentally conscious and earning a profit.

To gather this information, we collected information through six interviews with local businesses pushing the cutting edge of environmental sustainability in the Venetian economy. In

these interviews, we asked questions that allowed us to understand the business, what challenges it is facing, and where there could be room for growth. The six companies we interviewed were:

- **AlgaeScope**: a company led by two women from Japan and Scotland, focusing on the application of seaweed in industrial and culinary use
- **VogaYachts**: a company specializing in cutting-edge electric boats
- **See the Change**: an environmental solutions firm finding ways for other companies to boost their reputation and sustainability through innovative solutions
- **Palomar**: a group looking at innovative and authentic ways to do sustainable tourism
- **PesCo**: a company connecting fishermen with tourists looking for an authentic experience of Venice
- **The Tidal Garden**: an agricultural company specializing in halophyte production for use in culinary fields

Each interview contained different questions, tailored to the unique story and perspective of each company or organization. To develop these questions, we followed a step-by-step process.

First, we considered the broad goal of our questions. For us, each interview shared the same goal of understanding the main question: "Which factors most contribute to the success of a blue startup in Venice?"

The next step was brainstorming other, more specific questions. Before doing any research, we wrote down any questions we could think of about the company or person we were interviewing. This exercise was supposed to be fast and free-flowing. The idea was to get as many questions down as possible. After doing this, the next step was to answer as many of these questions as possible through research. This step allowed us to build a solid base of information from which we could conduct an educated and nuanced interview. Oftentimes, we had to repeat the last two steps multiple times to draw out all the information we could.

After researching, we took our remaining questions and made them as concise and insight-provoking as possible. With each question, we tried to show that we had done our research and understood our interviewee by bringing in relevant details specific to each company. The overall goal for each interview and the questions we created was to find 6-7 questions that would allow us to address four things:

- What is the story of a given company?
- What or who is most helpful to a Blue Economy Startup in Venice?

- What challenges does a Blue Economy Startup face in Venice?
- What can we recommend to future Blue Economy Startups that will help them on their path?

The information gleaned from these interviews allowed us to further understand the economic opportunities and challenges potential startups face when working within the Venetian Blue Economy. Using this information, we were able to expand into new waters in the second half of this deliverable. We first analyzed the information we received by engaging in dialogue as a team as well as with our sponsors, then decided which suggestions we might be able to offer to future Blue Economy startups in Venice.

3.5 Surveys for Student Handbook:

Another deliverable for this project was to produce a handbook for future Venice IQP cohorts from Worcester Polytechnic Institute aimed at providing helpful tips around both adjusting to and respecting the city of Venice. This handbook will act as a guide for these students completing their projects in Venice to raise awareness of the environmental and social impacts of their stay and project work in the city. It will also provide students with ways to reduce their environmental impacts through sustainable suggestions, and reduce problematic social situations with suggestions on how to “act more like a local and less like a tourist”, by showing respect to Venice and its residents.

To gather information to develop our handbook, we surveyed our peers in our cohort in addition to recording our own experiences or ideas as they came to us throughout our stay in Venice. We created a Google Form for this anonymous survey that we sent out to our cohort weekly. This form prompted them to share any observations they've had that might benefit future IQP students in their time in Venice. We indicated that we are looking more specifically for things connected to environmental sustainability, such as throwing trash away before you leave the house because there are not many trash cans throughout the city, or bringing a reusable water bottle to refill at local fountains as opposed to purchasing single use plastic bottles, but also collected responses on general tips for living in Venice, such as figuring out how the trash collection system works. These questions are phrased in an informal manner that is representative of the casual, peer-to-peer dialogue we are trying to create with this deliverable. The question list is as follows:

1. What have you learned about traveling in Italy or abroad?
2. What are the most useful Italian phrases you have learned?
3. Where are the best places to get food/groceries in Venice?
4. Do you have any tips for transportation in Venice?
5. Have you had any notable interactions with local Venetians?
6. Have you had any notable observations about or interactions with tourists?
7. What is something you do in Italy that you don't do in the US?
8. What have you learned about living in Italy that might be helpful to someone living here in the future?
9. Do you have any other observations?

We will analyze the information gleaned by these questions and their answers by seeing how frequently a topic comes up, to assess whether it is relevant to our project. Answers that appear many times (3-5) will be prioritized when being included in the handbook, while answers that appear only once or twice will likely only appear if the project team feels strongly about it.

With the audience of our peers in mind, our handbook will take the format of a short YouTube-style documentary video, where we share the suggestions through clips of us walking throughout the city of Venice, to reconnect the viewer to the main focus of respecting the city in which they will be living and working.

4 Results

4.1 Interviews

As part of our research, we also conducted interviews with startups located in and around Venice, as well as foreign startups with a story relevant to our research. From these interviews, we analyzed what experiences startup founders had in common as well as where their stories differed. From this information, we gained a better understanding of what it is like to do business in Venice.

4.1.1 Algae Scope

The first company we spoke to was AlgaeScope. AlgaeScope is an innovative Blue Economy startup based in Venice that leverages seaweed as a regenerative resource for creating bio-based alternatives to harmful chemicals and potential biofuels. The startup has encountered both significant opportunities and considerable hurdles in Venice. Through pilot partnerships, accelerator programs, and EU-linked funding initiatives, AlgaeScope has positioned itself as an up-and-coming business in sustainable marine innovation.

The company was cofounded by its CEO, Natasha Yamamura. We spoke to her and the business manager, Fiona McOmish. Natasha was inspired to start the company after noticing Venice's unused seaweed potential and learning from Canadian and Japanese seaweed farmers who demonstrated both the environmental and economic benefits of its use. They decided to bring the company to Italy because of Venice's marine ecosystem and existing aquaculture infrastructure, as well as because of the requirement of the Horizon Grant (described below). Their mission is to create a circular economy where seaweed cultivation helps clean water, absorbs CO2, regenerates marine ecosystems, and replaces petroleum-based products.

