

Bachelor's Programme in Design

# Low-tech for Music Festivals

A European exploration of alternative approaches and tools for socio-environmental event design

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## Abstract

In the face of growing concerns about the environmental impact of human activities, Music Festivals have increasingly been pointed out as noteworthy contributors to climate change (energy, water, and food consumption). However, the will to develop culture and art through music events should not forget its environmental impact of its activities. Previous papers and organizations have analyzed the different techniques for organizers, participants, artists, and managers to lower the impact of their field. Indeed, it is necessary to understand how to do so. Therefore, this thesis conducts qualitative research involving interviews with festival organizers to discover the benefits of socio-environmentally focused alternatives. On one hand, it conducts a more in-depth exploration of the Low-tech innovations for lighting, infrastructure, and scenography. On the other hand, it dissects the alternative approaches to organize a music festival (Localized and Mobile festivals).

This study provides an overview on the issues of Music Festivals, the importance and power of such practice, and interlinking topics about durable partying and community building. Indeed, Music Festival organizers should partake in repurposing materials or hacking “outdated” equipment (video projector), building low-energy electric systems with optimized stage design, and tools for transportable live performance (bike trolleys). This thesis concludes that, similarly to the Low-tech philosophy, Music Festivals should be decentralized, favoring localism and cultural outreach, reducing their audience capacity, and most importantly raising awareness and changing social norms. As a result, Music festivals become experimental platforms for durable alternative community building and societal organization.

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**Keywords** Low-tech, Music Festivals, Sustainable Event Design, Degrowth

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## **Preface and Acknowledgements**

This paper resulted from my great passion for social gatherings and music. It also probably came from the wonderful experiences that I had in small festivals and intimate events, as well as the ideas that emerged from the ones that were badly organised. I find fascinating, the social cohesion and atmosphere that this practice promotes to the participants, while seeing the potential of it. However, as I was saddened by the purposeless large-scale events of today, the ones focusing too much on music and consumption. I felt like the concept of Music festivals was summarized to such a small definition. Thus, learning about the work of optimistic professionals in the Low-tech and of the various approaches of independent activist festivals, made me want to share it to others.

I would first like to thank my friend Noah, who supported me through the writing and the research of this thesis but also for sharing similar opinions about the socio-environmental aspect of Music Festivals. As well as my family who kept on pushing me to work harder and the emotional help of my colleagues, and friends.

Thank you, to the professionals who were willing to orient me in an useful direction. To SlowFest, Organic Orchestra, and Waking Life who made the research easier by sharing and documenting their efforts, and for the time and details given in the interviews.

Finally, a big “Thank you!” to my thesis tutor and advisor Namkyuu who gave me important and necessary aspects of reflection and feedback through this research exercise.

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## Table of content

Abstract .....	3
Preface and Acknowledgements .....	5
Table of content .....	7
Table of Figures.....	9
Abbreviations.....	10
1 Introduction.....	11
1.1 Context.....	11
1.2 Definitions .....	12
1.3 Research questions.....	13
1.4 Structure of thesis .....	13
1.5 Goal .....	14
2 Literature review .....	15
2.1 Environmental impact of Music Festivals.....	16
2.2 Social impact of Music Festivals .....	20
2.3 Existing solutions for the main issues of festivals .....	24
2.3.1 Electricity consumption .....	27
2.3.2 Food and drinks.....	28
2.4 The Low-tech approach to Music Festival.....	29
2.4.1 What is Low-tech ? .....	29
2.4.2 The field's ecological transition .....	32
2.5 Documentation and Open-sourcing.....	36
2.6 Eco-conception and eco-scenography.....	36
2.7 Concluded knowledge-gap.....	38
3 Research method.....	39
3.1 Data collection (pre-interview) .....	40
3.2 Data collection (conducting interviews) .....	41
3.3 Data analysis .....	43
4 Findings.....	46
4.1 The approaches for sustainable festival organization .....	46
4.1.1 Mobile festivals .....	47

4.1.2	Public engagement .....	50
4.1.3	Cooperation and co-creation.....	53
4.1.4	World-building .....	55
4.2	The alternative tools for sustainable festival organization .....	57
4.2.1	SlowFest: a mobile festival .....	57
4.2.2	Organic Orchestra: a mobile live art organization .....	60
4.2.3	Visiophare: Low-tech visual art and mapping.....	64
5	Conclusion .....	68
	References .....	73
	Appendices .....	81
	A. Interview email example .....	81
	B. Codebook.....	81

## Table of Figures

Figure 1: Shares of the 540,000 tCO <sub>2</sub> emitted by the music industry in 2007. (Bottril et al, 2008)	17
Figure 2: Comparison of the categories of impact in Music Festivals. (Shift Project, 2021)	19
Figure 3: Percentage of tCO <sub>2</sub> e emitted by audience of a Music Festival's transport modes. (Shift project, 2021)	20
Figure 4: The different values of festivals. (Getz et al, 2018)	22
Figure 5: The different perspectives of the value of festivals. (Getz et al, 2018)	22
Figure 6: The key themes and variables of Social Sustainability.( Weingaertner & Moberg, 2014)	23
Figure 7: The saved tones of CO <sub>2</sub> e, by the different scenarios to decarbonize the culture. (Shift project, 2021)	27
Figure 8: Comparison of average demand for stage subsystems (Marchini, 2013)	28
Figure 9 : Comparison of GES Emissions in kg CO <sub>2</sub> eq between returnable glass bottles and single use recycled glass bottles through their life cycle ( <a href="https://www.brasserie-meteor.fr/uploads/docs/bb0d5234e6a42565bb01fbe24d23f456.pdf">https://www.brasserie-meteor.fr/uploads/docs/bb0d5234e6a42565bb01fbe24d23f456.pdf</a> )	29
Figure 10: Table of criteria for Low-tech designs. (Martin, A. et al, 2022)	31
Figure 11: Research Framework for this thesis	39
Figure 12 : Highlighting initial patterns and concepts in transcript	44
Figure 13: Underlying keyword of the highlighted text	44
Figure 14: Codebook layout	45
Figure 16: Technical component image of the Biclou (150 persons capacity) Source: <a href="https://SlowFest.org/">https://SlowFest.org/</a>	58
Figure 17: Technical component image of the Big Mama (250 persons capacity) Source: <a href="https://SlowFest.org/">https://SlowFest.org/</a>	59
Figure 18: Technical component image of the Tata (500 persons capacity) Source: <a href="https://SlowFest.org/">https://SlowFest.org/</a>	59
Figure 19: Pop-up box (transportable audio and storage system) of Organic Orchestra (Source: <a href="https://wikifactory.com/+organicorchestra/">https://wikifactory.com/+organicorchestra/</a> )	61
Figure 20: Lighting set up for ONIRI 72 (Source: <a href="https://wikifactory.com/+organicorchestra/">https://wikifactory.com/+organicorchestra/</a> )	62
Figure 21: Light on pole drawing (Gouloù) (Source: <a href="https://wikifactory.com/+organicorchestra/">https://wikifactory.com/+organicorchestra/</a> )	62
Figure 22: The Cuts, precise light projectors to stage lighting (Source: <a href="https://wikifactory.com/+organicorchestra/">https://wikifactory.com/+organicorchestra/</a> )	63
Figure 23: Visiophare hacked school projector (Source: <a href="https://www.visiophare.org/">https://www.visiophare.org/</a> )	66
Figure 24: Visual lighting on building wall by Visiophare designed tool (Source : <a href="https://www.visiophare.org/">https://www.visiophare.org/</a> )	67

## Abbreviations

SEM	Sustainable Event Management
SF	SlowFest
WL	Waking Life
OO	Organic Orchestra
GHG	Green House Gas
tCO2e	Tones of CO2 equivalent

# 1 Introduction

## 1.1 Context

In the era of a world dominated by industrial and mass manufacturing, crumbling under social and environmental crises, it is necessary to rethink all human activities and systems (Raworth, 2012). As explained by Boehnert “Anthropocene describes changes to Earth systems and the Capitalocene describes why these changes are happening, what is urgently needed now are visions of how humanity will respond” (Boehnert, 2019). Climate change, deforestation, destruction of natural ecosystems, intensive farming, and the severe emission of pollutants are some of the factors currently contributing to both, environmental degradation and the emergence and spread of deadly pandemics. (Arora and Mishra, 2020)

*“As an illustration, the excessive exploitation of natural resources carried out by 10% of the world’s richest population, affects the life of billions of people making it difficult for them to adequately satisfy their consumption needs” (Lopez, 2021, p.7)*

Music Festivals being a source and catalyst of culture and art also acts as a socio-cultural platform for promoting and using sustainable development values and ideas (Lopez, 2021). However, by rising popularity, high demands and competitiveness within the industry, Music Festivals result in an ever-increasing environmental footprint. (H.Ashdown, 2010; Mintel, 2007). In the music industry, more specifically amongst the professionals, it is said that the domain is over-competitive and unethical. Festivals nowadays are exploding their audience capacity, trying to reach a broader audience (internationally), an audience waiting for international stars, who are asking for higher pays for a more technically innovative performance. As well, a higher number of materials, equipment, and audience is transported (equipment that is innovating technologically every day). To close the loop, financially, all those technical demands are pushing festival organizers to raise their audience capacity and budget. (Shift project, 2021).

Along with the organization, terms like Regenerative design developed as a co-evolutionary, collaborative relationship between humans and the natural environment. Such alternative approaches -defined further in the literature review- could lead new innovation tools that aim at reducing the impact of festivals in priority, that enhances, rather than depletes, social and natural

capitals. Furthermore, rethinking the place of humans in its environment would facilitate the democratization of the ecological transition (Cole, 2012). This transition is possible through different techniques that does not forget the core ambition of promoting music, culture, and art, as well as social gatherings. Nevertheless, in the face of the challenge we are confronted with, the scale of efforts must be more radical and social norms need to be changed. Similarly, Transition Design, focuses on the need for “cosmopolitan localism”. A way of living that is place-based and regional, yet global in its awareness and exchange of information (Irwin, 2015). Existing, independent festivals, experiment with alternative tools and approaches to reach more durable goals enable us to diversify and rethink the definition of fun. These design-thinking approaches are in opposition to big crowds, famous artists, and high consumerism. This thesis aims to show the importance and potential of the above-mentioned concepts and to provide an analysis of the already existing alternative approaches and tools in Music Festival organizations.

## 1.2 Definitions

This thesis intersects the topic of Event Design defined by Getz (2019) as *“the creation, conceptual development and staging of an event using Event Design principles and techniques to capture and engage the audience with a positive and meaningful experience”*. More specifically, the research focuses on festivals, which stand as spaces in which communities share values, identities, and stories but also involve positioning of social status and channeling their cultural heritage (Zikfos, 2015). More specifically, Music Festivals are defined as events orientated toward music, where several artists perform to an audience live. Festivals are commonly held outdoors and most of the time they include activities and attractions, such as food and social activities (Leenders, 2010). The research dived into the practice of Ecoscenography defined as *“the integration of ecological thinking into all stages of scenographic production and aesthetics, it should be more committed and local in its materials, or simply avoiding new materials”* (Beer, 2016; Beer, 2021).

To better understand the importance of this topic, the term “sustainable development” needs to be explained. The process of sustainable development *“enhances the possibility of providing all human beings with adequate and equal opportunities for the effective exercise of basic individual and social rights such as life preservation, access to healthy food and drinking water, health care, basic education, and decent housing.”* (Lopez, G. C., 2021, p.7). Indeed, sustainable development stands as an effort for distributing resources,

changing social norms, and creating a more equal life to everyone. High ticket prices in festivals are an example of inaccessible opportunities.

Kate Raworth, a renegade economist, develops in a 2018 TED talk, that sustainable development foundations unleash humanity's potential to thrive with purpose, creativity, participation, culture, leisure and belonging. This mindset emerged in the Low-tech philosophy, in Western Europe. Discussed further in the document, the Low-tech lab defines the term as "*the techniques, technologies, services, and know-hows that stick to three main principles: Useful. Accessible. Sustainable.*" (<https://Low-techlab.org/en> ). The above terms, core of this thesis, and knowledge gap of available research, enable the creation of the next questions.

### **1.3 Research questions**

To tackle such topics, the research questions established have as aim, to understand and explore what the current challenges are and what can be adopted to counter the issues. The thesis gives an overview of emerging approaches as well as dives into what their difficulties, limits, and benefits are. In other words, Music Festivals exist with different scopes, what are they doing, what could they do, how can they do it? Here are the concluded research questions that this thesis will answer:

1. How are Music Festivals impacting the environment?
2. How are Music Festivals shaping current and new imaginaries?
3. What is the Low-tech movement? How is it applied to Music Festivals?
  - 3.1. What are the alternative approaches and processes for sustainable festival organization? Their difficulties and limits?
  - 3.2. What alternative tools can be used to reduce environmental impact of a festival directly or indirectly? Their benefits?

### **1.4 Structure of thesis**

This first chapter of this thesis introduces the subject and scope of this study. It then dives into the existing research papers on key topics such as the impact of large-scale Music Festivals and the solutions that emerged in the literature. Furthermore, the social benefits of Music Festivals as well as the movement of Low-tech related to culture, art, and music are reviewed. The following chapter develops a method that was applied to collect data, analyze it and conclude with findings. Indeed, the developed results of this study are divided into two parts. First, the approaches of organization for the development, logistic and

sensibilization of the event. Secondly, the tools that could provide an alternative to energy-demanding popularized equipment for audio/video/lighting and electric systems, which have been designed by festival organizers. Doing so allows an overview of the solutions that exist on different scopes and what their benefits and limits are. The last chapter concludes with the summarized literature and research findings, in relation to the research questions.

## **1.5 Goal**

This thesis aims to provide an overview of the already existing solutions but also explore the potential of Low-tech design alternatives to make scenography and infrastructures more durable (finding ways to use less energy, less technology, more re-usability, thus, less impact). Those alternatives could be a first step into the transformation of festivals. The overview of solutions already in place could promote and motivate organizations to adopt these accessible, durable, and useful strategies as well as change social norms.

This thesis takes a deeper look into the potential of scenography and design of festivals, because of their life-cycle process and material use. Indeed this practice is often forgotten in the pile of bigger issues addressed by studies of this field (Electricity, Food, Transport, and Waste management). Finally, scenography has the potential, if well used, to impact the participant -with the aesthetic and techniques- and the overall festival's atmosphere. Indeed, there are a lot of elements to investigate for reducing Music Festival's environmental impact. However, this research also dives into alternative visual creations, audio systems, lighting techniques, autonomous electric systems, and stage design.

