rzm 2023
SUSTAINABILITY REPORT

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RZM Collective is working towards the creation of a festival model that is 100% sustainable. That is, a festival with a zero ecological footprint and without future environmental repercussions. For this reason, in the 2023 edition, we have endeavoured to measure our ecological footprint. In order to do so in the most precise way possible, with this report we analyze the results and strategies applied to the festival from four vectors: energy, water, materials, and waste. **This document aims to be the starting point of a practice where year after year we evaluate ourselves for our progress towards sustainability.**

Today, humanity is confronted with an ecological crisis, coupled with a crisis of resources that requires a unified response from both individuals and organizations. For this reason, RZM collective defends that **festivals must be defined as a harmonious balance between free human expression, the promotion of culture and environmental protection.**

Therefore, **this sustainability report has the mission of analyzing the ecological** footprint that the RZM festival has produced in the 2023 edition, with a main objective: the search for a festival model that is sustainable with the environment over time.

Festivals are spaces that become platforms for cultural communication, that awaken emotions in attendees; new human links are created, experiences are lived away from everyday life, and moments that will be remembered for a lifetime. Thanks to these emotional bonds that can be generated, we believe that these events are a good place to transmit values of sustainability and respect for the planet. **Therefore, as RZM Collective, we want to turn this responsibility into a motivation to do things better and thus advance into the ecosocial transition.**

On the other hand, the RZM festival was born from the will of decentralizing the culture of established epicentres - urban centers - to be located in the rural world. **This decision allows us to explore ways to promote culture coherently, in touch with the environment.** By moving to a forestry farm, we seek to create an ephemeral cultural ecosystem that is sustainable for the environment in which we place ourselves. The space, located between the banks of the river Ter and the town of La Cellera de Ter, does not have an electricity network, drinking water network or sanitation network. The physical context in which we find ourselves challenges us to generate a space that can accommodate a respectful framework for artistic creation, a framework which can foster relationships between artistic creation and the ecosystem in which it is located. The main challenge lies in damaging the environment as little as possible, allowing us to produce future editions of the festival with the same environmental quality. It is to achieve this absolute respect for the place where the festival takes place that during the festival, an ephemeral community is created with a minimum consumption of resources, a minimum generation of non-biodegradable waste and minimum water pollution.

We maintain the confidence that initiatives such as this self-assessment, together with the dissemination of strategies, gradually brings us closer to

achieving this transcendental objective for the well-being of the planet and future generations. In addition, it should be remembered that the public institutions have begun to move in this direction. Within the framework of the **European Green Deal, the EU strives to become the first climate-neutral continent, with the aim of reducing net greenhouse emissions by at least 55% by 2030**, compared to 1990 levels, and becoming climate-neutral by 2050[1].

Faced with the urgency of an ecological crisis and the need to make an ecosocial transition, the RZM Festival organization emerges as a promoter of the change we have to face. With the commitment to achieve full sustainability, we share the first steps in reducing our ecological footprint and we trust that these documents, which we will be generated for each edition of the festival, will serve as a logbook towards the challenge of creating a totally sustainable festival. With this vision, we aspire to contribute to the well-being of our planet and to create a positive environmental heritage for future generations.

Guille Pouplana
Sustainability and Resourcer Manager

1. Siddi, M. (2020, MAY). The European Green Deal [Assessing its current state and future implementation]. In FIIA WORKING PAPER 114. FINNISH INSTITUTE OF INTERNATIONAL AFFAIRS.

energy
water
materials
waste

To celebrate a festival, energy is required. In the 2023 edition, we set ourselves the challenge of quantifying the energy used during the event, dividing it into two categories: the operational energy, necessary to carry out the festival; and the transport energy, which encompasses the energy consumption of attendees, artists and production to arrive. Apart from counting energy in kWh, we also wanted to count CO2 emissions in kg to be able to relate our energy consumption with our energy footprint.

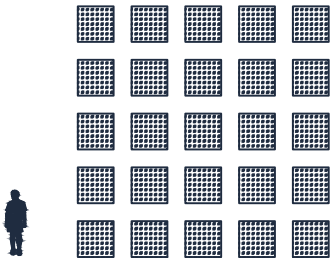
The total consumption of RZM 2023 festival was 24,093 kWh. Of these, 7.28% (1,972 kWh) was operational energy and the remaining 92.72% (22.339 kWh) was intended for transport. On average, each attendee of the 2023 edition (we were 467 people) consumed **51.6 kWh.**

To provide a perspective of the magnitude of this figure, and to be critical of what we have consumed, we will try to give physical dimension to energy. In order to do it in a simple way, we will relate it to the surface of solar panels that we would need to produce the energy consumed in the festival. A solar panel produces about 1.5 kWh per square meter per day. To cover the energy consumption of each assistant we would need a surface of 34.4 m^2 of solar panels and for the entire festival an extension of 16.062 m2. This exercise of surface comparison with solar panels does not aim to become an alternative for energy production, but to be able to understand the size of the energy that the festival has consumed.