Their main products are PFAS (Perfluoroalkyl and Polyfluoroalkyl Substances) alternatives and a form of biofuel derived from the Ulva Lactuca seaweed. They hope that these products can replace harmful alternatives derived from plastics and fossil fuels in industrial markets like shipbuilding, textile manufacturing, and energy production.

AlgaeScope has worked with several partners to get to where they are today. Their funding came from a Venture capital firm, called Village Capital, that invests in women-led businesses and the Horizon Grant: an EU program that supports sustainable companies in Italy. They also developed a professional network, working with startup incubators like SerenDPT, MIT Design X, Malta Accelerate, and the Faros Accelerator to develop a network of industrial partners. The network created by these organizations was the main factor that AlgaeScope identified as being instrumental in their ability to continue their operations. Making connections with industrial partners, potential investors, or people in the field who could provide feedback about the business model was an important part of their growth.

AlgaeScope also identified some government programs and regulations that contributed to their success. They mentioned that recently, EU countries have been considering (or even implementing in the case of France) a ban on PFAS. These are a large group of synthetic

chemicals known for their ability to repel water, dirt, and grease. They explained that these "forever chemicals" are widely used in various consumer products and industrial processes due to their durable and useful properties, but they have also raised concerns about potential health and environmental impacts. As AlgaeScope has developed an alternative to these chemicals based on algae, the banning of PFAS would open up significant opportunities for the company.

They also stressed ESG scores and carbon credits as being a significant aid in incentivising businesses to switch to or fund the sustainable alternative to PFAS or fuel that AlgaeScope creates. Because AlgaeScope has proved they can reduce the amount of carbon entering the environment, they can sell carbon credits on European markets. Businesses are incentivized to buy these credits because of European laws as well as ESG (Environmental, Social, and Governance) scores that track how responsibly a company acts. When businesses buy carbon credits, they fund sustainability businesses like AlgaeScope in their mission to make a positive impact on the environment while improving their own ESG reputation.

Some of the challenges AlgaeScope identified were the struggle to balance long-term ecological value with investor preference for short-term and scalable products, investor risk aversion, and bureaucratic hurdles. This last challenge, bureaucratic hurdles in Italy, was the obstacle they spent the most time discussing.

While they did emphasize that Venice has a strong foundation for aquaculture, the founders decided to start the company in Italy, not entirely because they wanted to, but because the Horizon Grant mandated it. They said, had this not been the case, they would’ve started the company in a more startup-friendly European country like the UK or France. The first hurdle they encountered in the process of starting up in Italy was the high barrier to entry. To open a company in Italy, you must first contribute an initial investment of €10,000, then pay a €5,000 fee. After paying these, you must navigate through a mountain of paperwork (each time making and certifying a translation), create and attend appointments with the necessary officials, apply for and complete certifications, and other bureaucratic hurdles that slow down the process of beginning to do business by weeks and months at a time. Then, before having any revenue, they were forced to pay tax on their projected future revenue. Without having an Italian who completely understood the process on the team, Natasha and Fiona felt as though they were doing more work creating a legal entity than growing their business. While these challenges were significant, they did identify a silver lining: when the process for starting a company is so

difficult, it drives away much of your potential competition. A company that can successfully navigate these hurdles will have much more room to grow and experiment in the market.

The key advice that AlgaeScope provided for future entrepreneurs in Italy and Venice was to expect long timelines, using this time to build your network and work on your product. They emphasized that in Italy and especially Venice, you must celebrate the small wins. Setting up a company in this environment is difficult, but can be very rewarding.

4.2.2 Sea the Change

Sea the Change was the next company we spoke to. It is a social innovation startup aimed at providing skilled support in sustainability pathways for companies with a focus on the blue economy. It was founded by Francesco Suzzi, Alberto Carpanese, and Luca Barani. The company specializes in ESG consulting, education, and project development within the blue economy, helping companies improve their reputation for and understanding of environmental sustainability.

According to Francesco Suzzi, during the initial stages, accelerators like MIT DesignX and Social TIdes were critical for their growth. These accelerators allowed the team to refine their business model and connect with mentors and funding sources. Operating in Venice, despite its logistical challenges (e.g., commuting by boat to the island of Giudecca), offers proximity to international events, policy discussions, and private actors working on marine sustainability.

Suzzi and his two co-founders identified a lack of reliable support tailored to blue economy sectors, prompting them to start Sea the Change with a strict ethical framework. They screen clients using an internal framework and exclude companies in sectors like arms manufacturing or those who are engaged in greenwashing, the process of conveying a false impression about how a company's products are environmentally sound for the sake of marketing. Prospective clients undergo a vetting process to ensure alignment between their sustainability claims and actual practices.

Sea the Changes prioritizes its partnerships based on sectoral goals, changing sectors every few months. Recently, they have been focusing on blue carbon and plastic pollution. Some of their successful projects include “Mare Du,” an arts-based educational initiative in local schools, and “Fishing for Litter,” which organized cleanups and raised awareness about marine

waste. Another initiative, “Net Reborn,” replaces environmentally harmful polystyrene fish boxes with durable alternatives, distributed to fishermen through partner funding.

Sea the Change distinguishes itself from product-based startups by offering service-oriented solutions that help businesses improve their ESG scores and long-term sustainability. Francesco emphasizes that while short-term collaborations often yield win-win scenarios (e.g., reducing travel to cut costs and emissions), true impact lies in guiding companies through deeper, more difficult sustainability transitions. However, the biggest challenge lies in overcoming companies’ limited incentives, especially when sustainability isn’t perceived as an immediate need.

Suzzi sees Sea the Change as a personal mission to integrate activism with economic reality. He advises aspiring founders to focus on doing meaningful work rather than chasing profit alone, and to design ventures that allow them to walk away from deals that compromise their values. Balancing financial and ethical needs is difficult but essential when trying to avoid becoming trapped in business situations that could compromise a business’s mission.