## 2 Literature review

To begin this chapter, this paragraph will develop the reasoning behind the below structure. Indeed, out of the available literature, several categories of research papers emerged. First, the impact of festivals, their positive (social and cultural) aspect, and their negative aspect (environmental impact). Furthermore, sustainability-driven concepts such as Low-tech, developed mainly in France, or Ecological transition shared common findings with culture and art. Thus, this next chapter overviews three pillars: the impact of festivals, festivals as experimentation tools, and the definition of the Low-tech philosophy. The retrieved data will allow to place the topic of this thesis within the already existing research. The literature review allowed to answer the Research questions regarding the impact of Music festivals. Furthermore, existing papers develop on how Music Festivals have shaped current imaginaries and the future ones. Available below is the list of findings from the literature review, essential for the research of this thesis:

- Festivals are spaces for co-creation, social cohesion and community building (Lopez, 2021)
- Eco-scenography is a tool focused on a place-based approach and localism (Irwin, 2015. Beer, 2021)
- The festival industry is a noteworthy contributors to climate change with high numbers of tones of CO<sub>2</sub>e emitted. (Shift Project, 2021, Ashdown, 2010)
- Low-tech relation with sustainability lies in soberness and transdisciplinarity (Ezra, 2024. Ribac, 2024. Tiberi, 2023)
- Festivals, live performance, and cultural institutions allow a building of imaginaries directed towards awareness of today's issues, and changing social norms (Sharpe, 2008. Lopez, 2021)
- To transform the field, we need to rethink of what is essential, what is unnecessary, and how it can be changed. (Martin, A. et al, 2022)
- Documentation and open-source are essential for sustainable development (Higgins, C., & Coffey, B., 2016)
- Important issues of Music Festivals that negatively impact are electricity consumption and transportation of audience, material, equipment and artists thus should be decentralized (Shift Project, 2021).
- To facilitate the ecological transition to everyone, the next steps need to be precisely thought through with accessibility durability, usefulness and aesthetics (Nahmias, 2019).

The Low-tech movement is developing in France and its neighboring countries, thanks to associations, researchers, and government-funded projects of documentation and experimentation. The snow-ball method, resulted in several studies and work originating from France. However, this did not limit this thesis in searching for similar topics outside of the Low-tech and outside of France. To do so, the research used keywords such as “degrowth”, “reversible”, “reusable”, “transition”, or “sustainable technology”. As well, independent festivals and their professionals are growing in numbers, especially in Europe. Those communities are activists in their will to spread their vision and to change today’s world, thus larger quantity of data originates from this geographical context. This movement is a reason for the geographical focus of this study as there is higher numbers of disciplines and projects carried out in transitioning culture for the environment and the society.

A noteworthy book complimenting this research is titled “Rendre le spectacle durable pour rester vivant” which translates to “Making the show sustainable to stay alive”. It collects 30 contributions of professionals willing to repair the culture, music, and live performances from today’s issues. The book lists processes, approaches, opinions, and tools for theatre, circus, visual shows, events, and Music Festivals.

## **2.1 Environmental impact of Music Festivals**

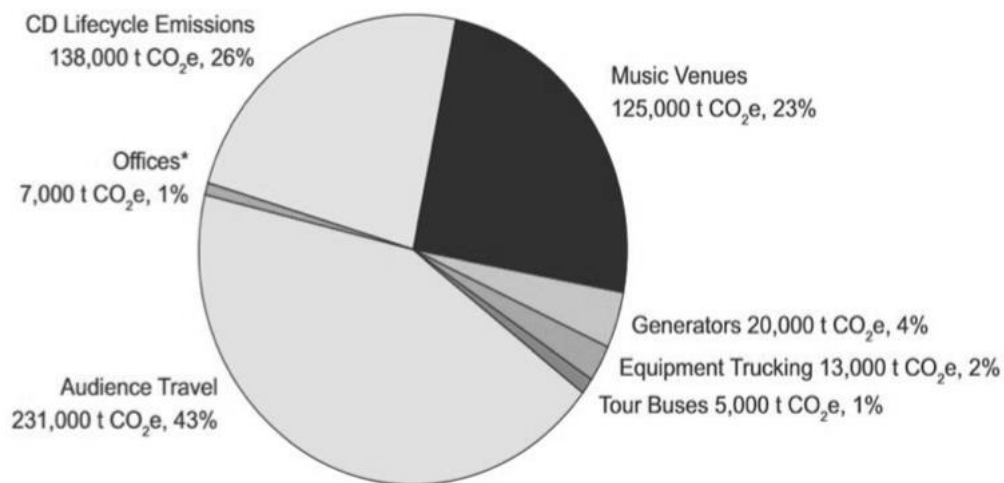
Meegan Jones, an event professional dedicated to creating sustainable management solutions for live events emphasizes the impact of such sector of tourism. *“If we ignore the urgent call of nature, events will surely contribute to the continual devastation of the environment and the diminishing of the earth’s natural capital, along with lopsided and far-from-fair distribution of resources, wealth and well-being.”* (Jones, 2017, p.2). Indeed, the impact of this practice involves large amounts of carbon emissions, environmental impact, and participation in unethical partnerships or promoting the use of airline companies.

With the industry accepting the fundamental link between sustainability and festivals, “sustainable event management” emerged. However, many festivals do not use sustainable event management tools to reduce the impact of their practice (Gallagher & Pike, 2011; Collins & Potoglou, 2019). Sustainable event management stands as a “collection of tools, processes and procedures that event organizers and operators use to make events greener.” (University of Central Florida: <https://www.ucf.edu/online/hospitality/news/sustainable->

[event-management-definition-examples-and-resources/](#)). Designing a system and its tools for creating Music Festivals that consider all areas of impact are necessary to make this practice ethical and durable in the long term. Being a festival organizer involves being the middle-man between all the multidisciplinary stakeholders - including the audience - that best assists the festival (Brooks et al, 2009).

First and foremost, as Wiedmann & Minx (2008) explains, “*the carbon footprint is a measure of the exclusive total amount of carbon dioxide emissions that is directly and indirectly caused by an activity over the life stages of a product*”. The product is in our case the outcome of an event, including before the festival (marketing/building/transportation), during the festival (consumption/waste), and after the festival (location’s impact/transportation). Transportation, Electricity production, or diesel used) produces greenhouse gas (GHG) emissions, or interchangeably carbon emissions, which are one side of the overall environmental impact.

Bottrill et al (2008) calculated that the UK’s GHG emissions were estimated to 518 million tCO<sub>2</sub>e in 2007, and that 540 000 of them belonged to the music industry. The music industry emissions are broken down in Figure 1.



\*Emissions from managers, agents, promoters, collection societies and trade body offices.

*Figure 1: Shares of the 540,000 tCO<sub>2</sub> emitted by the music industry in 2007. (Bottril et al, 2008)*

The study reports that 394 thousand tCO<sub>2</sub>e of the 540 thousand were attributed to live music performances, 84 thousand to Music Festivals. In other numbers, 15,6 % of the music industry emissions belong to the field of Music festivals. At

Music Festivals the primary sources of emission are audience travel, on-site waste disposal, and on-site electricity generation (Bottril et al, 2008; Tsiarta & Heathfield, 2011).

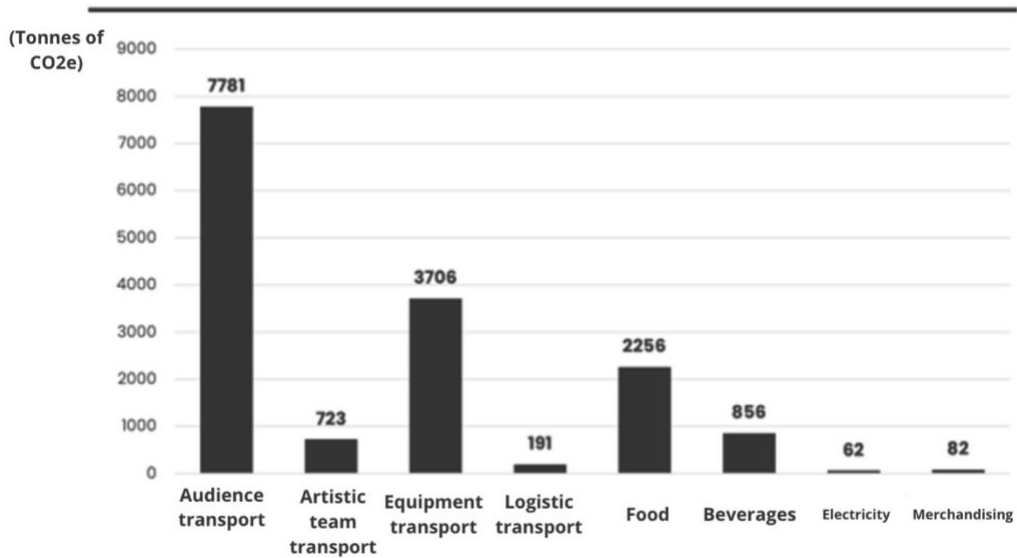
### **The Shift project: Decarbonizing the culture report (2021):**

A report written by the Shift project analyzes the challenges and solutions in decarbonizing the field of France's culture. "*The Shift Project is a think tank working towards an economy liberated from carbon constraints.*" (Shift project website, researcher's translation from French). This organization analyzed in the report how to lower the carbon footprint of culture titled "Decarbonizing the culture". It involves Live shows, streaming, theatre, cinema, and festivals. For better understanding, the report analyzes the amount of CO2 emissions of different audience capacities and location of events.

This is the typology used for categorizing live events according to their number of participants:

- Small festival (less than 3000 persons) in a city center
- Small festival (less than 3000 persons) in a suburban area
- Big festival (100 000 persons) in a city center
- Big festival (250 000 persons) in a suburban area (Shift project, 2021)

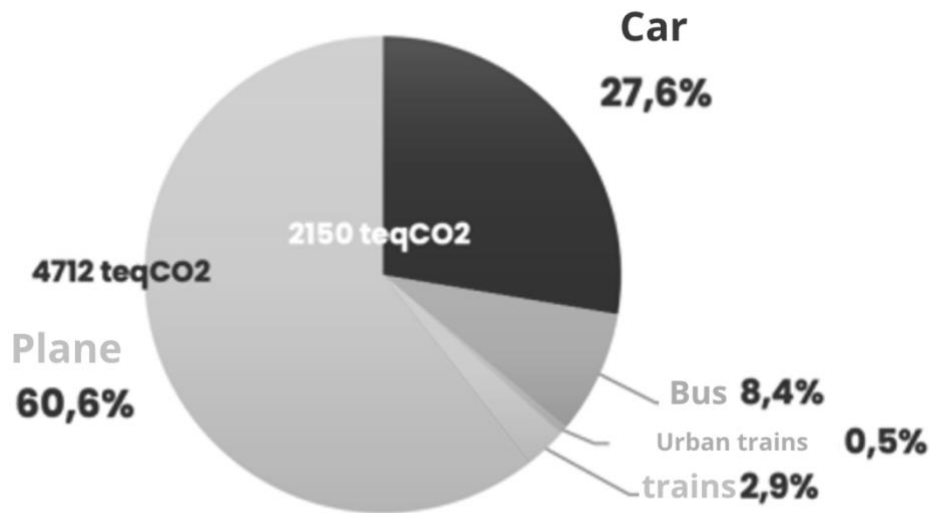
Figure 2 compares the different fields of activities of a music festival in the suburban area and their respective carbon emissions. It is estimated at approximately 15656 tones of CO2e (tCO2e) for a four-day event. This result is dominated by transport-caused emissions as well as the food menu.



*Figure 2: Comparison of the categories of impact in Music Festivals. (Shift Project, 2021)*

*"If 3% of festival-goers arrive by plane within an average radius of 1500 kilometers, they will account for nearly two-thirds of the transportation emissions of festival-goers." (Shift Project, 2021, p.56)*

Figure 3 shows the catastrophic impact of airplane mean of traveling, taking 60,6% of the total 2150 tCO2e emitted from audience transport.



*Figure 3: Percentage of tCO2e emitted by audience of a Music Festival's transport modes. (Shift project, 2021)*

However, Music Festivals should not disappear, they have the potential to impact positively participants, promote culture, art, and music through social gatherings, and participate in developing the area where it settles (Brooks et al, 2009). There are great benefits to these Music Festivals and their noteworthy environmental impact should be documented and accepted. Indeed, it should even be studied and changed. For instance, water consumption is often forgotten in the overall impact but should be accurately estimated and should be a prerequisite for rigorous festival water planning (Giurgea et al, 2023).

Outside of their negative environmental impact, festivals stand as spaces locked in time, where participants usually live an experience far from their regular lives. The next chapter will be develop the social benefits of this practice that is applied for small and large-scale festivals.

## 2.2 Social impact of Music Festivals

Many studies have shown the benefits of Music Festivals in impacting a large number of people on different scales and about important topics (Brooks, 2009. Sharpe, 2008). From a larger perspective, culture can change our imaginaries and our reality, contributing to the transition of other domains:

Agriculture, Energy, Transport, Digital technology, and infrastructure (Shift Project, 2021). Culture, art, and music are ways for humanity to feel the meaning of our existence and to what life really is. Joining communities of friends and families in a free-living space, that is safe, welcoming, creative, and open-minded.

In the context of globalization, festivals are collective spaces that provide opportunities to resist and rewrite the dominant cultural narratives that shape societal and individual lives (Sharpe, 2008). Music Festivals often include live performances which are unique to the artists. The socio-environmental potential of this practice can be planned by the performer, what they express, and what they point out.

In a research paper, Lopez (2021) explains the social benefits of Music Festivals. It argues that Music Festivals are spaces of conversation and action that are crucial to forest activism. With this practice, creativity constitutes a powerful tool for socio-environmental awareness and education. Sharing experiences, and knowledge, building social cohesion, and experimenting with alternative solutions. Festivals are catalysts of change to fight global crises such as climate change and land use. Lopez defines the social potential of Music Festivals as opportunities for *“building social capital and human capabilities by offering jobs, creating opportunities to develop skills, creating platforms for community building and by developing social networks and partnerships with local stakeholders”*. Brennan, et al., (2019) and Dickson and Arcodia (2010) concluded that music festival offers opportunities to connect with disparate communities to experience sustainability, and artistic and cultural sharing, but also play a key role in sustainability governance. As Lopez (2021) emphasizes, Music and art festivals are catalysts of ideas and strategies to confront the current socio-environmental challenges. Indeed, they allow experimentation with alternative solutions to counter today’s issues.

Getz et. al., (2018) have encouraged using the “Value of Festivals” framework for future research on festivals as it tends to benefit environmentally one’s organization. Figure 4 places the different major festival impacts between a society or individual axis and the Intrinsic and Extrinsic axis.

**Intrinsic values:** Aspect that something is valuable in itself (intellectual, emotional, and spiritual experiences). They are mainly perceived by spectators, volunteers, participants, or performers of a festival.

**Extrinsic values:** *“essentially utilitarian and derive from exchanges that provide tangible benefits either to individuals (including social groups and subcultures) or to society as a whole.”* (Lopez, G. C., 2021, p.34)

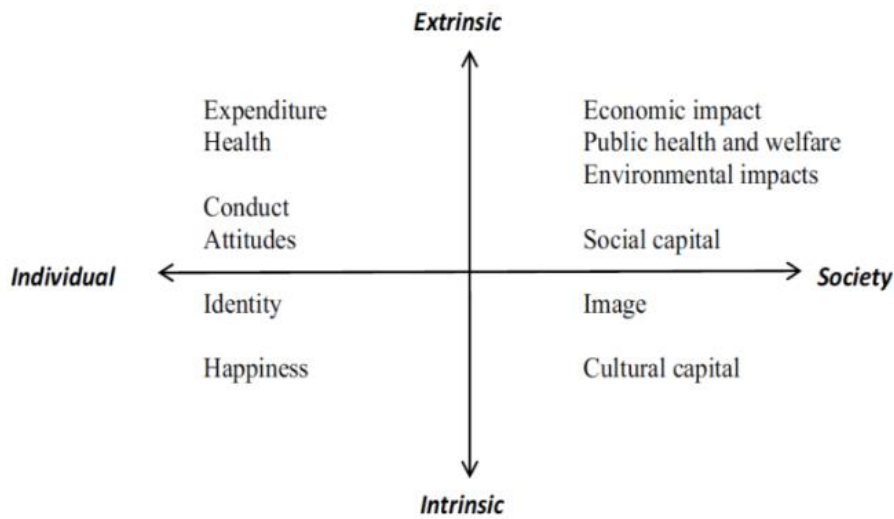


Figure 4: The different values of festivals. (Getz et al, 2018)



Figure 5: The different perspectives of the value of festivals. (Getz et al, 2018)

In Figure 5, the People perspective drives the meaning of festivals, it refers to those values that can be transferred from an individual (one participant) to a societal level (the crowd). These values adopt the form of community development processes, cultural and ideological constructions, and political activities.