With regard to the energy footprint produced in RZM 2023, **our CO_2 emissions amount to 6,096 kg of CO_2 released into the atmosphere.** In other words, each RZM assistant has generated 12.80 kg of CO_2. If we compare ourselves with the emissions of other festivals, we generate proportionally 51% less than the average, since, on average, festivals emit 25 kg of CO_2 per attendee [1]. Let us remember that the **European Green Deal aims to**

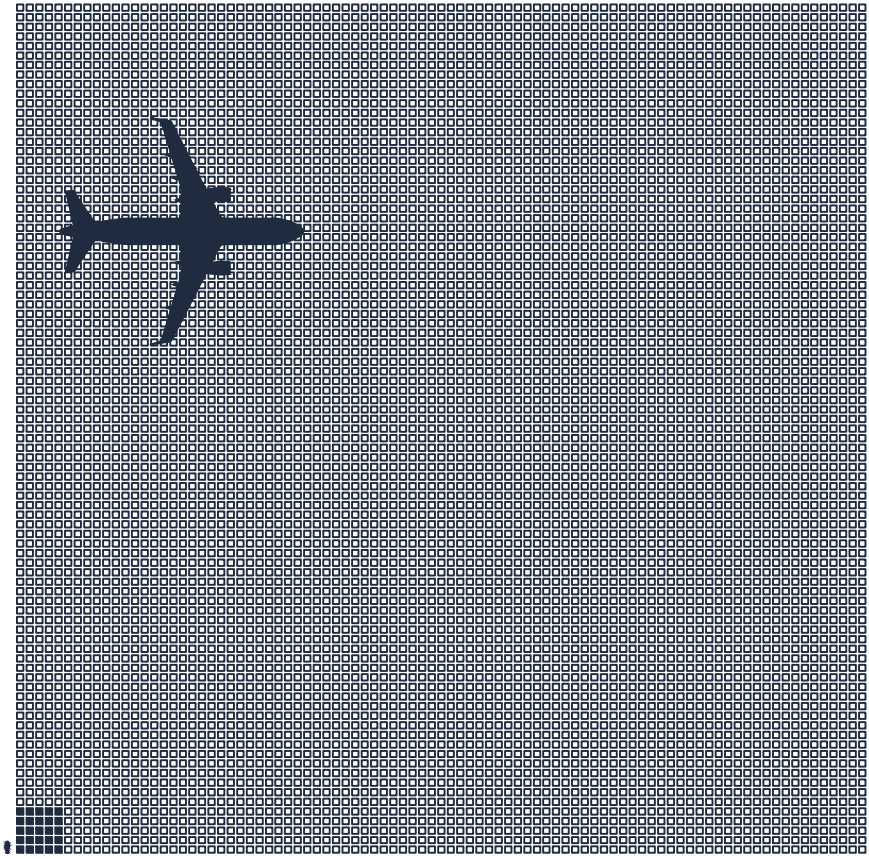
Consumption by assistant: **51,6 kWh**

Energy Surface



Energy surface for assistant: 34.4 m²

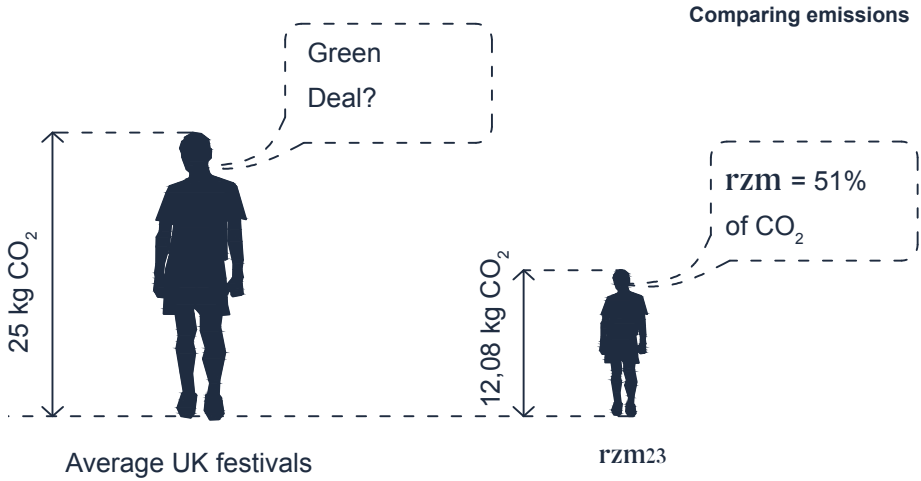
Total consumption RZM 23: 24.093 kWh



Energy Surface RZM 23: 16.062 m²

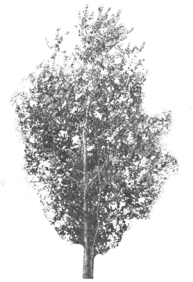
reduce net greenhouse emissions by at least 55% by 2030.