4.1.3 Voga Yachts

Next, we spoke to Voga Yachts. Voga Yachts is a hybrid-electric boat company with the intention of making leisure and commercial boating a more sustainable activity. Composed of engineers and designers, their research and development focuses on the optimisation of boat hull shapes, to reduce wave creation while in motion, and allowing for a more efficient propulsion-to-energy consumption ratio.

The Voga team plans to release their first commercially available model, Voga 7.5, by the end of 2025. The Voga 7.5 will be fully electric. For taxi use, a hybrid system with a small generator (range extender) is being considered to accommodate 12-hour workdays without the restriction of long charging times. The boat's specific hull shape is designed to reduce energy consumption by approximately 40%, regardless of the motor type.

Voga’s founder and CEO, Mike Tommasi, was inspired by his upbringing in Venice, having witnessed the disruptive impacts of traditional diesel boats on the infrastructure and natural ecosystems of the lagoon. Tommasi explained how the current models of vessels for water taxis are speed boats; the design of the hull is intended to go “on plane”, which refers to the hydrodynamic lift that occurs at a cruising speed of roughly 30 to 40 knots. When these boats

are not at speed, they remain in displacement mode, meaning the hull is pushing water aside as it moves, creating a larger wake and higher hydraulic resistance. The Venetian water taxi business is fast-paced, as drivers intend on getting to and from their clients' destinations as fast as possible. With the current style of hull and the speed limitations within the canal system, these boats are energy inefficient, loud, and hydraulically destructive to the fragile foundations of the city.

According to Tommasi, Voga Yachts faced a series of challenges in its founding in 2022. While sustainability consciousness is a growing consideration amongst consumers, it is still often viewed as a "nice luxury" or a buzzword to draw in investors and customers. Companies frequently "abuse and misuse" the term without concrete definitions or demonstrable impact. A significant portion of the market still prioritizes high performance over sustainability, where the most aesthetically pleasing and fastest products gain the most publicity. The European venture capital ecosystem is described as underdeveloped and highly risk-averse compared to the US and Canada. Investors often demand unrealistic levels of certainty and immediate sales projections from early-stage startups, making funding difficult to secure. Italy, in particular, is noted by Mike Tommasi as having virtually "no true venture capital," in that there is no strong network of Venture capitalists looking to invest in new ideas.

Another major obstacle is the lack of charging infrastructure in Venice, and the long charging times required for electric boats, which is particularly problematic for commercial or rental operations. Similar to other European startups, the business also faces challenges with a complex bureaucracy and significantly higher labor costs. Tommassi noted that because of the comparatively high social security burden in Italy (businesses are required to contribute a significant amount of money to the government for each employee they hire), labor costs make up 50-55% of the business's total costs.

Despite the challenges Tommasi faced, he identified many contributions to their company's development. Organizations like SerenDPT have been "super helpful" in refining their concept and message through pitching opportunities and feedback. Tommasi also relied a lot on his personal sources of funding. He chose to "bootstrap" the project, opting to self-fund the initial development to avoid early equity dilution and gain traction before seeking external investment over a planned period of 1 to 1.5 years. In the selection of manufacturing materials,

Voga chose to identify an excellent local boatyard in Venice capable of wood composite construction, therefore contributing to the local economy.

Tommasi's advice for future entrepreneurs looking to start a company in Venice and Europe was to be persistent and courageous, saying that people should be prepared for a "tough ride". He also advised that if possible, one should consider starting in countries with fewer obstacles to starting and growing a business. Understanding the investor mindset and being aware of the risk aversion among European investors and their focus on immediate sales projections rather than long-term risk/return. Tommasi closed his advice with a positive message to continue to develop solutions that genuinely reduce environmental impact rather than just relying on "sustainability" as a buzzword.

4.1.4 The Tidal Garden

The next company we interviewed, The Tidal Garden, is a company exploring the cultivation of halophytes and the development of novel culinary habits from salinized agricultural fields. Led by agronomic researcher and developer Filippo Grassi, researcher and designer Lodovica Guarnieri, and gastronomic researcher Lorenzo Barbasetti di Prunt, the project collaborates with a network of farmers and gastronomic professionals. The core idea is to introduce salt-tolerant plants, halophytes, into the diet as a response to the increasing salinization of agricultural land due to climate change.

They focus on agronomic research by studying how they can increase the number of farmers producing salt-resistant plants in areas like the Venetian Lagoon, Tuscany, and the broader Mediterranean basin. They also do gastronomic research by diversifying products and culinary applications of halophytes, ranging from specific restaurant dishes to fermented products like kombucha and bread. Lastly, they have been working on creating a market for their product by educating consumers and farmers about halophytes and their edible potential through events.

The Tidal Garden's products are not yet available in general grocery stores. Instead, they are distributed through specific restaurants with training in cooking with halophytes, specialty shops offering products like halophyte gelato or kombucha, and direct sales to their collaborators through their website.

According to Lodovica Guarnieri and Filipo Grassi, a significant part of their business model involves creating the market for halophytes through consumer knowledge campaigns, which are executed via events like culinary expos. They noted that there is a growing interest in sustainably sourced products, especially in European and UK markets. That being said, while interest is growing, common consumers in Italy generally do not know what halophytes are. Recognition often comes only when the plant is shown to them, and the story behind the product is told. After this is done, the consumer is often much more receptive to consuming them. To spread information about halophytes, The Tidal Garden does not run traditional marketing campaigns, but instead organizes events, such as food showcases at restaurants, in which new halophyte-based dishes are showcased and tried. This also helps initiate new chef collaborations after chefs can get some experience with the product.

During the interview, Guarnieri and Grassi identified a few challenges in the business landscape. First, the agricultural research space, particularly for niche crops like halophytes, is slow-moving. There isn't a crowded market; while small producers might exist, no major competitor has emerged. This is both a challenge and an opportunity. Less competition is an opportunity for more market share, but it also means that the market is underdeveloped. Knowledge about the topic is low, and consumer interest is still in its early stages. Another key challenge is finding and retaining farmers capable and willing to adopt new production plans for halophytes. Some farmers show initial enthusiasm but may lack the capacity or sustained interest to integrate new crops. Success hinges on farmers seeing the long-term economic potential and social significance of the project.