“Social Sustainability” is defined by Lopez (2021) as means to improve and maintain people’s quality of life. The concluded key concepts are “social capital”, “social equity”, “well-being” and “social cohesion”. They all contribute by positively impacting the process of reconciling the individual and collective aspects of social sustainability. Figure 6 lists the variables which are important to focus on.

Key themes	Social Sustainability variables
Social equity	<ul style="list-style-type: none"> <li>• Accessibility (e.g. access to employment, open spaces, local services, resources)</li> <li>• Social inclusion (between and among different groups)</li> <li>• Fair distribution of income and employment</li> <li>• Local democracy, participation and empowerment (community consultation)</li> <li>• Education and training</li> <li>• Equal opportunities and equity</li> <li>• Housing and community stability</li> <li>• Connectivity and movement (e.g. pedestrian friendly, good transport links)</li> <li>• Social justice (inter-generational and intra-generational)</li> <li>• Attractive public realm</li> <li>• Local environmental quality and amenity</li> <li>• Equal opportunities</li> <li>• Human rights (e.g., forced labour, child labour, freedom of association)</li> <li>• Indigenous rights</li> <li>• Labour practices (e.g., fair salary, working hours, social benefits to employees)</li> <li>• Fair operating practices (including anti-corruption, fair competition and supplier relationships)</li> <li>• Technology development</li> </ul>
Social cohesion	<ul style="list-style-type: none"> <li>• Social cohesion (between and among different groups)</li> <li>• Local democracy, participation and empowerment (community consultation)</li> <li>• Cultural heritage (e.g. local heritage and listed buildings)</li> </ul>
Social capital	<ul style="list-style-type: none"> <li>• Social capital and networks</li> <li>• Education and training</li> <li>• Sense of place and belonging</li> <li>• Governance</li> <li>• Community involvement and development (e.g. accessibility, community engagement, de-localization and migration)</li> <li>• Consumer/product responsibility (e.g. satisfaction, privacy, complaints practices)</li> </ul>
Well-being	<ul style="list-style-type: none"> <li>• Health and well-being</li> <li>• Safety and security (real and perceived)</li> </ul>

*Figure 6: The key themes and variables of Social Sustainability. ( Weingaertner & Moberg, 2014)*

One example that emerged from Figure 6, is Education and training, social cohesion, and community engagement. Present-day festivals involve high degrees of consumer engagement through the co-creation of the festival’s experience. This has been seen as a way for the industry to promote interaction, cultural values, and exchange (Richardson, 2019). Furthermore, festivals allow participants to be outdoors as they offer natural spaces to escape from the stress produced by everyday life in cities. (Webster & McKay, 2015).

R2D2 is a “Regional network to facilitate sustainable development” (R2D2, 2024, p.26) founded in 2012, and acting in France. From the social, cultural, and societal points of view, they defined festivals as spaces for conviviality, of civic responsibility, acting as a big transient melting pot. Such transient and temporal practice allows experimentation and making discoveries. Festivals create partnerships and development of local networks, grounded in the

territory. The artistic and cultural vibrancy is accessible and alive. A study by Le Pôle in 2020 conducted with 14 festivals concluded that 43 % of the volunteers at the festival learned new skills, and 30% will use those skills for their future careers. Furthermore, 92% of the public, participates in the festival because they can escape from their daily life and 23 % discover new artists (Le Pôle, 2020). In a time when ecological crisis confronts us with constrained lifestyles, those collective and individual benefits need to be highlighted.

Outside of the environmental solutions, festivals place themselves at the front lines for social issues: the question of gender parity is regularly raised within programming and teams. Protocols are being co-created to fight sexual and sexist discrimination. Access to culture is often a very important aspect for socially conscious festivals, efforts for limited mobility participants, or even lowering prices for limited special tickets to allow financially limited audiences to be able to attend. (R2D2, 2024)

These above-mentioned positive characteristics are countered by the social and ecological impacts of the music festival on natural systems. *“These impacts are largely characterized by unsustainable flows of energy and materials between the event, society, and the biosphere”* (Brooks et al, 2009, p.5)

## **2.3 Existing solutions for the main issues of festivals**

Within the literature available, a great amount analyzed the environmental impact and the social aspect that is often forgotten in Music Festivals. In this following section, solutions are listed as reducers of carbon footprint. For example, the report “The Show Must Go On” (2015) examined the top five priorities put forward by UK festival organizers, in order of priority.

1. Sustainable approaches to energy.
2. Standard approach to serve-ware and packaging.
3. Use of reusable cups.
4. A standard approach to waste management systems.
5. Sustainable travel policies.

### **The Shift Project report (2021):**

To better understand the environmental impact of festivals and the scale of their needed solutions, the Shift project compared the outcome of four scenarios :

- Scenario of reference: without any decarbonation measures (Figure 2)
- Scenario **TP**: including “**Transparent**” and “**Positive**” decarbonation measures
- Scenario **TPOD**: which includes the above measures but adds “**Offensive**” and “**Defensive**” decarbonization measures.
- Scenario **TPOD+**: including **all measures** of the above scenarios and a decentralization the festival would host 10 events each inviting 28 000 persons in different places instead of one event of 280 000 participants.

The scenario of reference (where no environmental measures and solutions are put in action) was already discussed earlier (Figure 2), thus will not be mentioned.

- 1) **TP**: Soft solutions that are not impacting the structural system of the festival
  - **Transportation**: Car-pooling results in 717 tones of carbon saved
  - **Food**: 100% vegetarian menu results in 1970 tones of carbon saved : *“The suppression of red meat and more broadly, the reduction of animal products, as well as the decrease in the carbon content of meals offered by cultural institutions and actors, drastically reduces the carbon footprint of the entity concerned without any consequences for its core activity.”* (Shift Project, 2021)
  - **Beverages**: Local providers = 269 tones of carbon saved
  - **Electricity**: Use the local electricity grid instead of generators (EDF for a French festival) = 55 tones of carbon saved
  - **Waste management**: Eco-cups or Reusable cups

Those changes would result to lowering the carbon emissions of a big festival by 20% or 3000 tones of CO<sub>2</sub>.

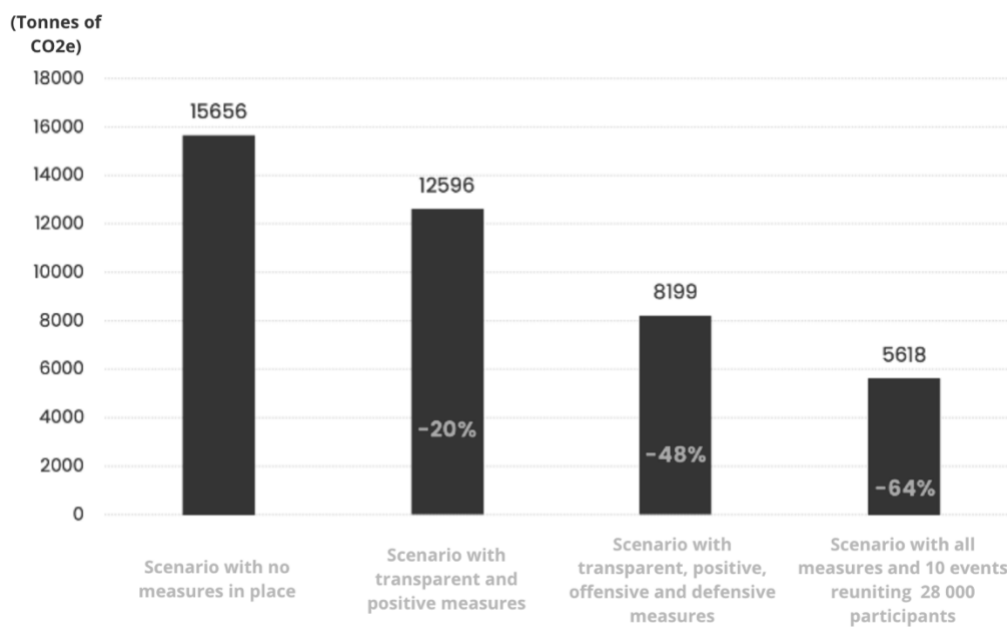
- 2) **TPOD**: Harder solutions that require changes within the organization and industry:
  - **Audience transportation**: integration into a better public transportation network (even if it means modifying the event location(s)) to increase the share of attendees arriving by train and public transportation to 65% of arrivals. This organization

would reduce the percentage of people arriving by car from 50 to 30% of the total. Estimated impact: approximately 1290 tones of CO2 equivalent avoided compared to the initial scenario. 575 tones of CO2 equivalent avoided more than in the TP Scenario.

- **Transportation of scheduled teams:** removal of territorial exclusivity clauses and maximum pooling of foreign artists' tours with other local structures. Objective: to limit air travel as a means of transportation for only 10% of scheduled teams. Estimated impact: approximately 442 tones of CO2 equivalent avoided compared to the reference scenario.
  - **Transportation of scheduled teams:** modal shift from tour buses to trains and cars (tour buses would represent only 25% of the displaced individuals). Estimated impact: approximately 117 tones of CO2 equivalent avoided.
  - **Transportation of artworks:** promoting shared tours between multiple venues and festivals could slow down the pace of kilometers traveled; further localizing equipment pooling (rather than having it transported over long distances by artists) can also help limit the tonnage carried by scheduled teams and, consequently, favor lighter vehicles. The objective would be to transition to 50% light utility vehicles, 50% semi-trailers, and only 10% air freight (which can be achieved through shared transportation). However, these decisions would raise significant questions about reception techniques as well as programmed aesthetics.
  - **Logistics:** mutualization and integration into a local area for all suppliers, particularly for all stage design, technical management, and food logistics elements. Estimated impact: approximately 145 tones of CO2 equivalent avoided.
  - **Digital:** limit the amount of data uploaded for communication by favoring video formats that never exceed HD 1080p, and communication via text, images, and audio files on social networks whenever possible (which implies giving up on live streams in 2K, 4K, and virtual reality, as well as the corresponding equipment).
- 3) **TPOD+:** Using all the above changes but also reducing the audience capacity and decentralizing festivals.
- **Social:** decentralized festivals provide more jobs dispersed in the territory and develops culture in secluded areas.

- Lowers the **distance travelled** for audience, artists, staff team and materials and equipment.
- If the **size of a festival** (including it's audience capacity) is cut by 10, it cuts the carbon emissions by 30. In other words, from an emissions standpoint, it is better to organize ten events throughout the year, each gathering 28,000 people - events spread across a territory and offering more local and less intense touring prospects for the scheduled teams - rather than one single event gathering 280,000 people over a few days.

In Figure 7, the comparison of saved tones of carbon emitted is given as well as the percentage of decrease:



*Figure 7: The saved tones of CO2e, by the different scenarios to decarbonize the culture. (Shift project, 2021)*

In the following section, a more specific analysis of the literature available on those issues and solutions of each category is made.

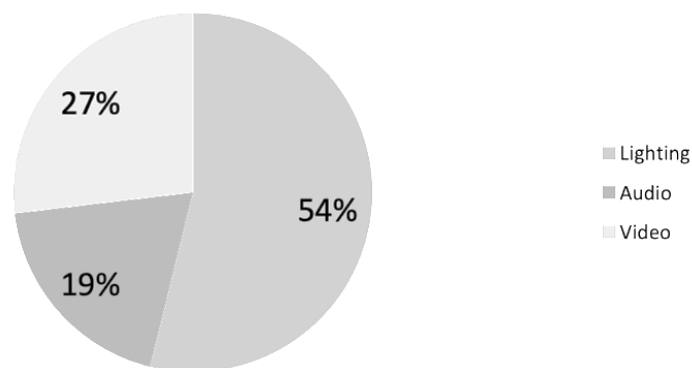
### 2.3.1 Electricity consumption

In the list of the energy-intensive practices to renounce for the festival sector, is the use of generators running on fuel (Shift project, 2021). A lot of Music Festivals try to reduce their impact by running their generators with biodiesel. However, the use of biodiesel should not be considered as an all-encompassing solution to reducing the environmental impact of power

provision as it is subject to debate (Marchini, B, 2013). Indeed, biofuel is a developing solution that is heavily dependent on food-crop-related biomass that requires heavy amount of water and transportation (Fargione et al, 2010). As well, the use of energy-intensive sound systems and streaming platforms is not sustainable (Shift Project, 2021).

Marchini (2013), analyzed in research, the issues with electric system's usage in Music Festivals and the solutions that could benefit the power load of these systems. Figure 8 shows the average power demand of the different elements of the electric system powered by generators such as Lighting (54%), Video from the projector or TVs (27%), and Audio (19%). It highlighted the important emission reduction opportunities on the load profiles. Limiting at different times of the event the supply or demand on power generators allowed less overcharges on the system, thus less fuel consumed. Such opportunities include changes in operating procedures to reduce the demand during non-operational periods and utilizing low-energy equipment on stages. Finally, using a provisioning system to allow the adjustment of the power plant supply to meet the demand of the system.

**Average power demand upon stage (kWh)**



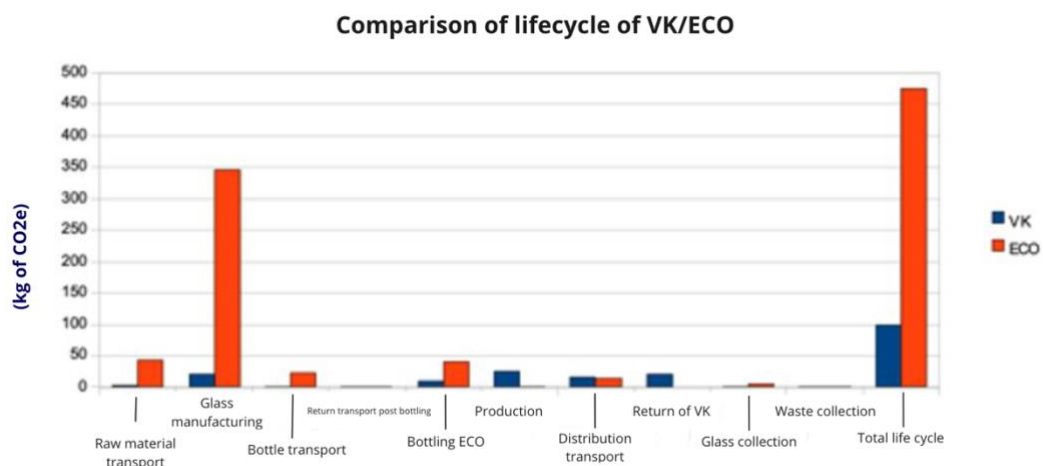
*Figure 8: Comparison of average demand for stage subsystems (Marchini, 2013)*

### 2.3.2 Food and drinks

Out of all mankind's activities, livestock production, and meat consumption is by far the most disastrous and resource demanding. Often, big companies, research labs, and governments fight to keep this industry. A large quantity of research proved that most of the carbon emissions of a festival came from the menu available to the participants.