On the other hand, and in order to understand the magnitude of the emissions produced at the festival, we wanted to calculate the amount of trees we would need to be able to re-fix that CO_2. In order to remove all this CO_2 from the atmosphere and reintroduce it into the biosphere, we would need



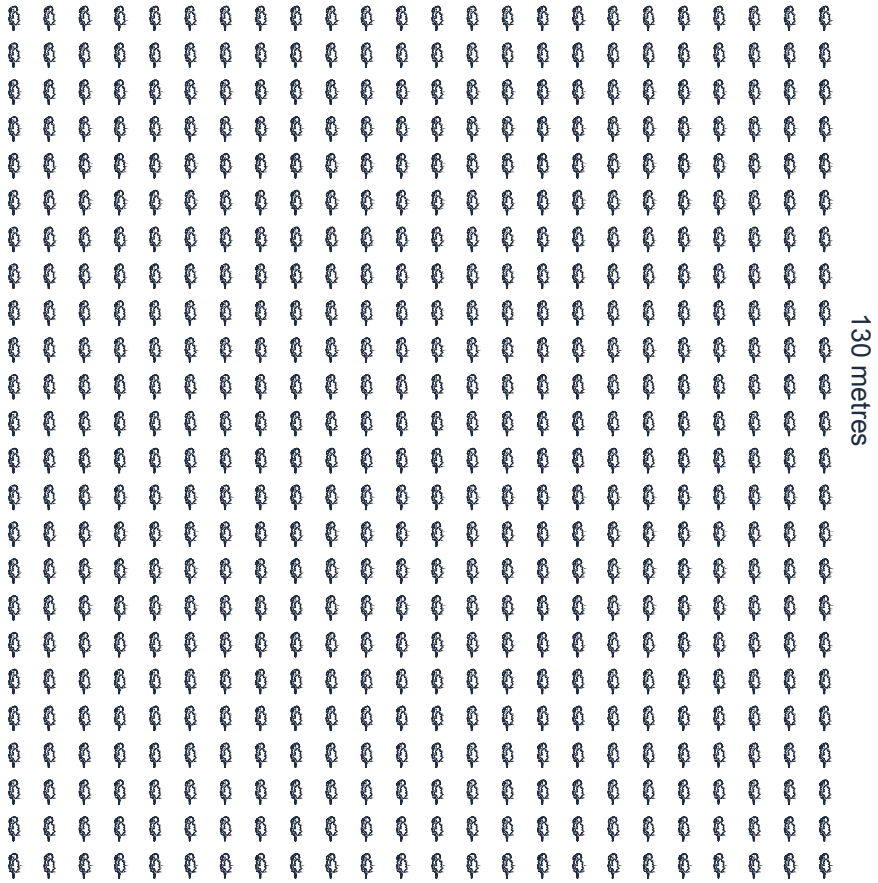
a total of 550 trees capturing CO_2 for a year. Related to this theme, and already mentioned in the prologue, the festival is held in a forestry farm made up of poplars (Populus Alba). This operation consists of 15,113 poplars and each poplar annually captures 11.71 kg of CO_2 [2]. In other words, every year, in this exploitation, 176 tonnes of CO_2 are captured, the equivalent of 30 RZM festivals.

To understand the margin for improvement and optimize the future festivals



Populus Alba annually captures 11.71 kg of CO_2

To re-fix all the CO_2 produced by RZM 23 we need a total of 550 white poplars for a whole year.