Similar to other startups in Italy, The Tidal Garden faces significant challenges with Italian bureaucracy and tax structures, which are perceived as complex and difficult. This has led them to delay establishing a formal company, operating currently with a registered trademark. The founders advised against rushing the process of business growth and development, especially in the blue economy/environmental sustainability sector in Italy. They advocated for starting slow and planning for the long term, contrasting with the "make it or break it" startup narrative often seen in American business culture.

Starting a business in Italy comes with challenges, but they also identified where their best support and opportunities came from. They mentioned that the researchers and business collaborators (chefs, specialty shops) have been highly supportive, helping with new product

development, client acquisition, and overall business sustainability. Also, while some farmers may be resistant to change and somewhat flaky when it comes to adopting new practices (experiencing challenges and quickly giving up), the farmers who have committed wholeheartedly to the cause have been very helpful to The Tidal Garden's growth. They emphasize that the most important thing for them as startup founders in Italy is the commitment to a long-term approach, rather than expecting immediate success. To them, this has been vital for navigating the inherent difficulties and slow pace of agricultural innovation.

4.1.5 PesCo

Founded in 2022, PesCo is a startup that emerged from MIT DesignX. It initially focused on fishing experiences in Venice to address issues of tourism in the city. The founder, Sandro Zanon, conceived the core idea of creating a platform similar to "Airbnb Experiences" for fishing, a non-existent service in Italy. The platform has since expanded to include "cultural flavors" and other local life experiences, aiming to offer tourists a deeper, more authentic immersion into the local way of life beyond standard attractions.

PesCo operates on a transactional and subscription-based model. Tourists pay the guide's fee plus a 10% commission to PesCo, so, for a €100 guided trip, a tourist would pay €100 to the guide and €10 to PesCo. On top of this, PesCo receives a 5% commission from the guide. PesCo also receives an annual subscription from each registered guide of €200 that pays for access to the platform's tools, like calendars and payment systems, as well as benefits from PesCo's marketing efforts.

PesCo's role involves maintaining the marketplace (web application), facilitating payments, and conducting marketing to boost and spread visibility for the fishing guides, providing them with a marketing budget and strategy they normally couldn't afford.

Some of the key developments since its founding in 2022 have been platform development, building relationships with local partners such as fishermen who can take clients, hotels who can refer them, and navigating the legal hurdles of properly documenting a tourism business.

Sandro Zanon, along with his sister and business partner Silvia Zanon, identified that a primary obstacle for PesCo is getting fishermen and hosts to join the platform. Guides are often hesitant to adopt a new tool they haven't used before and are unfamiliar with its functionality.

There is some initial "rejection" to paying the annual subscription fee, likely due to unfamiliarity with such models in their traditional industry. Many fishermen have been operating a certain way for decades and are resistant to integrating into the digital age. Fishermen also often lack the expertise to market themselves as an activity. They struggle with creating appealing listings, including taking high-quality photos (e.g., clients smiling with fish, enjoyable environmental shots, not just the catch itself). PesCo offers assistance in this, but requires the visual content from the guides themselves. While PesCo may be able to help their early partners sort out these details, a scalable version of the company must have partners that can work these details out independently, similar to how hosts would with Airbnb.

Despite the challenges in onboarding suppliers, there is significant demand from customers. Tourists actively seek authentic fishing experiences, often finding PesCo through Google Maps searches or by asking hotels for recommendations. Before PesCo, there was no centralized platform or website in Italy for hotels to book fishing experiences for their clients, leading to a fragmented, phone-based referral system. This indicates a clear demand for such a service. The market is characterized by high demand but a severe lack of structured service providers. This presents both an opportunity (no competition) and a challenge (educating suppliers).

PesCo also highlighted several common and unique challenges for startups in Italy: First, the process of legally establishing a company is complex, requiring engagement with notaries and accountants, and navigating specific "ATECO" codes (activity areas for taxation). Finding funds is also a big challenge. Italian investors are often highly risk-averse, demanding revenue and proof of concept before providing significant funding, even for early-stage companies. So far, PesCo has only been able to secure a small grant from a European fund.

The founders of PesCo offered some advice for future entrepreneurs in Venice. They highlighted a need for personal economic stability (e.g., other jobs) to keep the company afloat, as funding is hard to come by early on. This highlights another difficulty mentioned by PesCo. Graduates in Italy face very low initial salaries (500-600 euros/month) for extended periods (1-3 years), making it difficult to afford living expenses like rent (which can be 2,000-3,000 euros/month in cities like Milan or Venice). This makes it difficult to live, let alone save up to create a start-up. Many graduates choose to move abroad for better working conditions and salaries.

PesCo also stressed that it was crucial to have a second source of income so that a founder could take a patient approach towards their business. In Italy, much time is required to understand the legal and tax structure and go through the proper channels of starting a business.

4.1.6 Palomar

The last startup group we spoke to, Palomar, is envisioned as a website/portal offering unique travel experiences centered around citizen science, primarily focusing on water, ocean, and the Mediterranean area (initially Italy and Venice, then expanding). The idea has not yet been turned into an official company, but Palomar plans to launch in Q3 of the current year, 2025. The core inspiration is to address the lack of understanding regarding the connection between human beings and the ocean, aligning with initiatives like the "ocean literacy" goals of the UN's Ocean Decade (2020-2030).

The platform aims to showcase alternatives to conventional tourism, particularly in cities affected by overtourism, by providing tourists with more authentic and locally beneficial experiences. They promote local associations and businesses involved in citizen science, active citizenship, and research projects, meaning they try to connect travelers with researchers from local and international universities to contribute to ongoing studies (e.g., monitoring, sampling). The goal is to turn tourists into active participants in scientific research, transforming tourism into a beneficial force for local environments and communities.