However, the solution to the biggest problem of Music Festivals, is the easiest. Transitioning the food and beverages given on the day of the festival to local producers, local businesses, and 100% meat-free, can result in a drastic decrease of environmental impact (Shift Project, 2021).

For beverages, a study report researched the environmental impact between single-use glass bottles (ECO) and returnable bottles (VK) that are cleaned, filled, and consumed, on an average of 20 times. They concluded an obvious difference of impact that can be seen in Figure 9. Such systems create jobs as well as a more sustainable and accessible alternative to glass bottles.



*Figure 9 : Comparison of GES Emissions in kg CO2 eq between returnable glass bottles and single use recycled glass bottles through their life cycle (<https://www.brasserie-meteor.fr/uploads/docs/bb0d5234e6a42565bb01fbe24d23f456.pdf>)*

The following sub-chapter explores a concept (Low-tech) mainly developed in Western Europe, taking its root from earlier concepts and of the downfall of *The American way of life*.

## 2.4 The Low-tech approach to Music Festival

### 2.4.1 What is Low-tech ?

Low-tech is a term popularized by Philippe Bihouix (A specialist in mineral resources and promoter of Low-tech solutions) and the creations of the Low Tech Lab (a think tank and community, focused on the development and

democratization of Low-tech innovations and techniques). The movement partakes in facilitating the process of changing social and environmental norms. Out of all available concepts closely related to Low-techs, the quantity of research is rare even if they developed in recent years. (e.g., Grimaud et al., 2017b; Martin & Colin, 2022; Meyer, 2021; Nova & Roussilhe, 2020).

The Low-tech emerged as the opposite of the term High-tech which remains a blurry defined term (Martin, A. et al, 2022). This movement is multi-disciplinary as Low-tech tackles all domains and human activities. Furthermore, any designers, engineers, and researchers working for and with Low-techs, put themselves voluntarily in an environment “under-constraints” or artificial constraints, to put their lifestyles in coherence with their philosophy. *“The goal of living in a constrained world is to assume the responsibility of triggering public awareness about the state of degradation of our environment and the techno-capitalist system itself.”* (Tiberi.J, 2023, p.68). The Low-tech closely relates to the “less is more” philosophy. Jacques Tiberi writes in his book that *“the comfort of the Low-tech comes from its autonomy”*, both energy-related and technical, but also food-related and financial. Furthermore, it facilitates a rethinking of our needs, which ones are needed, fundamental, essential and basic. *“Outside of its technical aspects, the Low-tech also involves an organization mode and sharing system that is more democratic and participatory.”* (Tiberi.J, 2023, p.67). The author concludes with a short but precise definition:

*“The Low-tech is the will to conceal well-being and energetic frugality”* (Jacques Tiberi, 2023, p.23)

High-tech is an infinite loop, companies create new products, with new features and technologies, which consumers are racing to purchase to the last version. It involves a great amount of material sourcing, electrical components, and forever-lasting consumption and waste. This can be often seen in the music industry, as artists, musicians, and engineers demand new equipment which involves more transport and manufacturing.

The most known definition of the Low-tech stands on the front page of the Low-tech Lab website: *“objects, systems, techniques, services, know-hows, practices, behaviors and even ways of thinking that use technique and technology according to three principles: Useful. Accessible. Sustainable.”*(<https://lowtechlab.org/fr> )

More specifically, “Low-techs are therefore of twofold interest, i.e., for their respect of:

1. human beings (technology becomes affordable again, the human being remains master of it since he can understand/repair it, etc.)
2. of the environment in which they live (frugality in terms of resources, reparability, recyclability, etc.).” (Martin et al. 2022)

“On a more theoretical level, Low-techs question key concepts such as needs, actual behaviours or cognitive aspects of handling artefacts that are not or slightly digital “ (Martin et al, 2022, p.2)

Building a landscape of repair creates new opportunities for manufacturing and for slowing resource loops across product lifetimes, which together provide a framework for a sufficiency-based model of production and consumption (Dewberry, E et al. 2016). Indeed, repair stands as a key concept embedded in the Low-tech philosophy. Other key concepts and criteria are listed in Figure 10, to better explain the needed vision in Low-tech designs:

Categories	Definitions	Criteria
Technically sustainable	Have the least negative possible impact on the environment by providing a moderate technical response.	Ecological - Does not produce waste massively - Recyclable - Sustainable - Respects planetary boundaries - Reusable - Energy efficient - Resilient - Robust - Repairable - Contrary to the logic of exploitation - Sober design - Low complexity - Sober in materials - Modular - Responds to a design under constraints
Psychologically transformative	Generate psychological changes.	Proposes a vision of the world - Proposes new imaginaries - Generates a simplified way of life - Generates sober uses - Allows a reflexivity on social consequences - Gives meaning - Produces well-being
Critical	Question the dominant technical and social practices.	Alternative to economic models - Alternative to societal models - Breaking with the current mode of consumption - Redefining our modes of production - Challenging cultural models - Militant
Situated	Address the specific problems of a territory and uses local resources.	Interstitial - Locally repairable - Locally produced - Locally adaptable - Decentralized
Empowering/Emancipating	Give back some power to act, develop capabilities and enable growth.	Inclusive - Fits into the notion of "commons" - Collaborative - Open - Controllable - Reproducible - Simple to use - Accessible manufacturing - Allows for the democratic reappropriation of production tools
Radically useful	Functions meet priority needs.	Questions the degree of usefulness - Functional - Efficient - Versatile
Renewing design practice	Question design practices.	Resourceful - Implement new design methods
Demechanized	Favour manual energy while being as little automated as possible.	Labour intensive - Based on ancient techniques and know-how

*Figure 10: Table of criteria for Low-tech designs. (Martin, A. et al, 2022)*

If we look into the English literature review this Low-tech movement disappears and gives place to terms like “Degrowth design”, “Integrated design”, “Reversible design”, or “Transition design”. To exemplify the

similarities, if we speak of Integrated design, of design-as-a-whole, of unity, we speak about designers able to deal with the entirety of the design process. Integrated design involves rethinking the initial problem and establishing a level of complexity in order to solve it. The process, the solution, and the techniques are unique to every problem (Papanèk, V. 1985). Low-tech aims at reconsidering the initial purpose of an object, the cause of a problem, and the techniques of a process. Similarly, 'Degrowth' was officially introduced as a translation of the French *décroissance* at the first international Degrowth conference in 2008 (Kerschner et al, 2018). To more fully grasp the idea, Abraham (2019) offers what is perhaps the most concise description of degrowth normativity: *"produce less, share more, and decide together"*. Degrowth research focusing on questions of technological normativity, or "technology practice" (Drengson 1995) are few and mostly limited to work adopting largely quantitative, or metabolic, approaches to technology, for instance in the 'Low-tech' movement.

Furthermore, Low-tech, is closely related to radical transition, or (like some others prefer) transformation of human activities and the place of the human in the ecosystem. As explained by Boehnert, J. (2019) in their paper named "Transition design and ecological thought.", the term is redefined as: *"systems aware, enabling, participatory, collaborative, and aligned with the patterns and processes of nature. It enables responsible-ability in design. With this ecologically engaged approach, Transition Design can become a basis for understanding and responding to the complexity of contemporary problems."* This definition confirms the similarities between the two terms (Low-tech design and Transition design).

For better understanding, a drawn map of a Low-tech village is available with all the information and techniques of the movement, on the HAL open science website. (VITO & Guillaume Guimbretiere: <https://hal.science/hal-03451043v1> )

#### **2.4.2 The field's ecological transition**

Culture and art share a big part of responsibility in the ecological transition of the world. Its relevance to how society works and to how it lives, settles it's necessity as an important actor of the process.

*"In other words, to enhance the desirability of more virtuous models, rational arguments in favor of sobriety and resilience must be accompanied by other*

*levers, those of narratives, words, images, and emotions.” (Vers une culture Low-tech, p.11)*

The above quote, was taken from a white book translated to “Towards a Low-tech Culture? Cultural Institution’s shaping of Low-tech imaginaries”, which focuses on answering the question: How can cultural institutions sketch the outlines of Low-tech imaginaries, develop concrete proposals, and shape new cultural references regarding the issue of Low-tech? The paper accepts the idea that cultural institutions or organizations occupy a privileged title of building and materializing imaginaries (social values, convictions, norms...etc). Indeed, they attract wide audiences through the territory and share stories. Thus, initiating systemic changes, guiding political public opinions, and being the facilitators for sharing the Low-tech.

As explained in a study that redefines the concept of Low-tech, the first steps in the ecological transition and democratization of the movement is to offer a worldwide mapping of the terms used to describe the techniques, thus defining the other words from the initial vision. As explained by Martin, A. et al, (2022), their definition and the 8 categories they identified to describe the Low-tech, bring to the observation of its inadequacy. They advise the use of more open and representative terms such as "convivial tools" (Illich, 1973b) or “fair tools” (Illich, 1973a). However, since the term “Low-tech” has been widely accepted and democratized by associations and researchers, these alternative terms will hardly replace the “Low-tech”. Since this term has been rarely used in Anglo-Saxon countries it could be easier to envisage the use of Convivial tools and Fair tools as its translation.

*"If a Low-tech culture is to emerge, it will be thanks to how solutions stemming from this approach manage to become ingrained in individual and collective practices, from the most basic to the most recreational." Gilabert, C. (2020)*

Ezra (artistic name) from the collective Organic Orchestra, pushes a public reflection of experimenting: to get out of uncertainty and comfort to discover your limits and your capacity to adapt, learn to transform the material, cultivate your curiosity, and develop new domains of skills. Ezra, emphasizes on the necessity to open spaces that allow experimentation in a professional and

personal way, of popular education and conviviality, booster for sharing, creativity, initiative, and realization (Ezra, 2024).

François Ribac, a musical theatre composer and sociologist, declares the existence of three different ways to approach ecological issues and to act upon them:

1. The one already in use in the field of live performances and music: **Managerial Ecology**, which refers to adapting and organizing existing practices to make them more sustainable and ethical. In other words, durably rethinking our activities and practices.
2. **Conservational ecology** involves considering that most of human activities are a danger to nature and is putting efforts for wild species to be removed from human activities. This ecology closely relates to the “profound ecology” term defined by Anre Naess, as the will to give the same credit to all living beings (Naess. A, 2021)
3. **Transformational or bifurcational ecology**: It encompasses the responsibility of political, economic, and cultural processes linked to the power and growth of capitalism, productivism, and colonialism. François Ribac writes (translated by author): *“It is just as important to act for the protection of environments as it is to act against the social conditions and discriminations (racial and gender) that accompany them.”* This register emphasizes the centrality of action and public policies. (Ribac. F, 2024)
4. The author declares the emergence of a new ecology route, which is the **reconnection to the living**, often described as diverse components of the wild world and it insists on the importance of understanding the problems and the fields to act consciously.

*For the ecological transformation of the arts in the field of live performances and music, it is important to remember the improvements, the failures and the experience of the environmental movements and finally, to address this ecological transformation with a more pluralistic approach and debates.”*  
(Ribac. F, 2024, p.223 translated by author)

The movement to this ecological transition questions our professional usage and personal, as well as our skills of adaptation, our imaginaries, and our limits. In the scope of culture, the ecological transformation needs:

- **Transdisciplinarity**: the movement of one’s knowledge and skills between different disciplines

- **Sobriety:** Putting aside its technical benefits, it questions our usage toward serving a vision, an artistic writing, meeting with the public, and human experiences (Ezra, 2024)

As said by the Shift Project report (2021), the quest for power has been the engine of cultural development in these past decades. It leads to a race for “eventization” and higher numbers (audience, benefit, outreach). However, as events need to reach visitors for financial stability, the more international the audience is, the more its programming should feature spectacular performances and artists to stand out. In this process, the festival increases its carbon emissions. As explained by the report, there is a necessary shift that the field needs to accept. Reducing the scale does not mean a limit to creation. Creative profusion is not a barrier to sobriety. Indeed, in most cultural fields, most of the resources and impacts are in the hands of a small number of stakeholders.

*“It is necessary for the music festival industry to renounce to certain practices in order to build a resilient culture.”*

*Shift Project, 2021*

Regarding the solutions put in place by festivals, they often arrive before the daily use of the general public, this allows to test on a big scale those eco-responsible measures and even to facilitate and participate in their democratization. Eco cups, Recycling, Compost toilets, or even Crafted beer are now well-known and used innovations outside of festivals. It is hard to calculate the impact that festivals have on their evolution within the public, but festivals play a major role in accelerating their development but also to expand them outside of closed circles with sensitive people. (R2D2, 2024)

To conclude, several steps need to be implemented for the ecological transition. One of the co-founders of the Low-tech Lab says that the ecological transition is only doable if the efforts are accessible, useful, and aesthetically pleasing to everyone (Nahmias, 2019). As well, if the tools, the processes, and the philosophy emerge by collective intelligence, sharing skills knowledge, and ideas. The ecological transition of culture and art is one part of the overall change of wider challenge of social norms, and political and environmental standards. Nevertheless, the field’s power of sharing stories, voices, and emotions is greatly needed. We understand the potential that Music Festivals and cultural institutions hold for shaping new and more ethical imaginaries.

Guiding the general public in front of important issues while proposing possible solutions, alternatives, and expanding imaginaries.

## **2.5 Documentation and Open-sourcing**

One aspect that is worth mentioning is the necessity for any type of organization to document their projects and their activities. As said by Higgins *“sustainable report is widely regarded as a way for companies to identify and understand sustainability issues, and to drive changes that can gradually transition companies into sustainable enterprises”* (Higgins, C., & Coffey, B., 2016). In other words, sustainable reports are a tool to give access to stakeholders and communities about the organization’s impact. As well, the Open-source model is a tool that can benefit everyone by promoting innovations and discoveries. In the context of Music festival organization, which closely relates to companies and business practices, putting efforts into providing details, and tutorials on their practices can help develop the use of alternative tools and systems for individuals who are interested in creating and sharing an experience, or to individuals that want to improve the existing innovations. Furthermore, all this data, and information on one practice will explain the difficulties and errors that others have gone through. Higgins explained that its effectiveness rests on communication – to stakeholders, the community, and amongst managers and leadership teams themselves. *“Whether by expanding the accountability relationship between companies and the community – or by way of providing greater transparency about operations.”* (Higgins, C., & Coffey, B., 2016).

In general, literature advises every association and festival organizers should keep this open-source and documentation as a core goal. This collective intelligence could be a way to organize and share within a project, which will bring the best for everyone and the outcome. Such concept of sharing freely to anyone is a core ambition of the Low-tech movement. (Ezra, 2024)

## **2.6 Eco-conception and eco-scenography**

From the report of the Shift Project on decarbonizing our culture, eco-design or eco-creation is brought to light as a needed philosophy for designing. Every creation of pieces and scenography demands energy from its process to its life. Creating means using materials, its transformation process, and for its

diffusion. Indeed, the last mean involves large quantities of transportation to its audience. Its end of life will result in waste produced or other negative consequences of its existence. That is why it needs to be documented in terms of quantities and impact, thus, helping institutions, organizations, and creators to decide on the most virtuous and resilient practices (Shift Project, 2021).