130 metres

130 metres

1. Bottrill, C., Liverman, D., & Boykof, M. (2010). Carbon soundings: greenhouse gas emissions of the UK music industry. ENVIRONMENTAL RESEARCH LETTERS, 5(5), 8. 10.1088/1748-9326/5/1/014019

2. Serrada, R., & Montero González, G. (Eds.). (2008). Compendio de selvicultura aplicada en España. Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria.

we will hold, we have analyzed the diversity of forms of energy consumed during the event. Of these types of energy, there are some that can be produced in a more sustainable way, such as electric energy, or, on the contrary, some forms that represent additional challenges such as thermal or kinetic, since to cook or move we still use mostly fossil energy sources which emit CO2. That said, the distribution by type of energy at the festival was divided as follows:

-The electrical energy: which was produced through a 40 kVA electrogen group that consumed a total of 136 liters of diesel. This was mainly used to provide lighting, speakers, refrigerators and other appliances, with a consumption of 1,281 kWh **(5.32%).**

-Thermal energy: which was produced through the combustion of butane gas. In total, almost three butane cylinders were consumed. This energy that was used only to cook food meant a total of 474 kWh **(1.96%).**

-Kinetic energy: to transport us, which was consumed by the transport of production, artists and attendees brought a total of 22,339 kWh **(92,72%).**

In the light of this distribution, it will be crucial to explore strategies and practices that minimise the impact of energy associated with transport in the coming editions. In this sense, as an organization we can promote sustainable mobility models, but it is the assistant who has the last decision. **Where we hold 100% decision power is in operational energy.** Although it represents a small fraction of the festival, it is where we have all the responsibility, and turning it into 0 emissions is our goal.

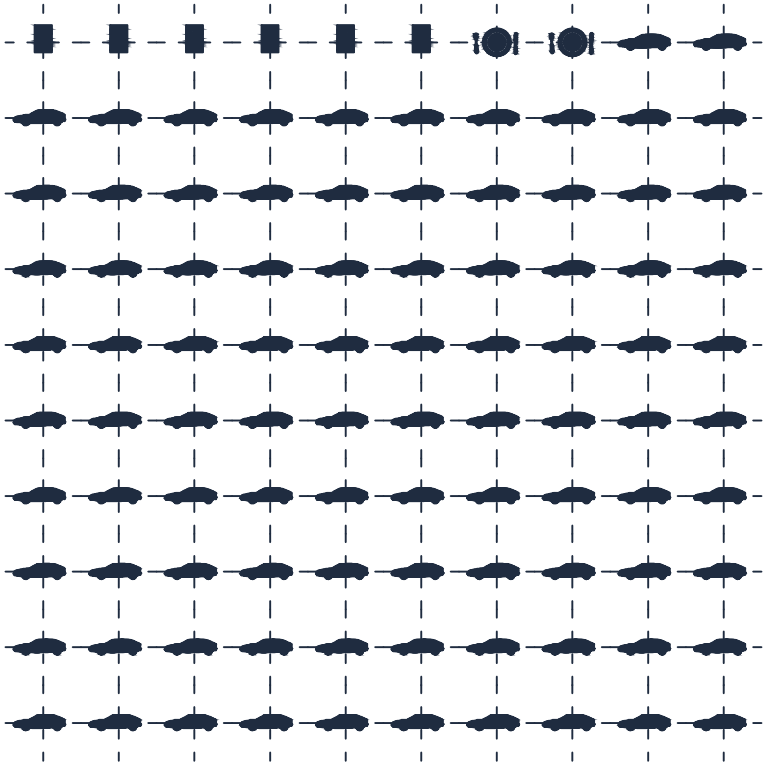
Division of energy consumption

Electrical energy: 1,281 kWh (5.32%).

Thermal energy: 474 kWh (1.96%).

Kinetic energy: 22,339 kWh (92,72%).

Proportional division of energy consumption



energy
water
materials
waste

RZM is held in La Cellera de Ter, a town located in the basin of the river Ter in the region of La Selva (Catalonia). As of February 2024, many populations located in the Ter basin are in a state of emergency and risk due to the drought situation, with reductions of up to 40% in the use of water for agricultural purposes [1]. In this context, it is clear that water is a key element to achieve the ecological sustainability of any project. Knowing how much water we have consumed and how allows us to judge our use of water and assess our efficiency.