One significant challenge Palomar identified was the perception and labeling of "sustainability". The founders consciously avoided using "sustainable" or "responsible" as primary descriptors for Palomar, recognizing these terms can be misleading, overused, and even off-putting when considering things like greenwashing. Their preferred framing is having a "positive impact," particularly on environmental degradation and urban cultural degradation. Palomar's sustainability definition leans heavily towards environmental preservation and education, aiming to raise awareness and encourage participation in monitoring and preservation efforts. While not explicitly focusing on "social sustainability" in its broadest sense, the project acknowledges an indirect social impact by fostering new, more responsible economies in tourism-affected areas and connecting travelers with local communities.

There's a struggle to position Palomar without using the buzzword "sustainability," as it can alienate a large segment of the audience who may not care or perceive such activities as

"work" or "boring." They desire to be seen as a tour operator offering unique, authentic, and engaging experiences rather than a purely "sustainable" one. This is why they shifted their offering from being branded as “eco-tourism”, a term that uses sustainability to sell, to “authentic tourism”, a product that has a demand outside the environmental sustainability market.

The Palomar representative from Palomar also recognized that the market for experience-based activities, especially in Europe, is booming, with a growing segment of travelers seeking conscious and connected ways to travel. While over tourism is a problem affecting Venice, Palomar recognizes that tourism is here to stay, and they believe they have found a better way to go about it.

Like many startup companies we talked to, the founders of Palomar have full-time jobs, making it challenging to dedicate sufficient time to the project. They said that not taking it "too seriously" initially helps maintain motivation and avoid burnout, but can make the timelines for any project quite long. Maintaining consistent engagement from all team members, especially those responsible for technical aspects (e.g., the IT consultant), is crucial and has also been a hurdle. Different project phases require varying levels of involvement from team members, and when not all team members are working on the project full time, efforts can become fragmented.

The founders identified that a critical future challenge will be balancing the number of available citizen science activities/research fields with sufficient customer interest and bookings to ensure a sustainable business model. Like many Blue Economy or sustainability-centered ventures, finding a significant market can be a challenge. For Palomar, the core appeal lies in offering an "authentic tourist experience" that allows travelers to genuinely engage with the city and its environment beyond typical tourist attractions, fostering a deeper understanding and connection. This is something they plan to lean into in the future.

4.2 EU Training Modules

4.2.1 Module 1 - Concepts, Actors, and Functioning of the Blue Economy

As part of our refinement of Module 1, we focused on enhancing the multimedia presentation and our own understanding of the Blue Economy. On the visual side, we implemented several improvements to increase engagement. This included adding short video

clips into the slide deck and using multiple voiceover contributors to add variety and maintain audience interest. There wasn't much room to improve the design component of the presentation since we had to follow format guidelines from the BLUNEW project sponsors.

More importantly, working closely with the contents of Module 1 deepened our understanding of the key concepts, actors, and functioning of the Blue Economy. This foundational knowledge proved helpful in all areas of our project. It contributed to our interviews with local startups by allowing us to ask more informed questions and contextualize their challenges. It also laid the groundwork for our research and content development for Module 3, which dives into policy making for the Blue Economy.

4.2.2 Module 3 - Policy Making for Blue Economy

In Module 3, our team conducted a comprehensive analysis of the policy and governance frameworks shaping the blue economy in the EU and IPA countries, with a focus on the Adriatic-Ionian region. Through desk research, we reviewed key EU directives such as the Marine Strategy Framework Directive, the Marine Spatial Planning Directive, and the Sustainable Blue Economy Strategy. We then examined how these directives and frameworks are enforced at the EU and local levels. Our research extended to radical perspectives and alternative water management frameworks such as Adaptive Co-Management and the degrowth theory, which challenge the assumptions of growth-based sustainability. We highlighted global examples such as the Maori in New Zealand and legal personhood for ecosystems as seen in Spain. These insights helped us understand how governance can evolve in response to the ongoing polycrisis in regions like the Adriatic-Ionian Ionian where overlapping jurisdictions and environmental pressures can complicate policy implementation.

The end product of our research was the production of a detailed presentation with a voiceover, in accordance with the BLUNEW project guidelines. Our team structured the presentation to ensure that EU policies, regional case studies, enforcement mechanisms, and conceptual models were clearly explained. The creation of this module deepened our understanding of the subject while contributing to the broader EU BLUNEW initiative.

5 Takeaways and Recommendations

From our research, we gained valuable information about the process of starting a company in an Italian city such as Venice, as well as key glimpses into the Italian startup culture. As a broad conclusion, we were able to deduce how Italian startup culture is characterized by a conservative approach to risk. Italian investors often require proof of concept, revenue, and experience in the field before they consider taking a small financial risk on your company. In addition, the Italian governmental process is structured to preserve the status quo. In coordinating with the Italian bureaucracy, there are no quick innovations or sharp changes. These characteristics are what make up the landscape that Blue Economy startups in Venice must work within, leading us to make recommendations for current and future startups working within these parameters.

5.1 Understanding Timelines

In the course of talking to these six startups, there were several common themes between each conversation, and some areas where differences across backgrounds could be seen. An important topic that was identified to have a large impact on all of our startups was the bureaucratic process of Italy. Every founder seemed to agree that doing business in Italy is slow. There are significant startup costs, mountains of paperwork, and tax burdens that complicate the process of starting a business. For example, the founders of AlgaeScope, Natasha and Fiona, mentioned that whereas in other countries like the UK you can have a company open within a day for as little as €25, in Italy you have to have a minimum initial investment of €10,000 and pay a €5,000 fee. Businesses often found themselves waiting for weeks for meetings with necessary officials or to get back important paperwork and documents. AlgaeScope had to hire a notary and a translator (another €2000 each), and wait in several-month-long queues for meetings with the proper officials. They then needed to pay a tax of €300 on their predicted revenue for the following year (revenue that they had not yet made). The process that the founders of AlgaeScope expected to take a few weeks ended up taking over a year, and ate up nearly half of their initial funding. This struggle was not unique to AlgaeScope. Italian consulting firms estimate the time to fully set up a business for an Italian national to be about 2-3 months, and an extra month for a foreigner. This is a sharp contrast from the few days to a few

weeks that these same firms estimate the process to take in the US and the UK (*Italy Company Registration Fees,* 2018). The pace of play clearly makes for a much slower process of starting a company in Venice, but there was a distinct difference in the way this process was perceived by native Italians compared to foreign startup founders.

