

**Waste**  
**Water**  
**Wonder**  
**(Land)**

Four symbolic landscapes for Montenegro  
pavilion at Venice Architecture Biennale 2018

(Land)



1. BIJELA



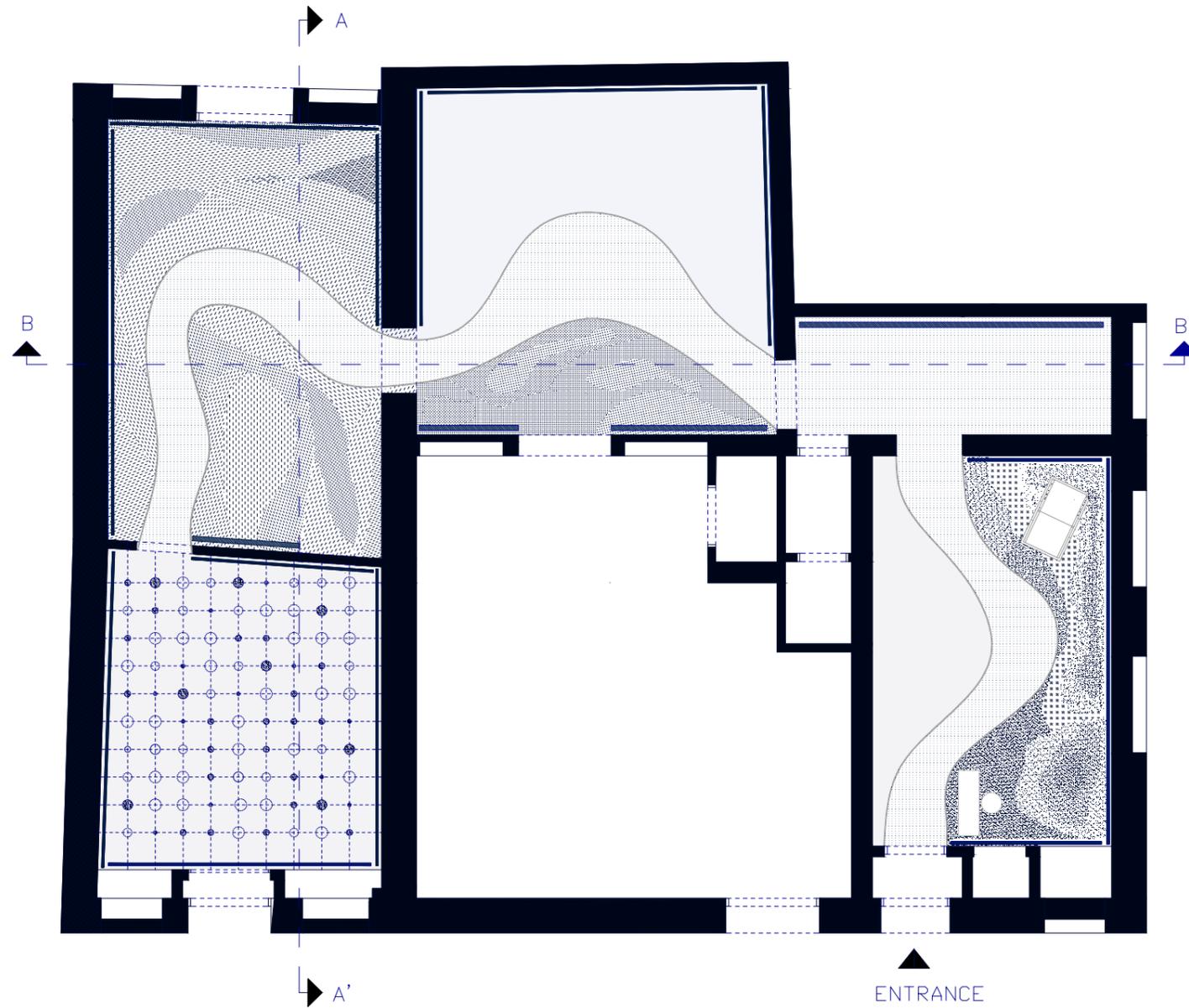
2. RIVER MORACA



3. KRALJICINA BEACH



PLAN 1:100

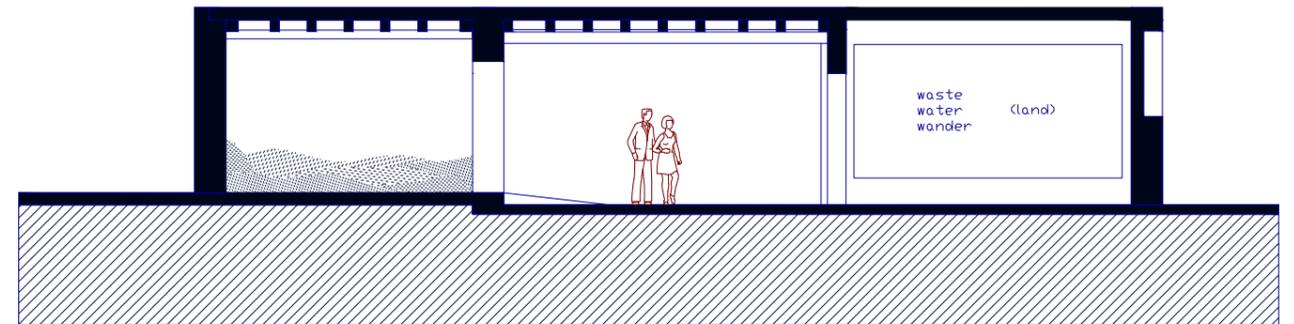
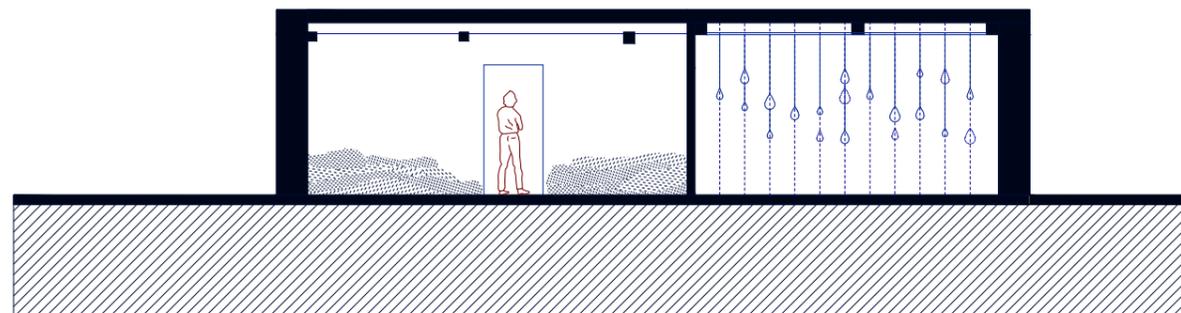


Starting from the data collected after a critical research on the topic, the exhibition aims to depict three main scenarios where the relation water-waste-landscape is highlighted by the symbolic and analytic representation of the most relevant case studies.