Tanja Beer, an ecological designer, community artist and researcher, develops the concept of eco-scenography by identifying three separate stages: co-creation (pre-production), celebration (production) and circulation (post-production) (Beer, 2021b). The idea is to create with the entirety of the process, rather than, designing with only the outcome in mind. Such design strategy, “Relational thinking” could be exemplified by the so-called “place-based approach” where:

*“One material choice in one place is not necessarily the best choice in another. Everything is relational.”(Beer, 2021b)*

The designer is pushed to think about where we are, here, now as the primary approach. This strategy is related closely to Localism, as creations are unique to the location in which it was initially designed. It is defined as: *“a political philosophy that prioritizes local production and consumption of goods and local government and culture”* (Irwin, T. 2015). Localism is proven to be a strategy for the sustainable development of communities as it reduces carbon footprint from deleting far sourced materials, develops local businesses, empowers communities, and strengthens the bonds of relationships. *“Creating a higher degree of resilience through their independence from centralized, monolithic corporations in the satisfaction of needs”* (Douthwaite, 1996; Shuman Citation, 2000).

Beer (2021b), uses Eco-scenography in many theatre driven research and experimentations, which is part of live performances. Indeed, all practices within the cultural and artistic world can be shared between all domains. Creating a stage for a theatre piece or for a festival needs to be unique to it’s environment. The designer needs to *“seek out the possibilities of place rather than holding onto a preconceived idea that does not acknowledge the potential of its unique surroundings”*. As well, it involves being ethically responsible for the designed system over its entire life cycle and after life. For example, facilitating reuse and recycling by designing components that can easily be disassembled (Yeang K. 2006).

However, from the norm AFNOR ISO 14006, eco-conception is: “*a methodological approach that takes into consideration the environmental aspects of the creation and development process in order to reduce the negative environmental impacts all along the life cycle of a product*”. Jacques Tiberri, in his book “What is the Low-tech?”(2023), argues the degree of absurdity of such definition, in which the consumerist and productivist model leads us. Indeed, it only confirms that the other ways of creation do not consider the environmental aspects and impact of the entire life cycle of the product. (translated by author)

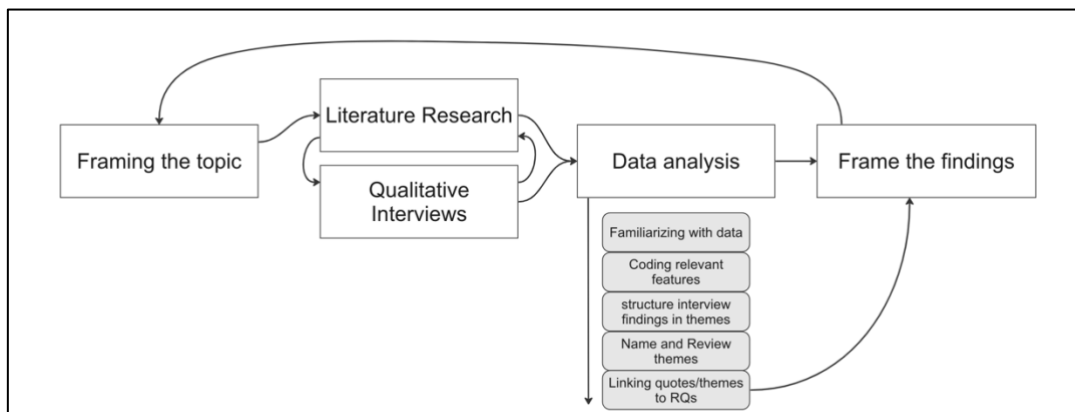
## **2.7 Concluded knowledge-gap**

When diving into existing and researched solutions to counter the negative impact of Music Festivals, many of the papers focused on large-scale festivals. For example, Tomorrowland or Glastonbury in the UK were mentioned as well as their solutions to the problem. Using refillable cups, compost toilets, or recycling trash. However, this literature research identified the knowledge gap on the positive impact of the reduced carbon emissions of smaller festivals, decentralized festivals, underground line-up, experimental activities or the psychological transformation that social gatherings have. The reason for this, could be because of the often-long-term positive impact that would result post-festival through the lives of the participant. The fact that most research focuses on the festivals that attract the most, that have the biggest artists and the biggest campsites, limits the research on the true potential of Music Festivals. The culture of festivals is popularized as a culture of praising the crowd, trends, celebrity artists or the name of the festival. In other words, there is a bridge to create between Music Festivals positive aspects and the ecological transition, what needs to be done and how?

### 3 Research method

The following chapter details the research process including literature review findings, interview selection and analysis of the data collected. For better understanding this chapter's structure, focuses on four separate sections chronologically.

This thesis will use explorative qualitative research methodologies as a "tool to move from ideas to inquiry, from inquiry to interpretation and from interpretation to praxis action in the world" (Denzin & Lincoln, 2018). By this method, will allow the research to be more holistic. As the field of Music Festivals is multi-disciplinary, involves different stakeholders, and each festivals have unique variables, the research explores the ideas and the goals of professionals and associations. The criteria for excellent qualitative research proposed by Sarah Tracy (2010) will be taken into consideration in the development of the research. Some of the author's proposed criteria are; worthy topic, rich rigor and sincerity.



*Figure 11: Research Framework for this thesis*

Figure 11 explains the research framework used for this thesis. The topics first framed are: sustainable event management, Low-tech design, and Music Festivals. The literature research was done at the same time as searching for interviewees. After selecting and conducting the interviews and reading existing research papers, came a process of data analysis. The data analyzed originated from the interview's transcript, and then, was structured through themes that were defined and categorized in the codebook. From the data collected in the literature and the interviews, a final step of framing the findings and comparing them to the research questions.

### 3.1 Data collection (pre-interview)

It is important to note that the selection of the interviews had for main objective to get more details about the festival's approaches and tools as they would consider their work as Low-tech or sustainable. To select the interviewees, the process went through social media research or mentions through daily discussions. Then, a search on the festival's Instagram and website to get a better grasp of their goals and their approach. If the festival claims to a sustainable-oriented festival, an analysis of their efforts was done, and questions were listed.

The chosen method for the data collection of this thesis is semi-structured interviews, more specifically, Focused interviews. *"The focused interview is designed to determine the responses of persons exposed to a situation previously analyzed by the investigator"* in this case their events. *"Its chief functions are to discover: (1) the significant aspects of the total situation to which response has occurred; (2) discrepancies between anticipated and actual effects; (3) responses of deviant subgroups in the population; and (4) the processes involved in experimentally induced effects."*(Merton et al.,1946). Each interviewee, or Music Festival organizer involved common themes (sustainable practices, benefits, and limits) and unique themes that focused on specific techniques already known beforehand by the data available online.

The goal of conducting semi-structured interviews was not to answer the research question on the impact of Music Festivals as the great number of literature on the subject already confirms it. The aim was to answer the research questions 3 and 4 about the tools and approaches that each festival was using, the difficulties in implementing them, the purpose to which they alternatively serve, and their limits. As well, interviews could provide their own perspective on sustainable approaches to organization, their goals, and their techniques to share their values.

Three Festival organizers accepted to participate in the research:

- **SlowFest (SF):** an association in France, that creates tools and democratizes soft mobility to share culture, art, music and Low-tech by touring by bike in France.
- **Organic Orchestra (OO):** an association pushing the limits and possibilities of what live performances will be in the future, creating Low-tech tools to facilitate the bike tours in France.

- **Waking Life Portugal (WL):** a curated Music Festival in Portugal that focuses on restoring the land of the area and sharing syntropic agroforestry skills with their audience and volunteers, promoting localism and improving the eco-system.

This selection was based on the belief that the analysis of cross-cultural cases enriches the understanding of how festivals can effectively contribute to the process of encouraging the emergence and consolidation of a more sustainable worldview. Those festivals are all addressing environmental impacts on different levels of radicality. All encompass the will to create meaningful experiences, with music, art, and atmosphere building. But on which level they are willing to renounce certain aspects of their practice is what makes them differ from each other. Festivals like SF and OO decided to create tools and promote soft transportation of their performance. Some festivals like Waking Life in Portugal decided to take care of the local area they live in, being aware of the carbon emissions of their audience (mainly by plane), and the energy-demanding electric and audio system. Thus, putting efforts in restoring and improving their location's ecosystem and biodiversity to counter the negative consequences.

As Ezra from OO explained, the ecological transformation in the scope of culture needs transdisciplinarity and sobriety. Interviewing festivals and organizers allowed this research to get findings from all festival organization disciplines (scenographers, lighting engineers, logistics, and sustainable managers).

As seen in Appendix A a brief development on the scope and goal of this study was given to the interviewee by email when asked about research participation. In addition, the research questions that the interviewee was expected to answer were given.

### **3.2 Data collection (conducting interviews)**

In this section, the development of the interview processes will be explained. Each participant's associations and project have potential to address the following research questions:

**What are the approaches and processes for sustainable festival organization?**

All three contacts have experience and diverse techniques in carrying out their message. The interview aims at understanding the benefits and difficulties of using their alternative approaches for organization, on day building, and activities offered to the participant.

### **What is the Lowtech? and its application with Music Festivals?**

SF and OO, involve actors that are deeply imbedded in the Lowtech movement, experimenting with tools and approaches for durable art democratization. Outside of the process of organization, and the techniques, the interview allows the researcher to examine more specifically the tools designed and experimented by SF and OO. Including the designer of those tools in the research allows to understand the purpose of each tools, the design process, and their limits.

### **How are Music Festivals shaping current and new imaginaries?**

The three interviewed organization have for goal to make their vision imbedded in their participants lifestyle. Their efforts of democratization and facilitation, promotes alternative habits and ways of living. The interviews would allow a better understanding of the power of influence that festivals have and what imaginaries each festivals try to create to their audience.

<b>Organisati on interviewe d</b>	<b>Role of interview ee</b>	<b>General information</b>	<b>Relevance for thesis</b>	<b>Duratio n of interview</b>	<b>Pages of trans cript</b>
<b>Slowfest (##IN1)</b>	Scenogra pher and Sustaina bility report author	Association that promotes arts and soft mobility by touring with artists and crew on bicycles and favouring local connections in France	Information about their tools, approaches, activities, and awareness efforts	62min (Zoom call)	6

<b>Organic Orchestra (#IN2)</b>	Light engineer /organization member	Artistic association for light and music performance, touring on bike, in France	Information about live performance bike touring and the impact on the participants	58min (Phone call)	9
<b>Waking life (##IN3)</b>	Organization member	Localised music festival restoring local ecosystem and agroforestry in Portugal	Landcare project details as well as awareness, activities, and collective festival building	56min (Zoom call)	3

### 3.3 Data analysis

For this research method, thematic analysis was used for analyzing the collected data of the interviews. Thematic analysis allows to create an initial set of themes, as explained by Braun & Clark (2006) it also helps in identifying patterns within the data. This method provides a way to identify similar themes from different festival organizers' approaches, understand their experiences, and findings recurrent visions and ideas in the process.

The three interviews conducted were audio recorded with the consent of the interviewee. The audio files were then transcribed to separate text files, including the interviewer's questions. The creation of the codebook was an evident outcome of the interviews. Indeed, a codebook benefits the data analysis process by providing a framework for creating codes and identifying themes (DiCicco-Bloom, et al., 2006).

Advised by Braun and Clarke (2006), data analysis can be shared in five steps:

#### 1. Familiarizing with the data

Following the thematic analysis method, this step included readings of the transcripts. After familiarizing with the interview's questions, and reading multiple times the transcript, initial patterns and concepts became apparent as they could potentially answer the research questions.

And also last year we decided to keep the shades used on the campsite to help trees need less water. We also used the festival infrastructure to kind of cheat on the syntropic process. The campsite is just empty, blank land, so we put enough for 8000 people of shade structure, cable wires, green shades (plastic net), made on size so they reuse every year.

*Figure 12: Highlighting initial patterns and concepts in transcript*

## **2. Coding relevant structures in the data**

In this next step, initial codes are created from the transcript. Codes are the main key concept that structures the initial pattern and are necessary to define the highlighted text.

And also last year we decided to keep the shades used on the campsite to help trees need less water. We also used the festival infrastructure to kind of cheat on the syntropic process. The campsite is just empty, blank land, so we put enough for 8000 people of shade structure, cable wires, green shades (plastic net), made on size so they reuse every year.

*Figure 13: Underlying keyword of the highlighted text*

## **3. Gathering data into initial themes**

As advised by Braun & Clark (2006), the next step after creating codes is to gather them into initial themes. For this study, the codes are regrouped into themes by whether they answer the research questions of approaches, tools or if they are findings on the Lowtech or the power of festivals. As well, each theme identified involve sub-themes for categorizing the codes more specifically.

## **4. Reviewing, defining and naming themes**

In this step of the thematic analysis process, it is essential to review the created themes alongside the entire data, to ensure logical pattern structuring and accurate reflection of the goal of this research (Braun & Clark, 2006). Thus, the themes are reviewed and named based on the research questions and the data set of the interview transcript. The work of this step is applied in the codebook as well, where each themes are listed with the codes (see codebook layout: Figure 14 )

Theme	Theme description	Code #	Exemple quotes	Distribution	Frequency
1. Sustainable approaches	Interviewees were asked about their approaches to organising their events, strength and weaknesses	1.1 <b>Transportation</b> of the equipment and staff reduces carbon footprint	"Notre souhait c'est d'étendre quand même le public tout en étant dans le respect des moyens de transport propres en mobilité douce de préférence et donc c'est à double tranchant c'est la raison pour laquelle on est obligé de regarder tout les paramètres." Interview 1	#1, #2	2/3=66%
		1.2 <b>Documenting and open-sourcing</b> of the festival's work and processes makes their tools, their approaches of management, and their difficulties free to the public, democratizing and facilitating others to try sustainable solutions.	<p>"Je déteste le terme de spectacle ou de pièce de théâtre comme ça, tout le monde n'invite d'autres artistes à se servir de ces outils pour repenser leurs pratiques leur mode de tournée et après du coup" Interview 1</p> <p>"que d'autres collectifs et d'autres artistes utilisent plus des remorques similaire et fassent des événements comme ça mais on n'est pas dans une démarche capitaliste où on a envie de dominer le marché et de prendre de plus en plus de place" Interview 1</p> <p>"que tout le code soit en open source et du coup là le but c'est que tout mette en libre accès pour que les gens puissent refaire ça(...), que les gens puissent faire très facilement des scènes lumières à partir du matériel qu'on a aujourd'hui ok et qui puisse le faire eux même (...) Après il y a un gros travail de documentation qui est ça amélioré toujours, documenter tous ces objets, tout ce qui est fait maison et toutes nos pratiques, c'est les expliquer pour que les gens puissent les copier et les refaire les médifier les..."</p>	#1, #2, #3	3/3= 100%

*Figure 14: Codebook layout*

## 5. Presenting the final report

The final step of the thematic analysis process is to create a meaningful and coherent development of the findings (Braun & Clark, 2006). It involves presenting the themes in a structured way and reintroducing their corresponding research questions. As seen in the codebook layout, each quotes prove the associated code thus, the final report includes defining quotes to answer research questions. As two of the interviews were conducted in French, the majority of the quotes used in the below findings chapter are translated by the writer, who is fluent in both languages.

## 4 Findings

The following section opens a list of findings, based on professional's experience (festival organizers), projects, and efforts that build on a larger concept of socio-environmental event design. The goal of this chapter is to answer the research question on the possible alternative approaches and tools for organizing and creating sustainable Music Festivals. The chapter is separated in two sections, the approaches (systems, concepts, efforts, processes), and the tools for various lower-energy purposes (mobility, visuals, scenography, lighting, and electric systems).

The socio-environmental focus of independent music festivals, like other concepts with social and environmental objectives, does not necessarily overlook economic outcomes. Lopez (2021) emphasizes three pillars of benefits in Figure 15. The below mentioned approaches, as well as the festival organizers interviewed, all embrace these benefits.