While native Italian startup founders do recognize that the process for starting a company can be long, difficult, and expensive, they are more accustomed to the process than foreign founders, allowing them to have less negative influence from this process. Because they have grown used to Italian bureaucracy, they accept it as a fact of life rather than an insurmountable obstacle. The Italian startup founders we spoke to kept their day jobs, spent time sitting with their ideas, and frequently made tweaks to their business plan as time went on. The slower timeline allowed many startups to focus on tweaking their product, their goals, their business strategy, and their market while, most importantly, spending time creating a vast network with which they could cooperate. The timelines around creating a business in Italy don't emphasize rapid progress, but they do allow those who are willing and able to take a slower, more methodical approach to doing business than is possible in other countries. So, if you are an entrepreneur looking to start a business in Venice, you should consider adjusting your timelines and expectations to fit Italian business practices and regulatory environments. By doing this, they can take advantage of the many perks that come with being situated in Italy, and more specifically, Venice.

5.2 The Venetian Advantage

A key part of being a successful startup in Venice is understanding the advantages that come with your setting. While each company that we spoke to understood the challenges of doing business in Italy, Venice has its own unique challenges. First, Venice draws over 30 million visitors to the city each year due to its cultural and historic landmarks (Chrisafis, 2023). While overtourism is a problem we have identified, a startup needs to leverage every opportunity it can. PesCo and Palomar identified that Venice is the perfect area for a company looking to capitalize on tourism through sustainable alternatives to the traditional tourist experience, since Venice has a market for sustainable and authentic experiences that are likely to continue to grow. The constant flow of new potential customers into Venice isn't something that all businesses need to

center themselves around, but for a startup in Venice, it is necessary to think about how one's business model can incorporate the tens of millions of visitors in the city each year.

While tourism represents a significant opportunity for any company in Venice, sustainability companies have a unique advantage as well. Venetians have experienced a generational symbiotic relationship with the lagoon and can understand and interpret its needs better than anyone else. Venetians understand sustainability naturally; therefore, a company with a focus on helping the environment is important to Venetians. These companies can take advantage of support networks like SerenDPT or SeaTheChange, as companies founded by native Venetians who understand the symbiotic relationship to the environmental landscape better than foreign businesses.

5.3 Developing Your Network

Developing your professional network is one of the most important pieces for success in developing a Blue Economy startup in Venice. Due to the culture around startups in Italy, it can often be difficult for new and innovative businesses to secure funding. This was a challenge identified specifically by PesCo and Voga Yachts. The founder of PesCo noted that Italian investors are often highly risk-averse, demanding revenue and proof of concept before providing significant funding, even for pre-seed or seed-stage companies. This obstacle can be difficult to overcome, but these companies cited their professional networks as being the reason they were able to overcome it so far. Voga Yachts and PesCo stated that companies such as SerenDPT and organizations like MIT Design X have been extremely helpful in allowing them to make connections with other startup founders and potential sources of funding. Venture Capital groups and revenue are scarce in Venice, so startups need to be able to attach themselves to incubators such as Faros Accelerator that can lend them the necessary credibility and funds to continue to grow.

The connections that link companies to sources of funding and to other startups can be just as important. The founders of AlgaeScope viewed collaboration with other startups as a huge influence on their ability to continue their business. Seeing how other businesses tackle the challenges of being a startup and gaining feedback on your own business model can be very important for a company that is still in the early stages of its development.

To take advantage of all the connections that are created by living in a city like Venice, a startup founder should participate in events like MIT Design X, speak to and collaborate with companies like SerenDPT, and attend relevant events in their sector of the blue economy. The Biennale Architettura, Salone Nautico, or a beach clean-up sponsored by a local organization are great opportunities to meet people in your field who are inspired by innovation and sustainability in the Venetian Blue Economy.

5.4 Understanding the Role of Sustainability in Your Business Model

Another key piece of developing a successful venture in the Blue Economy in Venice is understanding how sustainability fits into your business model. A truly sustainable company does more than market its sustainability as a gimmick to attract investors. A truly sustainable company is a company with a clear goal and a useful product that engages in sustainable business practices. This was a key idea in Palomar's shift from an "eco-tourism" company to an "authentic tourism" company. The founders understood that in order to become a company that could succeed in the long term, they needed to develop a product that consumers would want to use while being sustainable at the same time.

This was also an overlapping idea within Voga Yachts. In the discussion of their product, Mike stressed that there was a growing market for slower-paced leisure boating with lower wake and less noise. The fact that his boat was a more sustainable option was helpful, but the key marketing feature was its viability for a leisure market. These companies understood that in the future, people may no longer look to buy or use products and services because of a sustainability tag, but they can continue to make a positive impact by creating a product that people will use that happens to be sustainable. When a product function does not compromise its sustainability, it leads to a more sustained financial success, and therefore more capability to make an environmental impact. The future of business does not lie with sustainability companies, but with companies that can succeed while making sustainability a priority.