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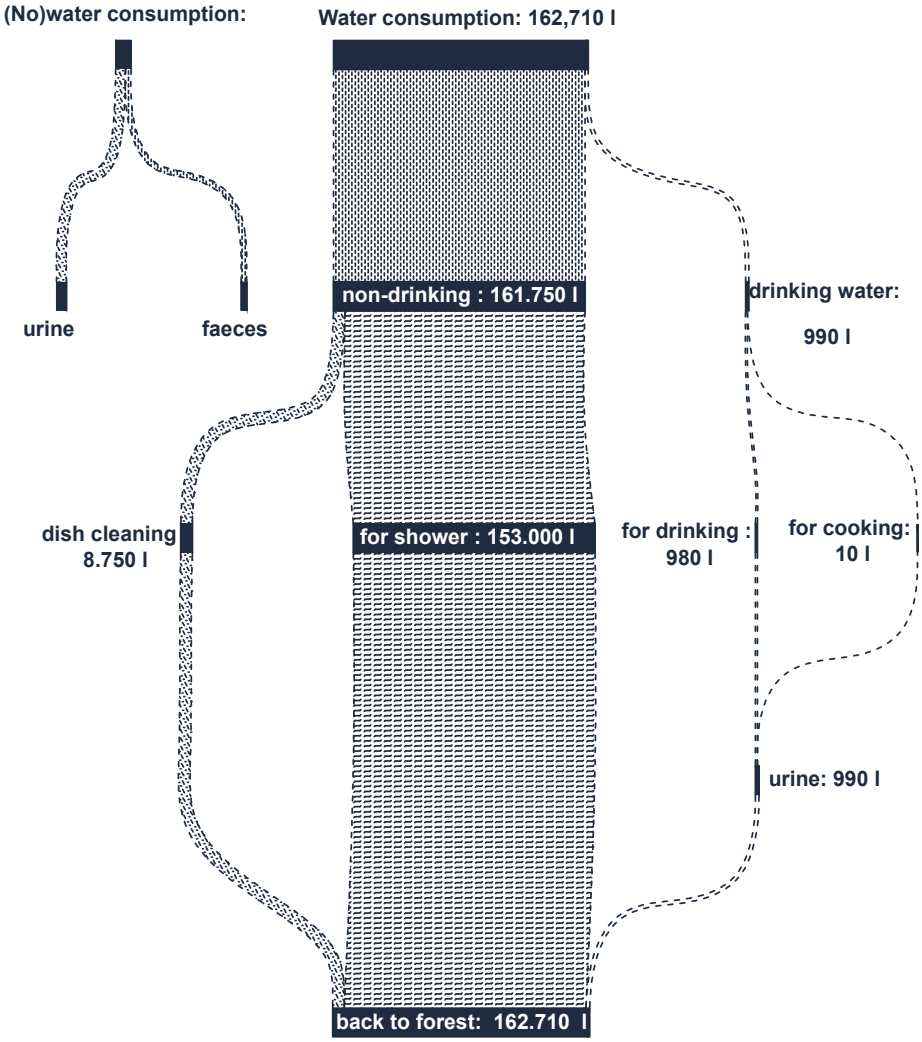
To reduce water consumption at RZM festival in 2023, we established the strategy of separating our water demand according to the different uses of the festival. This strategy allowed us to divide water into three large groups according to its consumption:

1. Drinking water consumption: This group includes all water intended for direct consumption, whether for drinking or for food preparation. We guarantee that only drinking water is used for cooking and keeping attendees hydrateted. The total drinking water consumption at the RZM 2023 festival was 960 liters

2. Consumption of non-drinking water: This group includes all the water for cleaning tasks, such as showering, washing dishes, cutlery and glass-

Water flow:



1. Visor de la Sequera. (n.d.). Visor de la Sequera. Retrieved December 10, 2023, from https://aplicacions.aca.gencat.cat/visseq/estat-actual

es. This non-drinkable water is sourced from an irrigation canal. What we have done with this water is to use it as water for washing the organic matter of the dishes, glasses and our bodies. Subsequently, we have filtered it (only large particles) and oxygenated to reuse it to water the poplars. In this way, through the use of this water for cleaning tasks, we have enriched it with organic matter to fertilize the trees. In addition, this water is gradually reintroduced into the aquifer. Thanks to this, we have achieved a balance of water consumption for cleaning tasks of 161,750 litres consumed. These 161,750 litres have been used to irrigate the farm and have therefore been reintroduced into the aquifer. Consequently, the final balance of water consumption as a cleaning vector per person is 0 liters.

3. No water consumption: This category includes all the water we have saved. We have achieved this saving by implementing dry toilets, that is, toilets that do not need water to work. Thanks to this, we have obtained a balance of water consumption for the evacuation of excrements of 0 liters, hypothetically saving us 18,160 liters.