SECTIONS 1:100

SECTION A-A

SECTION B-B



(Land)



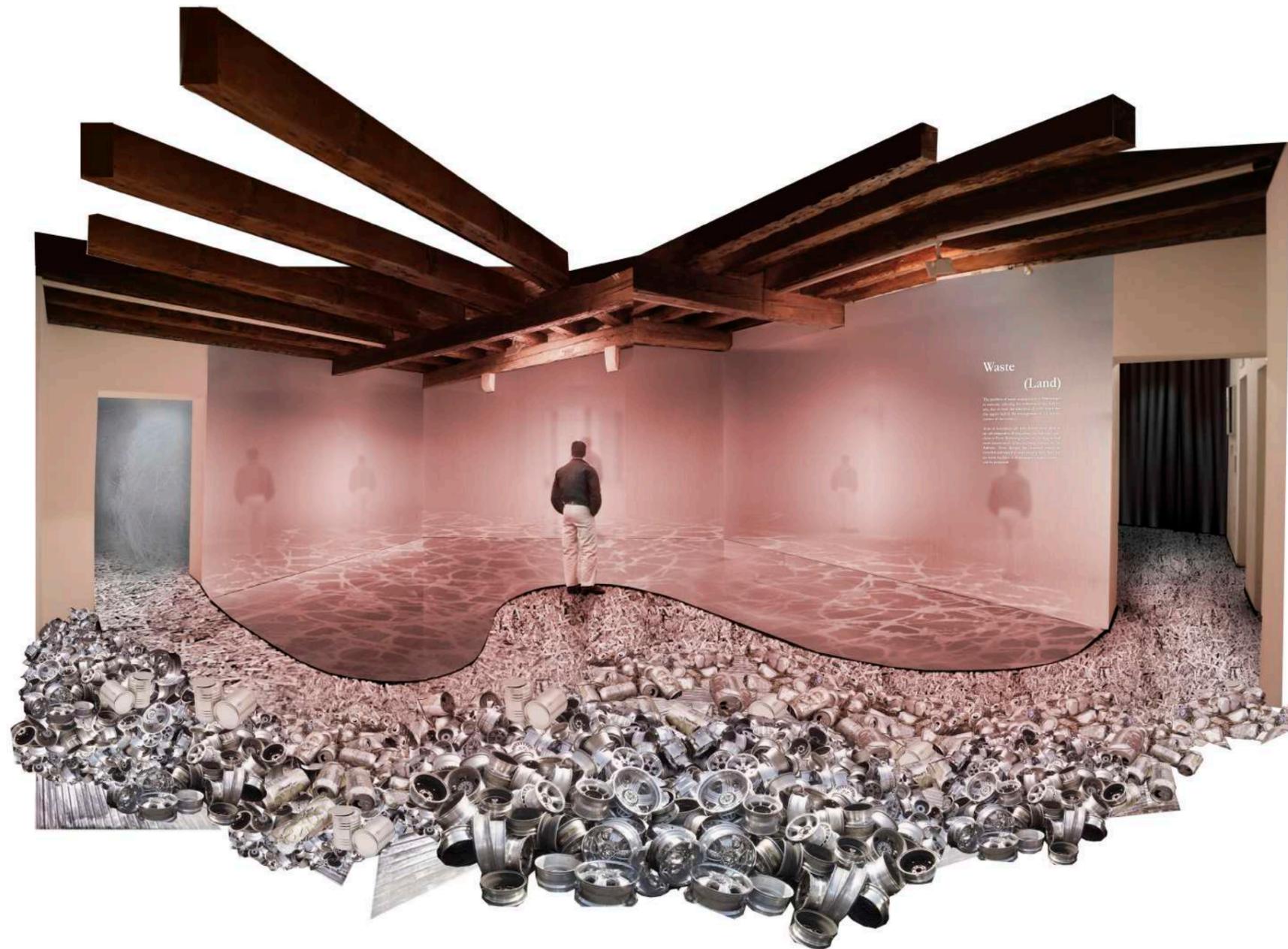
From beautiful coastal towns to enchanted mountains, from dramatic canyons to magical islands, Montenegro presents itself as a paradise for both nature and biodiversity. Water is not only the main component of the natural system that allows all these beauties to exist and to thrive, but also the propelling force that triggers the economy of the country.