Environment	Economy	People
<ul style="list-style-type: none"><li>• Experimenting possible sustainability solutions</li><li>• Activism</li><li>• Strategies to combat climate change and land use change.</li></ul>	<ul style="list-style-type: none"><li>• Jobs generation</li><li>• Social capabilities</li><li>• Social capital</li></ul>	<ul style="list-style-type: none"><li>• Social Cohesion</li><li>• Creativity as a tool</li></ul>

Figure 15: Key findings applying to People, Economy and Environment. (Lopez, 2021)

### 4.1 The approaches for sustainable festival organization

An approach that conceals the vision of lower energy usage and smaller audience capacity is the concept of a Transportable festival. A group of festival organizers or artists move their festivals to different cities and villages often by bike. Their event takes place outdoors or indoors in cultural institutions like music and show venues. The approach results in minimizing the number of participants coming by car, plane, or bus. The festival goes to the public to have better control on the impact of transportation.

*"Some aspects of live performance are very poorly thought out, much like many other fields, but the strength of live performance is that it allows for the transmission of things, so showing that even in live performance it is possible, showing that we can try to do things even if there is no perfection."*

*Translated #IN2 by author (2024)*

In the following chapters, Mobile festivals and Localized festivals approach will be analyzed. Based on interview discussions with festival organizers and from the concluded literature findings, this chapter will focus on what are the benefits of transportable festivals and what can be done to lower the carbon footprint of localized ones.

#### **4.1.1 Mobile festivals**

##### **Social benefits:**

Festivals constitute spaces that, in addition to the promotion of social cohesion and mobility, communicate meaningful ideas and values and, as a result of this, constitute useful instruments for setting and reinforcing the foundations of local and global communities (Bennett, Taylor & Woodward 2014). However, secluded rural areas often lack of cultural and artistic development.

On the scope of the social benefits of Transportable festival approach allows for Rural outreach. With the festival moving to venues around an area, the culture is shared throughout the territory. Thus, giving access to secluded areas and population the opportunity to experience and learn new skills and knowledge. As understood from the social benefits of Music Festivals, they allow to give a space for participants, to socialize, be creative, and open themselves to learning about issues and skills (Lopez, 2021).

*“The idea is to be able to play in places where there is no culture normally (...) we don’t want people to come from far so we ask people to make the communication of the event only locally”*

*Translated #IN2 by author*

This rural outreach approach pushes the development and democratization of alternative practices and knowledge to populations not confronted to today’s issues. It provides a reflection to the audience of what can be done differently but also why it is done like this.

Incorporated within the mobile festival approach are the challenges of touring and raising public awareness. One solution to these challenges is to reduce audience capacity. Larger crowds complicate organization and diminish control over the overall experience, as explained in an interview with SF:

*“It is important for us to do events with limited audience capacity so that we have more controls on a lot of factors (...) electricity consumption (...) when you do small events, with limited audience, small staff team, you have more the time to explain your approach and to find solutions with people that are not usually used to that”*

*##IN1 translated by author*

By reducing the audience capacity, the festival can better control its environmental impact but also the sensibilization of its crowd. Their message is better explained. If a festival adopts constraints to their practice, to decarbonize their field or fight today’s issues, they should put in place awareness and organization efforts.

In addition to the difficulties of this approach is the accessibility of sustainable transportation. Ezra, the co-founder of OO, writes *“If biking or sailing arise very interesting questions of temporality and coherence of the tours, public transports question political and standardized issues more constraining”*. Ezra emphasizes on the difficulties for touring with public transports like trains as they do not allow easy bike transports or heavy equipment on board. This results in organizations risking tickets and extra expenses to have a more ethical mode of transport for their shows. (Ezra, 2024)

### Environmental benefits:

Transportable festivals or Mobile festivals would be defined as an organization touring with their equipment to different cities, settling in various cities on their way. This approach allows significant social benefits such cultural development in rural areas, far from big cities, extending the positive impact and democratization of Low-tech, soft mobility and the ecological transition to secluded areas. Transporting a festival by bike indirectly pushes constraint like energy usage, less and lighter equipment, slower rates of shows and tours, and physically possible distance. Indeed, precise planning of all aspects of the tour needs to be adapted and reduced. To do so all parameters

need taken into consideration, what is needed, what is useless, and what needs to be adapted.

OO, wanting to conceal their vision of their mobile live show, constrained the energy needed to run the performance to less than 1Kw/h. Such constraints helped them to put a frame and a goal, in their project. For them, the next step was to understand the consumption of the show: how it consumes normally, so analyzing the demand of energy for all devices and equipment. Then deciding on what is necessary, what can be transformed, and finally optimization. SF needed to calculate everything beforehand, knowing what could be plugged in, and all this constrains on one hand the creation because it is useless if you create a show that can't run with the tools at your hands, and on the other hand the diffusion, when artist join the tour there is a long work of adapting the artists performance to the tools, what is essential or not?

This approach needs to balance the goals of impact of the experience and reducing carbon footprint. As discussed with SF, defined as a degrowth festival, their goal is to extend their audience capacity to democratize their vision and tools but with respect to soft transportation modes. To do so, SF creates small experiences (decentralized) in different cities where in the end, the impacted audience goal is reached. It allows a noteworthy difference if they were localized for a 3 days festival where the public would come to them (interview with SF).

Their Low-tech vision, even if embraced by the association members, needs to be shared and explained to professionals and to the public. In a discussion with the association, the often specific demands of equipment of professionals (engineers and artists) was mentioned as a contradiction in the organization process :

*“they have their little habits, their favorite equipment, « I want that console and that... » even though it isn't the Low-tech approach » translated ##IN1 by author*

If a festival uses sustainable alternative tools that lower the energy consumption rather than using technologically advanced and energy-hungry pieces of equipment, then they should conceal this vision with their overall electricity consumption. For instance, SF defines itself as participating in the Degrowth, because of its approach and its tools. Keeping a high energy consumption does not conceal with using their alternatives, it does if they

reduce their energetic consumption in parallel. As well, OO emphasizes the Kw/h constraint that forced them to make decisions and abandon some of their ideas. This reflection brought them to make everything themselves and have a better perception of the amount of energy. OO organized a live show that consumed 200 watts per hour which means they could run the festival 15 times with their batteries but needed to save some for moving to their next dates.

Mobile festivals include a lot of reflection, adaptation, and work, to make this approach efficient. For example, reducing audience capacity, keeping the essentials concealed with low energy consumption, or putting efforts into making less energy-hungry electric systems. This alternative approach is possible if the vision is well explained to all stakeholders.

#### **4.1.2 Public engagement**

Explained by Lopez (2021), the relevance of the social aspect of festivals is due to the level of individual and community awareness where the urgently needed cultural change is most likely to take place. To achieve an environmentally safe and socially just future, the first step is a paradigm shift in the social aspect, especially at Music Festivals, to encourage the collective action needed to build the necessary structural foundations. All three interviews concluded with a positive experience in engaging with their public. More specifically in sharing feedback reciprocally, in working with the public to debate, teach and design.

Design workshops are necessary to find ideas, answer questions, and create useful collective outcomes. Conferences also allow professionals to best explain the important questions and issues around culture, ecology, economy, and society. It creates a space of free speech, where individuals can ask questions or propose ideas that could be answered by professionals. Finally, the use of collaborative workshops for all ages, to create enlightenment and learning opportunities.

Another key solution that should be mandatory in most events is activities that gather and educate. In a moment where energy is consumed, it is most important to explain to the public the impact of the festival. Many topics can be introduced and experimented. For instance, SF organized a collaborative roundtable on the topic of Low-tech: How can Low-tech influence the cultural sector to make it more resilient and eco-responsible? The process of their design workshops “often starts with theory (...) why are we doing this? The issues and stakes?” (#IN1 by researcher). For this specific Low-tech driven

collaborative workshop, three teams were working together to imagine an event eco-designed, deconstruct and rebuild a solar panel box generator, and calculate electric consumption. OO explains the sensibilization and teaching potential of their created tools. Initiating the axis of development, facilitating discussions, and reflecting on the obstacles to the ecological transformation. For example, the association creates workshops for the young public (teachers and students), where they explain their systems and what they do, pushing the transmission of tools and sharing skills.

In a discussion with SF on the future of Music Festivals, exemplifying a scenario where there are higher numbers of independent mobile festivals compared to the actual scenario, Slowfest answered:

*"For me, there can be many small SlowFests that develop, but it requires a lot of awareness-raising, so a lot of acculturation work (...) for everyone, from the audience to the producers and artists." Translated ##IN1*

Festivals can catalyze activism by, among other things, encouraging people to take an active part in the implementation of co-created efforts. For example, waste management, reforestation during the festival days, and vigorous campaigning to bring about social and political change. (Lopez, G. C., 2021)

Localized festivals, on the contrary to Mobile Festivals, settle and engage, indeed they are the most common types of events (Ashdown, 2010). Such festivals stand in a single location area, that is often re-used for the next editions. This approach, as explained earlier, directly or indirectly brings their audience by plane and car, which was proven to be the biggest environmental issue of the practice (Shift project, 2021). However, a festival staying in a single location allows the development of the area, creating jobs, connecting with local communities, and local partnerships for close providers. An example of public engagement for Music festivals could be volunteering on the day of the event. However, a festival in Portugal provides volunteering throughout the entire year.

Waking Life stands as a festival focused on life-changing experiences, curated music, collaborative teaching, and working, settling in the Apùro area of Portugal. The organizers put effort through the years in restoring the ecosystem and land of the festival's area. Not only do they repair the location but also improve the soil quality. Adapting their practice to the natural laws of the area.

The ambitious Landcare project of Waking Life is beneficial because it not only repairs the festival's area, but also helps the ecosystem by developing and improving the soil quality and local biodiversity. On a larger scale, it favours photosynthesis and soil restoration thus offsetting a part of the carbon emissions of their Transport. Their use of social efforts involves actively engaging in awareness, teaching, and workshops with volunteers. An example of their volunteering is the Landcare project. Throughout the year, the staff team living on site work daily for restoring and improve the ecosystem of their area. For help, the festival provide spots for volunteering and learning about agroforestry.

In an interview with one of the organizers, water usage, human efforts, time, and other difficulties were mentioned. The approach to dealing with difficulties is explained through the creation of the term Groovements, accepted by the entire team:

*“Groovements is when there is a movement, there is a sort of revolution, that results in changes and then we need to take distance, analyze and evaluate.”*  
#IN3 interview quote

However, as explained by one of the organizers, *“Planting trees is one thing, it's easy, but taking care of them takes way more time.”* (#IN3 interview by author). Reforestation projects are needed efforts to counter and reconstruct the impact of human activities but are solutions that only benefit in the long-term. Indeed, the difficulties mentioned by Waking life on their Landcare project consisted of long-lasting efforts (planting, watering, protecting, and waiting). *“In summer we need to water all the trees which is like 6 days a week every morning and evening to do all of them”* #IN3.

One branch of their project is to add trees on the campsite to give shade to bellow tents of festival goers. To help the process Waking Life kept the shade structure of the past edition to reduce the water need of the young planted trees. In addition, Syntropic agroforestry is used - and taught to volunteers during the year - as a technique to reforest ethically the ecosystem and the location where the festival settles. A hard challenge discussed with the festival is the soil degradation consequences of nearby eucalyptus monoculture farmers, taking most of Portugal's land.

*“Our dream would be to ask the monoculture eucalyptus farmers to give a hectare or half a hectare and to design a system for syntropic agroforestry of eucalyptus, but how fast can we restore the degraded soil? Can we design a system that could give similar revenue to the original monoculture system? thus changing their perspective” (#IN3).* Waking life emphasizes on the impact of the nearby monoculture farmed lands, resulting in degraded soil of their campsite. However, to fight against the negative impact of this practice, questions arise. The association wish to experiment on a parcel of the monoculture farmer to prove the benefits of agroforestry on the eucalyptus parcels. With a Music Festival as experimental platform could be a tool to try different agricultural techniques, social organizations, and environmental approaches on the long-term.

Landcare projects are long-term efforts that only see it's benefit later, as many areas that need care are already and continuously devastated by human activities. However, localized festivals need to care for the location they settle in and favor activities of restoration and improvement of the ecosystem. This approach allows the sharing of sustainable agriculture practices, gives space for the ecosystem to strive, and actively anchors the festival locally.

#### **4.1.3 Cooperation and co-creation**

Collaboration, open-source framework, documenting efforts and projects, and sharing skills, equipment, and knowledge allow easier organization with partnerships, other associations, artists, and audiences.

One association, ArMoDo, allows all the actors and professionals of the live performance and event-making field to meet, share, and mutualize. As well as learning to formulate the issues to facilitate the dialogue with the rest of the ecosystem (Ezra, 2024). This transformation of the cultural and art field is growing with new artists and associations thus promoting a separation of the field from competitiveness (race to money, participants, hype, and title).

Arviva is an association that works toward identifying the levers to facilitate and democratize the sharing of equipment, of experiences, skills, knowledge, and spaces. Arviva's co-founder, Solweig Barbier, explains that it was born from the profound conviction that the field needs to be transformed to face ecological issues that we all consciously realize. Mutualization became apparent for this association, as a quick and obvious response to reduce the negative impact of the field but also cost reductive (rather than building it and creating waste in the making). One of the identified levers to reduce carbon

emissions is cooperation. Indeed, Arviva started a research in 2021 that aims at analyzing the different cooperation strategies initiated in the field of event making and live performances. The research concluded that the analyzed associations and spaces, evolved within economically viable organization models, ecologically durable and artistically rich. They also confirm that cooperation cannot be decreed but requires commitment and iterations. Social communication networks emerge, evolving and adapting constantly, they have the advantage of shining preciously shared benefits that deserve to be valorized and supported for their direct impact and their quality of dissemination. Outside of its theoretical benefit and the democratization of new routes for stakeholders of the field, the study shows the positive impact of Arviva's work, facilitating the mutualization of equipment. (Barbier. S, 2024)

As discussed in an interview, SF engages in collaborations with activist associations. On events like riots or tours, their tools serve as great message spreaders. La Caravane des Possibles consisted of a tour by bike doing concerts and meetings with citizens and small village associations. Slow-fest partnered with Green Peace, ANP COP 21 and others. As well OO and SF share their tools with other associations, artists and organizations that opt for the same mindset and goals. OO pushes itself to make its source codes, plans, and tools documentation open source and free to the public. Even if OO is financially tight, they see this approach of creating a common, of sharing "goods" and ideas, as a pillar to the ecological transition (Ezra, 2024). Anyone can find their tutorials, to make their own transportable audio system and light system from home with accessible materials. They emphasize, however, the amount of work with the open-source framework, documenting all their projects, explaining so that anyone can understand, improving and resharing their tools.

On another side of collaboration and co-creation, the festival l'Echo du Marteau stands as an experience of Collective Architectural building. During a week, participants (novice or not) are invited to build the festival from the construction to the animation or the logistics. By focusing on diverse needs and actively participating in the community's daily life, all participants share unique moments and gradually cultivate a shared consciousness of the festival and its multiple values and purposes. As well as to create and construct the festival ambitions to be Low-tech lab for bio-sourced and local materials, hand-made tools, and techniques. Such vision is kept for all aspects of the festival to address the final environmental footprint of the event. The festival pushes the reflection that Architecture is a prerequisite for a broader reflection on how to

inhabit the world. Furthermore, on the important issues of the ecological transition, where they convince not necessarily through words, but above all through the making.