The results show how this division has allowed us to optimize water consumption based on its use, we have stopped consuming a total of 179,910 liters of water. Of these 179,910 liters, hypothetically, 161,750 would have been used as a cleaning vector: 153,000 liters of water for the shower and hand washing of the attendees; and 8,750 liters for the washing of the dishes.

On the other hand, the use of dry toilers alows us to reduce water consumption to zero to evacuate feces and urine, thus avoiding water pollution. This practice is believed to have hypothetically allowed us to stop

using 18,160 liters of water (three visits to the bathroom per attendee). In addition, as is known, excrements and urine are carriers of macronutrients for plants such as nitrogen (N), potassium (K) and phosphorus (P), which are necessary for forest growth [1]. By installing dry toilets and avoiding toilet flushing, we convert the waste of the attendees into fertilizer for the trees. In short, the result of this strategy is to turn a waste that pollutes water into a raw material for the forest.

Had we not carried out these strategies, RZM would have consumed and therefore contaminated a total of 179,910 litres, sending all this water indiscriminately to a wastewater treatment plant. That is, each person would have had a final balance of 346 liters of water, 173 liters per day per attendee. To give us an idea of all the water that we have stopped sending to the drain, it is the same as 1383 people consume on a day [1].

Thanks to this way of classifying water uses, the consumption of drinking water per assistant has been only 2 liters of water, well below the 130 liter average which the Catalan Water Agency estimates per person and day [1].

Excrement and urine are carriers of macronutrients for plants such as nitrogen (N), potassium (K) and phosphorus (P), which are necessary for forest growth

1. Galán, E., Tello, E., Garrabou, R., Cussó, X., & Ramón, J. (2012, enero-diciembre). MÉTODOS DE FERTILIZACIÓN Y BALANCE DE NUTRIENTES EN LA AGRICULTURA ORGÁNICA TRADICIONAL [LA BIORREGIÓN MEDITERRÁNEA: CATALUÑA (ESPAÑA) EN LA DÉCADA DE 1860]

Related to the previous chapter, it should be noted that in order to purify 1000 liters of water, around 0.42 kWh [2] are consumed. Reducing 179,910 liters of water consumption during the festival allows us, as a society, to save energy. This means that the festival has saved 75.96 kWh for water purification, which is equivalent to 50 m2 of solar panels.

1. Agència Catalana de l'Aigua. (2019). Saps quanta aigua consumim? Generalitat de Catalunya Departament de Medi Ambient i Habitatge.

2. Martínez Cebrián, N. (2019). CONSUMO DE ENERGÍA PARA LA DEPURACIÓN DE AGUA EN ESPAÑA.

energy
water
materials
waste

One of the fundamental pillars of RZM as a festival is the creation of an ephemeral cultural ecosystem. This ecosystem is defined as a cultural environment with a limited time duration, specifically designed for a specific event that is held during a certain period. This transient nature implies an inherent temporality which is reflected in the materiality of the festival.

This transient nature implies an inherent temporality which is reflected in the materiality of the festival

This fleetingness is also applied to the materiality of the festival, as we pursue a festival construction that emphasizes the life cycle of the materials we use. This perspective promotes the responsible and sustainable use of the facilities needed for the realization of RZM. For this reason, all the festival facilities are built with reusable, recycled or recyclable materials. in order to minimize waste after its use.

To build a festival like RZM, a whole series of objects and artifacts are needed that give the forest a temporary habitability. Obviously, it is key at the time of its design, the rule must always be: to offer maximum habitability with the minimum of resources, to be as optimal as possible. In this sense, it is crucial to extend this useful life to the maximum in order to minimize the environmental impact associated with its construction and use.

To remain in line with our topic, a key concept we value is the ecological footprint. This consists of relating the amount of raw materials that have been necessary to build an object with its social impact. To do this, the total amount of resources necessary for the manufacture of the object must be divided between the number of times it is used. For example, if a stage is built and throughout its useful life only is only used by a musician with a total audience of one assistant, the ecological footprint of that stage is divided between two people. This results in a high footprint per person. Otherwise, if the stage is used countless times with infinite numbers of music groups and attendees, the footprint is divided among many people, reducing the amount of resources per person necessary to offer the same show. With this formula, it is easier to understand the ecological impact of an object. Therefore, it is important that the festival is executed with materials that have low ecological footprint.