However, the Balkan “Wild Beauty” is nowadays facing several problems related to waste management, that are increasingly affecting rivers, streams, lakes and the Adriatic coastline.

The primary aim of the exhibition is to highlight the importance of a fundamental aspect of Montenegro: the proximity to water. Water as an essential source that claims its value as Freespace within a natural and urban landscape contaminated more and more by the human presence.

The decision to design three symbolic landscapes made out of recycled waste aims to highlight the close relationship between water, waste and landscape. It is interesting to see how this simple relation can affect the ecological footprint and economy of an entire state. Through the use of rubbish and recycled materials, different kind of immersive water-related landscapes are created, in order to clearly show how even the most urgent problem can be transformed into a precious resource for the whole country. It becomes a fundamental responsibility for architects to invest time and resources to fully exploit the rights and benefits of water as value in Montenegrin cities, in order to influence the public perception and acceptance of the natural system, to preserve the environment, and to improve the quality of life of inhabitants.

(Land)



In general, almost every city in Montenegro is having problems with waste disposal due to the lack of an integrated waste management system, so that every municipality tries to solve the problem independently. At this regard, Montenegro is recycling only 5% of its waste, while the European average is above 50%.

The issues related to the waste management affects the accession process to the EU, so that the Montenegrin Government prepared an action plan in order to fulfill the obligation of recycling 50% of the total amount of waste by 2020. However, according to the EU requirements of environmental protection contained in Chapter 27, Montenegro is not yet ready to open a negotiation with Brussels, because of the production of industrial hazardous waste much higher than the amount accepted.

Moreover, in recent years, tons of waste have been spread into rivers and lakes, even nearby densely-populated towns, villages and luxurious sea resorts. Just outside Podgorica, for example, along the old post-Socialist foundry on Montenegro's main river Moraca, two huge water basins contaminated with hard metals, cyanide and tons of solid open-air waste, covered around 40 hectares with about 7 million tons of red mud (Natasa Kovacevic from local environmentalist group Green Home).

Such situations rise feelings of anger and skepticism among citizens, such as Veselin Vujovic that affirmed "We are somewhere between an ecological state and an ecological catastrophe".

According to these facts, the first exhibition room is named *Wasteland*. It claims to represent and transmit to the visitor the urgency of a pollution circumstance that becomes tangible through the violence of a red water basins surrounded by metal scraps of different kind.

(Land)



The problem of waste management in Montenegro is seriously affecting the pollution of the Adriatic sea, due to both the dismissal of solid waste and the urgent lack in the management of the sewage system of the country.

Tons of hazardous grit have indeed been piled in an old shipyard in Bijela, along the Adriatic coast, close to Porto Montenegro, one of the biggest and most luxurious of all the yachting marinas on the Adriatic. Even though the material could be recycled and reused in road construction, there are no waste facilities in Montenegro's region where it can be processed.