5.5 Leveraging Environmental Policy and Government Grants

Lastly, startups in the sustainability sector need to be able to take advantage of the unique funding and business opportunities created by the EU's focus on sustainability. The term

“sustainable blue growth” was adopted by the European Union in 2012 as part of the broader European 2020 strategy. Also, the United Nations General Assembly declared 2018–2028 as the “International Decade for Action on Water for Sustainable Development.” The world, especially in Europe, is beginning to prioritize the sustainable development of aquatic resources. Startups can take advantage of this shift in mentality by applying for grants that have been born out of this new focus on sustainable aquatic growth. For example, the Horizon Grant utilized by AlgaeScope is a program created by the EU to fund companies and organizations tackling climate change, allowing for achievements within the UN’s Sustainable Development Goals and a boost within the EU’s competitiveness and growth (*Horizon Europe*, n.d.). These grants can be used to get a startup from the idea stage to the stage at which a real, tangible difference can be made. In an Italian landscape where funding opportunities can be few and far between, especially for innovative but unproven sustainability companies, taking advantage of funding opportunities designed specifically for environmental sustainability companies could be the difference between surviving the early stages of a startup and going under.

6 Conclusion

Navigating the Blue Economy and its business landscape in Venice is not easy, but through thoughtful planning, resilience, and collaboration, it can be done. Our research shows that creating a sustainable, Blue Economy in Venice is not just a possibility; it is a necessity. Sustainability is not only a moral imperative, but it is a strategic one. As our natural resources decline and climate impacts accelerate, the future will belong to those who build economic systems that regenerate rather than exploit. For Venice, whose very identity is bound to its waters, this is especially urgent.

The lessons from this project are clear. First, startups in the Blue Economy must understand the local context, embracing the slow, bureaucratic nature of the Italian system not as a barrier, but as a timeline that can be used to build strong networks and refine ideas. Second, sustainability must be embedded in the business model, not as a marketing slogan but as a foundational design principle. Successful companies in Venice are those that find authentic ways to serve both people and the planet.

We also found that meaningful change often comes not from large-scale disruption but from intentional, patient efforts: rethinking tourism through citizen science, leveraging natural resources, and building sustainable products that have real consumer value. Each innovation contributes to a broader ecosystem of resilience. On top of this, public support from EU grants to regional startup accelerators can serve as lifelines for emerging ventures if founders know how to access them.

Ultimately, the takeaway is this: building a Blue Economy in Venice is not just about saving a city, it's about reimagining what kind of future is possible when environmental integrity and economic viability are treated as partners, not adversaries. The choices made in Venice today will ripple far beyond the lagoon, offering a model for coastal cities around the world. If companies and their collaborators are willing to move slowly, think deeply, and act as a team, then the Blue Economy can become not just a buzzword but a lifeline for cities in need.

References

Bertocchi, D., & Visentin, F. (2019). "The Overwhelmed City": Physical and Social Over-Capacities of Global Tourism in Venice. *Sustainability*, *11*(24), 6937. https://doi.org/10.3390/su11246937

Whipple, M. (2023, August 5). Republic of venice: The rise & fall of a maritime powerhouse. *TheCollector*. https://www.thecollector.com/republic-of-venice-history/

Booth, E. (2024, July 12). *Climate Policy Implementation in Venice, Italy: A Multi-Level Governance Analysis*. https://static1.squarespace.com/static/6350624e26a29514ddcf7b2a/t/66c8d3cc8e003672bcad06b3/1724437453316/Elisa+Booth+-+Keck+Summer+Named+Fellowship+Research+Paper+24+%281%29.pdf

Chrisafis, A. (2023, December 31). Venice to limit tourist group size to 25 to protect historic city. *The Guardian*.

https://www.theguardian.com/world/2023/dec/31/venice-to-limit-tourist-group-size-to-25-to-protect-historic-city

Commonwealth Secretariat. (2022, February). Innovative financing – Debt for conservation swap, Seychelles' Conservation and Climate Adaptation Trust, and the Blue Bonds Plan, Seychelles. https://production-new-commonwealth-files.s3.eu-west-2.amazonaws.com/s3fs-public/2022-02/Innovative%20Financing%20%E2%80%93%20Debt%20for%20Conservation%20Swap,%20Seychelles%E2%80%99%20Conservation%20and%20Climate%20Adaptation%20Trust%20and%20the%20Blue%20Bonds%20Plan,%20Seychelles.pdf

Coulling, I. (2024, September 2). *The Venetian Lagoon and its ecosystem*. Images of Venice. https://imagesofvenice.com/the-venetian-lagoon-and-its-ecosystem-2/

D'Alpaos, C., & D'Alpaos, A. (2021). The Valuation of Ecosystem Services in the Venice Lagoon: A Multicriteria Approach. *Sustainability*, *13*(17), Article 17. https://doi.org/10.3390/su13179485

Department of Forestry, Fisheries and the Environment. (n.d.). *Operation Phakisa – Oceans Economy*. https://www.dffe.gov.za/operation-phakisa-oceans-economy

Dong, Y. (2024, April 4). China's 'Blue Economy': A state project of modernization. China Daily Hong Kong. https://www.chinadailyhk.com/hk/article/384043

Economic Commission for Latin America and the Caribbean (ECLAC). (2020, December 16). The outlook for oceans, seas and marine resources in Latin America and the Caribbean: Conservation, sustainable development and climate change mitigation (LC/TS.2020/167). United Nations. https://www.cepal.org/en/publications/46509-outlook-oceans-seas-and-marine-resources-latin-america-and-caribbean-conservation

Eugui, David & Onguglo, Bonapas & Razzaque, Mohammad & Fevrier, Stephen & Roberts, Julian. *(2014). The Oceans Economy: Opportunities and Challenges for Small Island Developing States.*

European Commission. (1999). *ESDP European Spatial Development Perspective: Towards Balanced and Sustainable Development of the Territory of the European Union.* Office for Official Publications of the European Communities. http://europa.eu.int

European Commission. (2021). *Italy – Country profile.* EU Blue Economy Observatory. https://blue-economy-observatory.ec.europa.eu/country-profiles/italy_en

European Economic and Social Committee. (2021). New approach for a sustainable Blue Economy in the EU (Opinion NAT/817-EESC-2021). https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/new-approach-sustainable-blue-economy-eu