All the festival facilities are built with with reusable, recycled or recyclable materials.

Regarding the use of materials, we consider that all the objects and artifacts necessary to build the festival can be classified into three large groups: first, ephemeral constructions such as stage, bar, showers, dry toilets and chill-out areas. Secondly, technical elements such as wiring, lighting and sound, which allow to cover technical needs; and finally, the pieces of visual art exhibited during the festival.

With regard to all the technical elements, which include sound, light and electricity, all were hired. This decision, which is the most logical in the field of physical and economic resources, allows us to affirm that its footprint is low, since it is divided between all the shows that these elements have been used. Obviously, rental companies optimize that objects are used to the maximum throughout their useful life. This makes RZM able to divide its ecological responsibility among other events. This reflection invites us to think that, in order to be sustainable as a festival that is held once a year, we must try to rent as much as possible.

Ephemeral constructions were mostly built with materials from other editions such as wood, fabrics and strings.

As for ephemeral constructions, they were mostly built with materials from other editions such as wood, fabrics and ropes. All the new materials acquired by the last edition of the festival were saved during the dismantling to continue using them. Thus, its footprint is divided between more attendees and artists.

As a novelty, this year, due to the growth of attendees and the need to make a bigger stage, we decided to rent the stage to the cultural association “El Pumarejo”, thus reducing the amount of resources necessary for ephemeral constructions.

Finally, and with reference to the visual arts on display, its raw material were made from waste and recycled materials. This decision is not a random one, since by promoting art built with recycled materials, we are creating a framework of artistic creation with negative raw materials consumption. In other words, we convert waste into raw materials and not raw materials into waste, as we normally do. In this report, we consider it necessary to add the explanation of the artists themselves, explaining the piece from this perspective.

CRISÁLIDAS

The installation that arose for the RZM Festival was born from the process of dialogue with materials and space. For years I have been creating an archive of fabrics composed of sheets, tablecloths, old paintings, fabrics manipulated with molding processes, buried, cutbacks and remains of clothes returned by the tide of the sea, discolored by the sun, inherited clothes. This forms a textile collection that acts as self-referential elements of each of the experiences in the places where they were found.

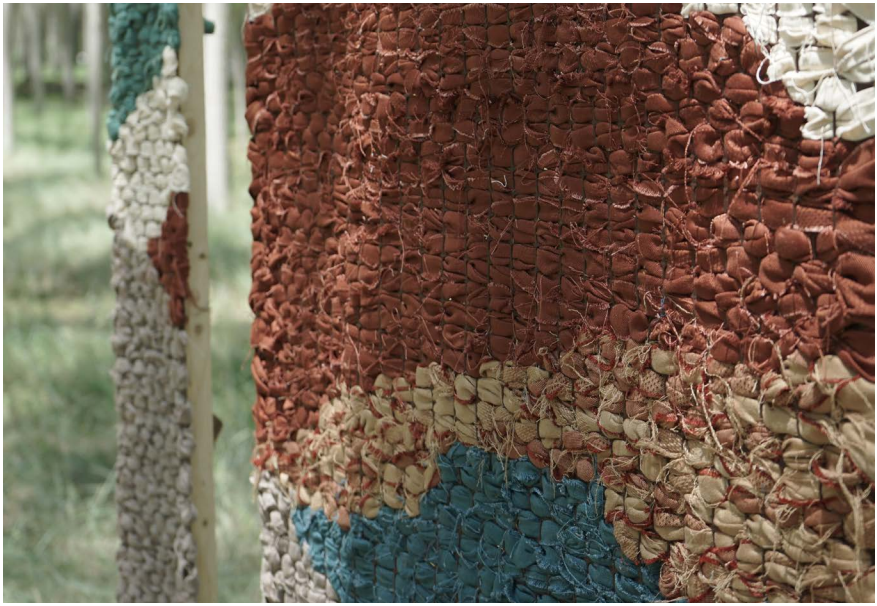
In this installation, the fabric ceases to be rigid and tense and approaches the material from its fragility and vulnerability, exploring different devices for installing fabrics in space, new forms of exhibition and new modes of interaction with the spectator to create a more participatory and sensory experience.

CARLOS HERRAIZ

ENTRELLIC

“Entrellic is a tapestry that experiences new forms; it is born from the need, or the opportunity, to give life to materials that have already become obsolete according to companies or people, eventually transformed into waste. An experimental tapestry that uses textile waste, to weave the composition and a gardening mesh, abandoned in the river bank, used as a structure. In this case, the textile company Gancedo collaborated with RZM to give a second life to the fabrics that gradually remain out of stock. From this material a selection of colours was made to create a composition inspired by the environment where the festival was held, a space between the organic shapes and the geometry of a tree garden.”