Outside of those activities the festival opens debates and talks to rethink our knowledge, and our values, sometimes confronting them. The farm used to settle the festival, center of festivities, cohabit the construction workshops, collaboration spaces, work meetings, and other numerous moments of sharing.

*“ It is by living together for several weeks, by fully appreciating the diversity of the place, that we aim to make this event unmissable, and for the public - locals, tourists, festival-goers - to fully recognize themselves in it.” (L’Echo du marteau’s website: <https://www.echodumarteau.fr/>)*

Finally, often forgotten, is the impact of a programmed line-up. Many large-scale festivals aim at booking mainstream artists, paying them large amounts of money for expensive and energy-intensive performances. If decentralization is one of the sustainable directions to lower the environmental impact of events, then line-up programming should conceal the vision to book small artists. An approach to programming the line-up could be to act as a “launchpad stage” to give exposure to underground artists who have worthy messages and creativity to spread. A fair trade between promoters/organizers and artists to lower programming budgets and give light to the unknown ones. As an example, the festival EMERGENCE acts as a launchpad event for diversified domains like dance, theatre, music, and visual arts. Their goal is to create unforgettable experiences for the audience and offer a platform of expression for Strasbourg’s local talents (<https://www.instagram.com/p/CwQDRs5sjaV/?hl=fr>).

#### **4.1.4 World-building**

From past studies, it is clear that Music Festivals stand as experimental playgrounds for testing alternative durable practices and organizations. (Lopez, 2021). In an interview with OO and their ONIRI 2070 project, was discussed the design-fiction approach for world-building. “*Through the writing of the show, the spectator is invited to think and question their lifestyle and actual energetic consumption*” (#IN2 by author). Their last tour, ONIRI 2073, is a light and sound creation that invites the participant on a trip to future cities in development, that compose progressively a fantastic archipelago. Juliette Guignard recorded the stories of individuals invited to embody the inhabitants

of the shifting archipelago. She connects them through her singing, and Ezra envelops these interviews in a musical universe that he creates live, using tools and instruments often made within the OO company.

Through their future design-fiction approach, they have distanced themselves from their practices by confronting them with scarcity, slowness, and social paradigm shifts regarding progress, ownership, or the living. Carried by musical and luminous compositions, these narratives continue to be performed on stage in unconventional venues, creating a bubble of intimacy with their audience (Ezra, 2024). Indeed, it favors community engagement and facilitates the understanding of the vision. World-building subtly puts the audience in front of important subjects, testing the imagination of the participants to change their perspective or bring them to rethink their beliefs. The ecological transformation needs to be understood and accessible, world-building creates an environment that offers constraints, possibilities, and universes where everything seems more doable and optimistic. On a larger perspective Valensi describes the central role of culture as: *“the one to constructs stories, and to inspire it’s audience to more successful models”*. The makers of world-building stand as Artists, which should not be forgotten in the ecological transition of the field. (Valensi. S, 2024, p.141)

*“The ecological transition of the culture that does not involve it’s artists, is forgetting it’s systematic role: the one to share stories and to build resilient models”*. (Valensi. S, 2024, p.141)

The author and theatre director ask the field to think about the questions one audience member goes through, in order to facilitate the ecological transformation: who do they want to be like? Which lifestyle will they associate with success? What will really impact their way of living in the future? We understand the role of the artists, to facilitate the search for ethical values and beliefs with their audience (Valensi. S, 2024).

To conclude on the approaches of festival organization, the debate of Transportable festivals and Localized Festivals is related to each organizer’s perspective. The main ecological approach to festival organization is grounding itself in the territory, with the stakeholders, and democratizing their tools to secluded towns and villages (Ezra, 2024). Ezra’s colleague and light engineer confirms the importance of having both transportable and localized festivals. Indeed, even if the public needs to move to the location, there exist festivals

that manage to organize themselves and decide on more sustainable approaches. As well they allow to work for social and ecological efforts, testing new alternatives and inviting the public to think differently (#IN2).

## **4.2 The alternative tools for sustainable festival organization**

It is important to note that all tools are unique to one purpose/festival. For instance, an audio system designed to be transportable by bike might be less efficient and good sounding than a high-fidelity sound system that will consume more and be harder to transport. Every festival should wisely think about what equipment or processes to renounce or adapt. As well, put effort into researching what could reduce carbon footprint without impacting the goal of the event. The next chapter aims at listing what alternatives designed tools could provide and their limits. The next tools are viewed as potential solutions which are a few out of all the techniques used in today's live performances and Music Festivals.

### **4.2.1 SlowFest: a mobile festival**

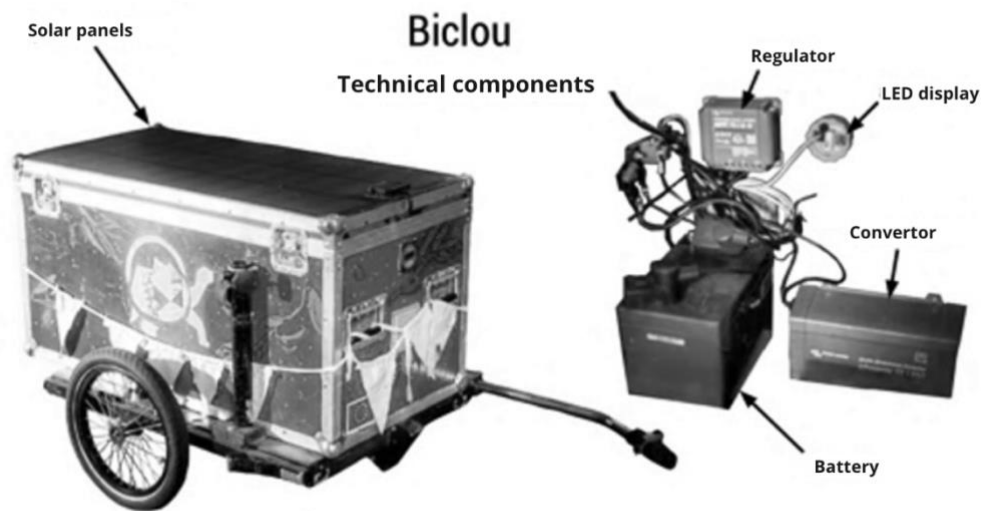
#### **Technical details and their goals:**

SF association created Low-tech bike trolleys (see Figure 16, 17, 18) to help them move around cities and villages, performing on the way to the venues. Their tools also help for sensibilization and teaching of their audience, on technical skills and overall Low-tech philosophy. Their goal was to have an object that could easily be stored in a corner until the next usage. Thus, being reversible, reusable, and lightweight. The bike trolleys are powered by solar panels and used to coproduce the different events. SF, describes their bike trolleys as Low-tech since they were designed for their needs and built by the team. Through their projects, the trolley was adapted and improved to being perfectly fitted to their practice. The designed tools are understood, and repairable, and their limits are tested. The scenographer of SF insisted on the goal of minimizing changes to the raw material, for it to be used for other purposes, making the design reversible. For lighting the use of LED is widely accepted within the industry as low-energy consumption however their manufacturing could be criticized. Adding to the use of LED lights, SF tries to use lights that are not meant for shows, like construction site lamps.

Finally, SF is actively testing new alternatives with mirrors to control the lighting of the projector and experimenting with light redirection. As well, an

interesting project in working was their experiments with light and bike wheels. A human-powered light experiment would produce images and bring a reflection to the spectator.

Since SF are on the go, at a venue, or in an outdoor area, their need for structure (bar, chill zone, stage) is either movable or not as needed. However, as discussed in an interview, a reversible and reversible white dome, was transported by horse for one of their tours. (#IN1)



*Figure 16: Technical component image of the Biclou (150 persons capacity)*

*Source: <https://SlowFest.org/>*



Figure 17: Technical component image of the Big Mama (250 persons capacity) Source: <https://SlowFest.org/>

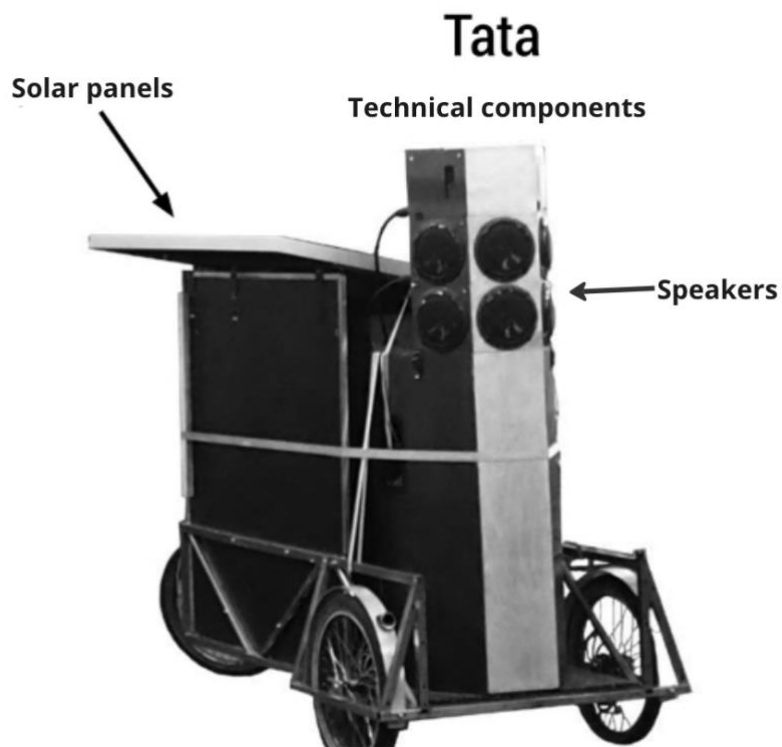


Figure 18: Technical component image of the Tata (500 persons capacity) Source: <https://SlowFest.org/>

## Difficulties and implementation

SF limits its audience capacity for better control over social factors but also energy consumption. Indeed, as explained in an interview with the sustainable report organizer of the association, a performance for 300 persons is doable, but to go higher would involve rethinking their tools, and create additional trolleys which could be useless. Furthermore, tours need to be well designed to human health capacities, date times, distance traveled, audience transport, and budget.

A difficulty with designing tools is their usage in venues. As the tools are not certified, venues prefer to have equipment invoices to ensure safe systems. SF realized the often-unusable DIY batteries and inverters.

A reflection that arrived in the process was the mindset of electricity consumption when performing in venues: "Let's say that in venues, you can easily support the show with the equipment already in place, forgetting the impact of your consumption, however, when performing outdoor you start from zero and it pushes to think for optimized systems" (#IN1 interview)

### **4.2.2 Organic Orchestra: a mobile live art organization**

#### Technical details and their goals

OO designed all the tools that are needed to run their show. From the Raspberry Pi lighting devices, and programs, to the lights, audio systems, and transportable trolleys. Their goal in creating the tools themselves helped them and their audience to understand better how they run, what they do, and what they consume. The vision was to create tools that would consume in total, less than 1Kwh (electricity consumed by a single typical light model used in venues).

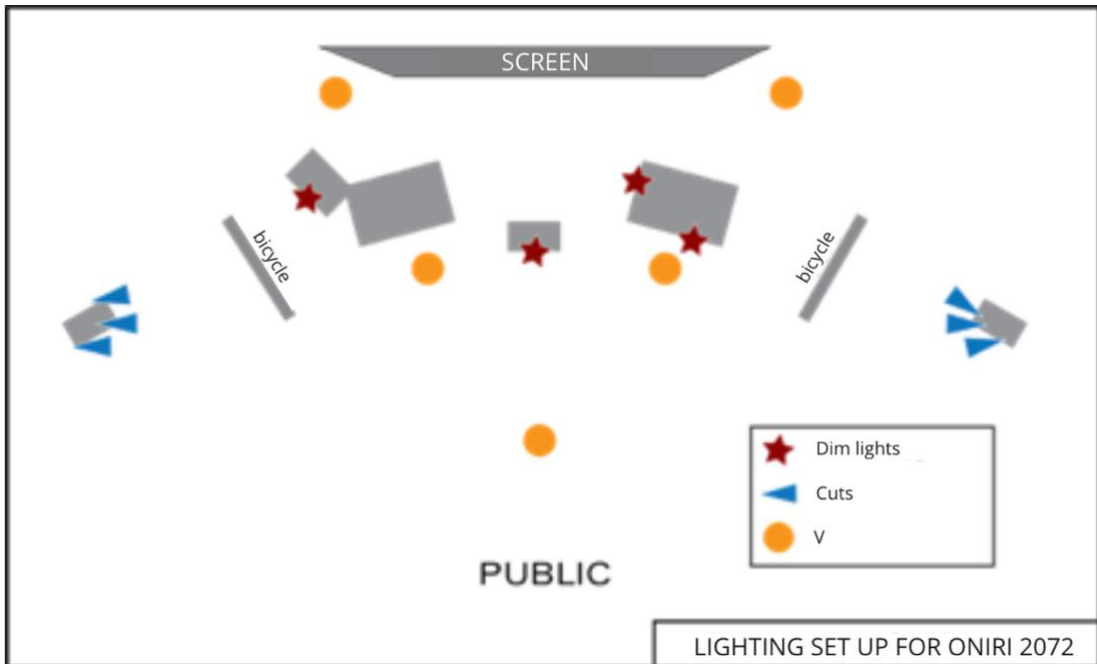
The Pop-up boxes are designed for audio quality, storage, and to be transportable with bike trolleys. *"The Pop-Up Box is therefore the sound system for this performance and thus addresses the constraints encountered for several years by this restricted but desired mobility. Sound quality, weight, ergonomics, and robustness are the reasons why several versions have already been built, tested, and improved."* (Website of OO).



*Figure 19: Pop-up box (transportable audio and storage system) of Organic Orchestra (Source: <https://wikifactory.com/+organicorchestra/>)*

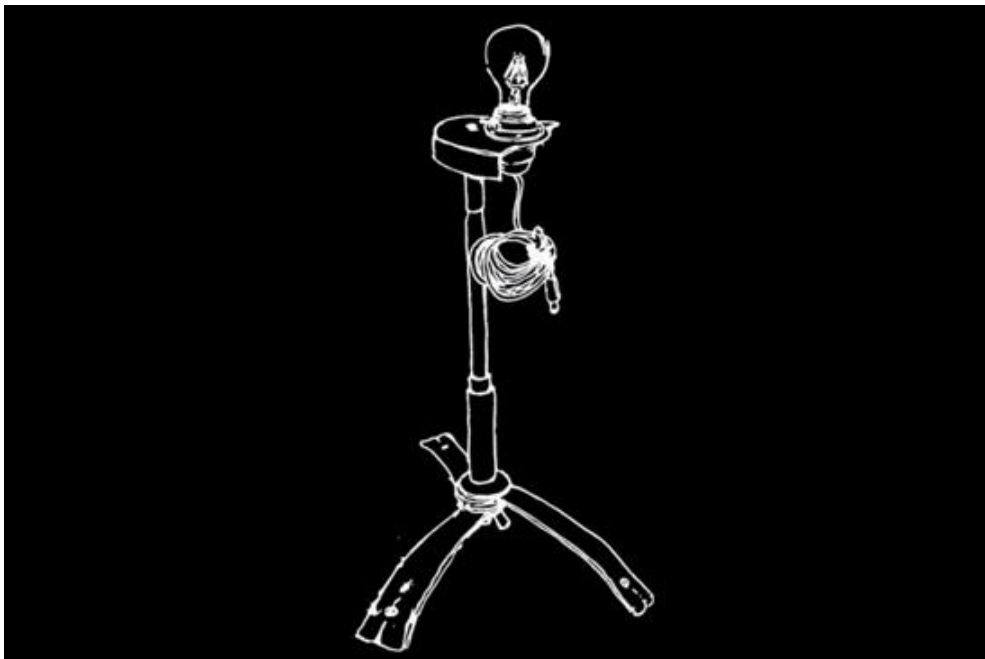
The overall designed system fits the goal of lowering energy consumption; thus all objects need to be adapted. Figure 20 shows the lightning system set-up plan with the following elements:

- **The screen:** For past editions of their show, OO invited a VJ that films shadows and light on organic-looking objects, projected on the screen.
- **The V :** scenographic elements important for the show, invest the volume of the stage in a V shape.
- **The Dim lights (cols de cygnes) :** Lights for instruments, tables, and faces.
- **The cuts :** Long-range and focused lights allowing precise lighting of scenic elements.
- **Bicycle (VéLow):** Hacked electric bicycles used for transportation and power supply. *“In a world where soft mobility is booming, energy generation tools are multiplying. Indeed, electric bicycles, and more particularly electric motor bicycles, are capable of producing energy as much as consuming it. The objective of this project is to focus on the generation aspect when these mobility tools are at rest” (#IN2).*



*Figure 20: Lighting set up for ONIRI 72 (Source: <https://wikifactory.com/+organicorchestra/>)*

This lighting set-up is designed to be used while travelling by bike and autonomously powered, the entire lighting system is robust, compact, low voltage, low consumption, and controllable with a PC or Raspberry Pi.