European Commission. (2021). *Communication on a new approach for a sustainable blue economy in the EU: Transforming the EU's Blue Economy for a Sustainable Future (COM(2021) 240 final).* https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0240

European Commission (2025). *The EU Blue Economy Report 2025*. Publications Office of the European. https://op.europa.eu/en/publication-detail/-/publication/0a4a79d8-353f-11f0-8a44-01aa75ed71a1/language-en

Faranda, D., Ginesta, M., Alberti, T. *et al. Attributing Venice Acqua Alta events to a changing climate and evaluating the efficacy of MoSE adaptation strategy.* https://doi.org/10.1038/s41612-023-00513-0

FEDARENE. (n.d.). *IN-PLAN: Navigating the future: The intersection of energy, climate, and spatial planning made clear by IN-PLAN*. Retrieved from https://fedarene.org/project/in-plan/#:~:text=Navigating%20the%20Future%3A%20The%20Intersection,made%20clear%20by%20IN%2DPLAN

Fisheries and Oceans Canada. (2024, June 3). The Government of Canada outlines the next steps for Canada's Blue Economy. Government of Canada. https://www.canada.ca/en/fisheries-oceans/news/2024/06/the-government-of-canada-outli

Martínez-Vázquez, R. M., Milán-García, J., & de Pablo Valenciano, J. (2021). Challenges of the Blue Economy: Evidence and research trends. *Environmental Sciences Europe, 33*(61). https://doi.org/10.1186/s12302-021-00502-1

nes-the-next-steps-for-canadas-blue-economy.html

Gibson, E. (2022, June 23). *Oceans and the Blue Economy*. Parliamentary Library, Parliament of Australia. https://www.aph.gov.au/About_Parliament/Parliamentary_departments/Parliamentary_Library/Research/Briefing_Book/47th_Parliament/OceansBlueEconomy

GreenOffshoreTech. (n.d.). *About GreenOffshoreTech*. https://greenoffshoretech.com/about/

https://valuingwaterinitiative.org/regions/dordrecht/

Guice Offshore. (n.d.). *What is the "New Blue Economy?"* https://www.guiceoffshore.com/what-is-the-new-blue-economy/

Horizon Europe. (n.d.). Research and Innovation. Retrieved June 19, 2025, from https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en

Italy company registration fees and enagement timeline. (2018, October 15). https://www.healyconsultants.com/italy-company-registration/fees-timelines/

Lee, K. (2021). *The Monster Of The Venice Lagoon: Humans, Policy, Or Ecology?* http://hdl.handle.net/10315/38612

Macchi, L. (n.d.). *Venice: Residents by area 1871-202*. Statista. Retrieved June 23, 2025, from https://www.statista.com/statistics/1454765/venice-population/

Meadows, D. H., Club of Rome, & Potomac Associates (Eds.). (1974). *The Limits to growth: A report for the Club of Rome's project on the predicament of mankind* (2. ed). Universe books.

Munaretto, S., & Huitema, D. (2012). Adaptive comanagement in the Venice Lagoon? an analysis of current water and environmental management practices and prospects for change. *Ecology and Society*, *17*(2). https://doi.org/10.5751/es-04772-170219

Munaretto, S. (2011). *GOVERNING WATER AND ENVIRONMENT IN TIMES OF CLIMATE CHANGE: THE CASE OF THE VENICE LAGOON* (dissertation). ANALISI E GOVERNANCE DELLO SVILUPPO SOSTENIBILE, Venice.

National Oceanic and Atmospheric Administration. (2023, April 27). *U.S. marine fish stocks show improvements in 2022*. https://www.noaa.gov/news-release/us-marine-fish-stocks-show-improvements-in-2022

Ocean Panel. (n.d.). *Chile's iterative approach to sustainable ocean management*. https://oceanpanel.org/sustainable-ocean-plans/chiles-iterative-approach-to-sustainable-ocean-management/

Pauli, G. A. (2010). The Blue Economy: 10 years, 100 innovations, 100 million jobs. Paradigm Publications.

Scarponi, D., Nawrot, R., Azzarone, M., Pellegrini, C., Gamberi, F., Trincardi, F., & Kowalewski, M. (2022). *Resilient biotic response to long-term climate change in the Adriatic Sea*. *Global Change Biology, 28*(13), 4041–4053. https://doi.org/10.1111/gcb.16168

Statista. (n.d.). *Number of containers handled in the Venice port in Italy*. Statista. Retrieved June 9, 2025, from https://www.statista.com/statistics/921057/number-of-containers-handled-in-the-venice-port-in-italy/

UNESCO World Heritage Centre. (n.d.). *Venice and its Lagoon (Italy)*. https://whc.unesco.org/en/list/394/

United Nations Conference on Trade and Development. (2014). The oceans economy: Opportunities and challenges for small island developing states (UNCTAD/DITC/TED/2014/5). United Nations. https://unctad.org/webflyer/oceans-economy-opportunities-and-challenges-small-island-developing-states

Valuing Water Initiative. (n.d.). *Dordrecht*. https://valuingwaterinitiative.org/regions/dordrecht/

Venice Project Center. (n.d.). *Special law for Venice*. https://www.veniceproject.com/index.php/en/governance/special-law-for-venice

Vianello, R. (2021). *The MOSE Machine: An anthropological approach to the building of a flood safeguard project in the Venetian Lagoon. Shima: The International Journal of Research into Island Cultures, 15*(1). https://doi.org/10.21463/shima.104

Wenhai, L., Cusack, C., Baker, M., Tao, W., Mingbao, C., Paige, K., Xiaofan, Z., Levin, L., Escobar, E., Amon, D., Yue, Y., Reitz, A., Neves, A. A. S., O'Rourke, E., Mannarini, G., Pearlman, J., Tinker, J., Horsburgh, K. J., Lehodey, P., … Yufeng, Y. (2019). Successful Blue Economy Examples With an Emphasis on International Perspectives. *Frontiers in Marine Science*, *6*, 261. https://doi.org/10.3389/fmars.2019.00261