BERTA COTRINA



energy
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materials
waste


Golden Braak

Waste management and applied strategies aim to minimise the festival's ecological footprint. That is why, as a festival, we seek to generate zero waste; a task difficult to achieve but not impossible. The reduction of consumption of raw materials, as well as the preferential use of biodegradable materials, constitute the two main strategies that we implement at RZM. Through this approach, we aim to generate as little waste as possible, thereby contributing to the preservation of the environment and the promotion of more sustainable practices.

To begin with, we have carried out a systematic classification of waste into two clear categories: organic and inorganic. Within the organic group, we have included all the waste related to food, paper and cardboard. As for the inorganic group, we have included materials such as plastics, glass and aluminium. This subdivision facilitates its subsequent management and contribution to the most effective practices in terms of recycling and waste reduction.

This division has given us the ability to take full responsibility for organic waste. At RZM festival, we assure our attendees that all organic waste is converted into fertilizer for the forest, through the process of converting organic matter into compost. In this way we can ensure that in all organic waste they become raw material ensuring a closure of the material circle in the same forest.

On the other hand, as we cannot manage inorganic waste (mostly plastic, glass and aluminium), we have been very rigorous when it comes to classifying them to ensure that the waste managers of La Cellera de Ter, can do it in the most efficient way. What we can do is reduce the consumption of inorganic waste. To carry this out, we have executed a series of strategies

that we cite below:

All drinks were served in the same plastic glass throughout the festival. Each ticket includes a plastic glass for multiple uses. For this reason, we are also responsible for cleaning them. All the water was served in each attendees own plastic glass, and thanks to this policy we saved buying 3,253 disposable plastic bottles. We also served a total of 3450 beers, spirits and wine in these same glasses.

All the meals were served in ceramic plates and leased cuttlery, allowing the waste to be reduced to almost zero with regards to food. This strategy has allowed us to save 1455 dishes and 2910 disposable sheds.

To assess the effect of these strategies, we have done the exercise of calculating the amount of plastic that we have saved. If we agree that a plastic plate weighs 7.1 grams, a set of cover 7.7 grams, a glass 10.1 grams and a 33 cl plastic bottle 15.3 grams, we can affirm that we stopped generating 105.27 kg of plastic thanks to these strategies.

We are aware that the time of disassembling the festival is the most prone to generating waste, since it is easier to classify waste wrongfully. For this reason, a careful exercise of classification was carried out during the disassembly of the festival, separating all the constituent elements in the following categories in order to re-use them in further editions: wood, keys, strings, fabrics and other elements. This way, we can use all these materials again, dividing their footprint, saving consumption of raw materials, and reducing waste production along the way.

Plastic saved:

x 1455  **Plastic plate**
7.1 grams

x 2910  **Cutlery**
7.7 grams

x 3450  **Cup**
10,1 grams

x 3253  **33 cl bottle**
15,3 grams

Total: - 105,27 kg plastic

conclusions

CONCLUSIONS

We face the urgent need to change our habits in order to ensure the sustainability of our planet and guarantee a better future for for the coming generations. It is for this reason that RZM Festival emerges as an advocate of ecosocial transition. With the analysis of its processes and the implementation of sustainable practices, the festival has shown that it is possible to organize cultural events which reduce the ecological impact. From the significant reduction of energy and water consumption to the integral management of materials and waste, RZM Festival has not only committed itself to being part of the solution, but has reaffirmed that sustainability is fundamental to its way of thinking and operating.

Despite the significant progress that has been made, it is important to recognise that there is still a long way to go. The transition to complete sustainability is a continuous and dynamic process that will require the collaboration of all the actors involved, from organization to artists to attendees. It is essential to continue exploring new ways of optimising existing practices, designing solutions in dialogue with nature and promoting a culture of environmental responsibility in all areas of the festival. We must therefore remember that work for a more sustainable future is a long-term commitment that requires constant dedication and determination.

In short, the RZM Festival is not only a cultural event, but a tangible manifestation of the power of human collaboration and determination to protect our planet. With each edition, the festival reminds us that, despite the challenges we face, we have the potential to transform our relationship with nature and create a more sustainable world for all. It's through the commitment towards sustainability where the benefits of an environmentally-conscious cultural framework await us.

rzm

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