Moreover, the infrastructural network of sewers in Montenegro is limited to a low percentage of users, generally referred to a small nucleus of the city. About the 40% of the population in urban areas is not connected to the sewage system, so that most of the population uses septic tanks and collecting pits for the evacuation of black waters. In some inhabited areas, such as close to the well-known beaches of Kraljicina or the Great Beach of Ulcinj, black waters are directly released into the sea, worsening the quality of the sea water.

A sea made of waste is, therefore, the main character of the second exhibition room named *Waterland*, with the aim of letting visitors metaphorically drown in a water that the human presence have deeply contributed to contaminate.

(Land)

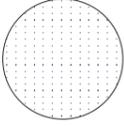
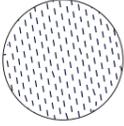
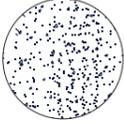
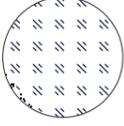
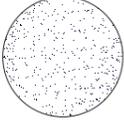
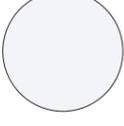
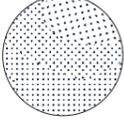
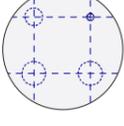
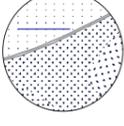


The dramatic abuse of Montenegro's region of its precious natural landscape and water basins, its Freespace, needs to be discussed in a wide debate involving government representatives and environmental experts in order to find urgent solutions and increase the awareness towards a possible sustainable development able to preserve and share the natural values of the Montenegrin territory.

Adequate analyses of water services, effective planning approaches and the active participation of administrative organisations and citizens can effectively contribute to a better perception and resolution of the issue. At the same time, the industry of recycling could significantly help to stimulate Montenegro's economy and accession to EU, as well as to get closer to the definition of a real 'ecological state'.

Therefore, the last room of the exhibition is dedicated to a Montenegrin territory made of enchantments and natural beauties is interpreted as *Wonderland*, a scenario where water plays an outstanding role as a source that needs to be admired, respected and preserved.

In conclusion, it is possible to state that the first step to solve a problem is to actively take part of it, so that the Montenegro's Pavilion Exhibition aims to let people use their bodies and senses in order to be part of the most tangible environmental issue of the country.

Symbol	Name	Aspect	Unit cost	Quantity	Total cost	Notes
	<i>Neutral pet yarn effect</i>		<i>1,050-1,130 EUR/mton</i>	<i>100 kg</i>	<i>100 euro</i>	<i>Material derived from production waste</i>
	<i>Minced white ABS</i>		<i>1,880-2,010 EUR/mton</i>	<i>1,5 m<sup>3</sup> 1590 kg</i>	<i>2800 euro</i>	<i>Recycled material for injection molding</i>
	<i>Minced transparent HDPE</i>		<i>1,100-1,200 EUR/mton</i>	<i>250 kg</i>	<i>275 euro</i>	<i>Recycled material derived from cisterns</i>
	<i>Minced blue HDPE</i>		<i>1,100-1,200 EUR/mton</i>	<i>250 kg</i>	<i>275 euro</i>	<i>Recycled material derived from fuses and bidons</i>
	<i>Minced neutral PC</i>		<i>700-1,200 EUR/mton</i>	<i>250 kg</i>	<i>175 euro</i>	<i>Recycled material derived from fuses and bidons</i>
	<i>PET bottles</i>		<i>1,050-1,130 EUR/mton</i>	<i>50 kg</i>	<i>50 euro</i>	<i>PET bottles before recycling</i>
	<i>Reflective sheet mylar tarp</i>		<i>3,00-4,00 eur/m<sup>2</sup></i>	<i>230 m<sup>2</sup></i>	<i>690 euro</i>	
	<i>Scarp iron</i>		<i>70-120 EUR/ton</i>	<i>1 ton</i>	<i>100 euro</i>	<i>Recycled material</i>
	<i>Polyethylene plastic bags</i>		<i>35€ 500 bags, 25x40cm</i>	<i>1 set</i>	<i>35 euro</i>	
	<i>Metal angular profiles</i>		<i>7€/m 30x30mmx2mm</i>	<i>80 m</i>	<i>500 euro</i>	
	<i>Wall sticker Printed on PVC</i>		<i>16€/m<sup>2</sup></i>	<i>20 m<sup>2</sup></i>	<i>320 euro</i>	

**TOTAL COST OF INTERVENTION:  
5320 EURO**

The design of the rooms was developed by choosing recycled materials. Almost three quarters of the total cost are absorbed by recycled materials. The entire exhibition path takes place on a totally recycled plastic material that recreates a gravel effect. The landscapes that follow each other in the rooms have been created with minced plastic materials or plastic bottles for which recycling is provided. In the red room, the ferrous material is also recovered. Regarding the reflecting surface and the other materials used, the decision to find low-cost materials was made in order to further reinforce the idea of recycling and the wealth of re-use materials to protect the environment.