*Figure 21: Light on pole drawing (Gouloù) (Source: <https://wikifactory.com/+organicorchestra/>)*

**Gouloù:** Light on pole, movable with light shade. Low tension (12 volt), compact, robust, and on tripod to adapt to the terrain.



*Figure 22: The Cuts, precise light projectors to stage lighting (Source: <https://wikifactory.com/+organicorchestra/>)*

**The Cuts:** DIY projectors, running under 12 Volts, 7W, with a 15° degrees opening for settings.

The creation of those tools is part of the research conducted by the OO company, which places its creative philosophy in close connection with mobility. Indeed, their touring travels are done by bike. This mobility is coupled with a concern for energy autonomy, leading the project towards a trend of energy self-sufficiency. Currently, the means of recharging the batteries used for their shows are solar panels coupled with different power blocks allowing recharging or simply a power adapter. The objective of this research is to provide a new way of generating energy to charge the batteries but also to raise awareness and mediate around these techniques. The idea is to make the system understandable and to be able to follow the generation steps. Furthermore, it is necessary to create an engaging and open display. The idea is to develop a system that retrieves voltage and current data to light up an LED strip display according to the energy intensity generated by the audience. This

system can also replace the Wattmeter used. Thus, the more one pedals and generates energy, the more the LED bar will light up. Additional modes can also be added if the bar is not only meant to act as a gauge. We are thus creating 2 complete systems with two bikes in each system to compete teams against each other to see who can generate the most energy.

### Difficulties and implementation

Through an interview with OO, difficulties came to the surface. Aesthetical wise, the number of lights is a balance to find, to not block other sources of light like the projector or the camera used to film the objects for the VJ. Energetic-wise, it is important for autonomous systems to be used wisely and to recognize their negative manufacturing processes. If a festival aims at creating autonomous electric systems and tools, using batteries and renewable energy, they should as well limit their energetic consumption.

On the limits to their designs, OO emphasized on possibility for wider purposes, recognizing the need to adapt the tools but confirming the robustness, and fidelity of its design. *"We consider that our tools are good for 150 persons or maybe 250 persons max, but indoor, the audio system is comfortable and audiophile with a really good sound quality."*(#IN2). Finally, answering the question of whether their tools could be used for a more danceable festival rather than live performance: *"Totally, that's one of our future goals (...) the tool is robust, very polyvalent, and adapts to many other contexts"* (#IN2). OO aims to share and test the limits of their innovations, to other purposes, and to different artistic organizations that are interested in adapting their practice to a more sustainable alternative.

### 4.2.3 Visiophare: Low-tech visual art and mapping

#### Technical details and their goals

Visiophare (see Figure 23) is a tool created by a group of designers, artists, and engineers (Oyé Label association) willing to create, share, use, and democratize Low-tech lighting and video tools. Their technological choices are political as a result of the Low-tech approach that invites everyone to rethink what it means to innovate, and under what social conditions. *"Modern utopia cannot solve the contemporary need to live with our environment"* Visiophare's website (available at <https://www.visiophare.org/>).

This association tries to do things differently:

- By creating simple objects using mainly existing technologies and materials.
- By systematically strengthening participation with people, for a social art.
- Aiming for objects to be companions rather than servants.

The goal is to use electricity but as little as possible. The LED modules are optimized and can be linked to sustainable energy production. Visiophare alternative tool brings a more DIY technique to Visual Arts and used by collectives around France (Crocofumé, Oyé label and more). Their tool opens a wide number of visual arts techniques and styles: Moiré generators with transparent plastic films and black markers, or liquid colored water and soap. This organic and handmade style to the projections brings the audience and artist closer to the technology in use, understanding its possibilities and limits (see Figure 24)



*Figure 23: Visiophare hacked school projector (Source: <https://www.visiophare.org/>)*

*“We then wanted to question the mediums of digital art to convey other messages across: how can we combine ecological and popular storytelling with appropriate tools for visual art that has to be performed and shown on large surfaces in the public space?”*

*Visiophare’s website.*



*Figure 24: Visual lighting on building wall by Visiophare designed tool (Source : <https://www.visiophare.org/>)*

## 5 Conclusion

The resulting alternative approaches from the interviewed festivals ended up correlating with the essential concepts that the literature review found. This chapter will summarize the research findings in relation to the research questions. As well, it will list the limits and shortcomings of the thesis. Finally, developing further inquiries to be researched.

### **SQ1: Why are Music Festivals important in the ecological transition of our world?**

In this research question, we try to understand the potential for Music Festivals to be designed as socio-environmental events. Within the literature review and the interviewed festival organizers, it is clear that Music Festivals are much more than just a space where people come to listen to music. They stand as spaces to develop activism, community building, and are platforms for experimenting with new sustainable tools and organizations, as well as societal governance. (Lopez, 2021)

### **SQ2: How are Music Festivals impacting the environment?**

In this research question, we try to understand the negative practices that are often used in festivals (mainly large-scale festivals), the impact of their competitiveness, and race to audience capacity. It is clear from the existing research papers that Music Festivals are noteworthy contributors to climate change and that they often raise bigger questions about the place of mankind in the ecosystem. More specifically literature showed that the biggest source of emissions was Transport (audience, equipment, staff and artists), Food menu, Beverages and energy usage (Shift project, 2021).

### **SQ3: What are the approaches and processes for sustainable festival organization?**

As a result of this thesis research, listing the alternative approaches of Music Festivals allowed us to get a grasp on what can be done on a small scale. The research included interviews with festival organizers that pushed the limits of socio-environmental capabilities. This thesis analyzed mobile festivals that democratize and share culture by expanding their local networks and world-building, in small villages and towns. As well, Localized festivals allow to connect with local stakeholders improving the connections with communities, developing the area, and improving the ecosystem. From a holistic perspective, the needed festivals are the ones directly fighting for social and political norms to change and be redesigned. These festivals allow the audience to

collaboratively enrich each other, sharing ideas, voices, and skills through workshops and debates. Similarly, the Low-tech approach allows a more democratic organization system where the audience is part of the team, during the festival, before or after (co-construction of infrastructure or land restoration projects). All these approaches socially and environmentally change our common beliefs about having fun which is what sustainable festival organization should be.

**SQ4: What examples or tools can be used to reduce environmental impact of a festival directly or indirectly?**

On the same mindset as the above approaches, Low-tech tools are developed to democratize these ideas and perspectives. Such tools were found through the web and interviews with festival organizers. Mentions about building electric systems powered by human strength and solar energy. As well, transporting the festival with bike trolleys -while charging the batteries to delete the carbon emissions of its audience transport- democratizes the ecological transition. Furthermore, Eco-scenography and Eco-conception reminds the needed place-based approach of designing. A philosophy in which every solution is relational to its location and should be unique to its purpose and its local stakeholders. The designs shown in this thesis, not only have the power to reduce energy usage but also provides the spectator, the artist, and the organizer with a reflection of how they function, what they require, and why they are created, as well as open discussions and ideas. Through the research and interviews of this thesis, organizations like SF, OO, and Visiophare are developing Low-tech tools to reduce the impact of Visual Arts and Lighting systems. Tools like Autonomous and optimized lighting systems allow the democratization of alternative ways to share art and party durably. In fact, they have the potential to be used and adapted to more culture, art, and live performance events.

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**Limits:**

The limit of this thesis is to analyze the problems associated with large-scale events, while the interviews focus on more decentralized and small festivals that experiment with new tools and approaches. Indeed, the bigger the festival, the bigger the impact, the bigger the problem, and the bigger the effort is, to counter the issue. Developing listed solutions on a large scale can be difficult, and the changes required to make music festivals more environmentally friendly are thus not only technical but mainly cultural and social. The

development and improvement of those tools for larger size of audience need to stay ethical, reconsidered, and durably made.

With this thesis being a Bachelor's thesis and with the limited time available, three festival organizers answered. At first, the interviewee selection involved researchers, artists and designers in order to get a more transdisciplinary perspective. The actual interviewed contacts ended up giving already diverse answers for topics of different organization disciplines. Most of these festivals have a vision of open documentation and sharing so participating in that research followed their values. As well as democratic organization thus, a more holistic perspective on the field.

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#### **Future studies:**

To summarize, this thesis explores the approaches and tools that allow a decrease of carbon emissions compared to typical equipment and processes. It also contributes to the fact that the social benefits of cohesion, togetherness, wellbeing, and collective intelligence plays a role in a sustainable festival organization (Lopez, 2021). If the bridge between festivals and sustainability exists, efforts should be made to reinforce and facilitate it to the wider public. Often the standards and policies created are oriented towards economic growth but this thesis emphasizes on the paradigm between festival's visions and financial benefits that should not take place. The future off Music Festivals depends on the help of outside stakeholders like public transport, Insurance companies, and the rest of the public sector (standard policies).

This thesis took a holistic view of the problems of Music Festivals and compared them to possible alternative approaches, tools, and structural changes. Out of this research emerged niche topics that are worth studying:

To see the impact of the approaches mentioned above, studies need to be made on a long period of time to understand the impact of social cohesion, or alternative organization, or reduced carbon emission of Low-tech visual mapping. Mobile events allow to better control one festival's transport carbon emissions, but localized festivals could provide a more stable space for building resilient communities and experimenting with more local connections and organizations.

Secondly, these more durable alternative tools and approaches might be working for small-size festivals but would they reduce the impact for bigger festivals, would they be adequate? Would they still be efficient for bigger crowds thus higher carbon emissions? What if Tomorrowland or Glastonbury festival started using Hacked school projectors, or bike-powered lighting systems? The outcome? There are growing need for research on the difference of the impact of decentralized smaller festivals that result in rural outreach, a more accessible experimental platform for trying new things.

Thirdly, does festival's size matter? *"To intersect social and ecological challenges with economic, organizational, and human contexts is to question the size of our festivals. This question of size implies being clear about our social utility: what we want to defend, produce, and the narrative we want to contribute to. It is then necessary to find the just and acceptable size for today and for tomorrow. Here, ideas and proposals abound carbon emission quotas, socio-environmental accounting, reduction of capacity, and revision of temporality and/or rhythm... To succeed in this equation is to think about the essence of our project and act responsibly: how can we better welcome audiences and artists, putting hospitality and pleasure at the center? How can we improve our know-how and professional gestures? This challenge of sobriety or degrowth cannot be considered without strong cooperation and solidarity among cultural actors. This ethic of cooperation must be at the heart of our collective projects and networks."* (R2D2, 2024, p.31, translated by researcher). Future studies could study the difference of impact of different variables (big/small scale festivals, local/national artists, provided activities and lower usage of sound system and lighting throughout the event)

Finally, in an email discussion with L4R visual artist collective: "Many times, we use reclaimed materials from trash to create our stage designs. Our video projectors have been recovered and refurbished, but our electric consumption is higher than another team that uses a newer laser projector. The technology in our projectors relies on a replaceable lamp, allowing us to continue using the same projector—that thing is not possible with laser projectors. Low energy consumption versus reusing materials that would otherwise end up in the trash—these issues related to technological change must be viewed through the lens of a circular economy; otherwise, in our opinion, it doesn't make much sense. Some of our stage designs have been crafted from fruit baskets found in the garbage. We've given these baskets a new life, but at the end of the evening, we wondered what to do with them. If the concept of Low-tech is understood as an environmental stance, it should be a banner that the artists involved in festivals and the organizers carry

together; otherwise, it becomes an empty choice.” In other words, the bridge between Low-tech and Music festivals should be embraced by all stakeholders, musicians, promoters, volunteers, participants and higher positioned actors in order to facilitate the transition. There needs to be more work and projects between the general public, associations and public institutions in facilitating, experimenting and democratizing the ecological transition.

### **Practical implications:**

This thesis actively promotes the philosophy of a more responsible and sober approach to Music Festival organization and creation. Thus, the findings of this study, interview quotes or research papers, could help independent festival organisers, festival managers, artists, and designers to see a different side of Music Festivals. The tools developed and shared in this study could be redesigned, recreated, and developed for future festivals. Such approaches developed and shared in this study could be experimented and adapted to a festival’s audience and logistic. There are a lot of solutions that already exist today, and even more that have just been tried by a few, so this paper is only a portion of what can be done. Its goal was to democratize the Low-tech philosophy, that includes transdisciplinary and soberness, and apply it to Music Festivals. It creates a more socio-environmental approach to event management for all actors and participants.

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# Appendices

## A. Interview email example

Name of interviewee

Dear Waking Life,

Why contact them ?

As a music festival and electronic music fan, I stumbled upon your instagram account and was led into your landcare project page. Your community and organization have been putting efforts into topics I am researching such as, circular and place-based approach, impact of participant on the location and ecosystem, reducing environmental impact of the festival...etc.

Research questions

My research questions are the following:

- What are the Low-Tech innovations (systems, objects, tools, and processes) having potential on music festival grounds? For scenography and infrastructure?
- What are the boundaries to the implementation of alternative designs that are Low-tech or ecologically positive? (What is stopping the scene to evolve with those tools?)
- What are the benefits of the ecological transition for scenography and music festivals?

Scope of thesis / Goal

My goal is to list the innovations that require minimum energy, influences, and impacts the user, that are easily accessible and reusable (Low-Tech). Then, finding their potential being adapted and used at/for music festivals and how. Therefore, my paper could provide a first step guide to music festival organizers and scenographers.

I believe that the sector/field should become small-scale, decentralized, and diversified. This research would promote and push this low-tech philosophy forward as well as the benefits of sustainable culture and art of the music event scene.

What they could bring to the research ?

It would be with great pleasure to have a talk on this topic, and to get your take on the subject. Your festival seems to have a diverse list of tools and people that are willing to push the sustainable, local, and frugal approach to music festival organization.

Warm regards,

Mattéo SERRE  
Aalto University Bachelor of Design (4th year)

## B. Codebook

Topic	Topic description	Code #	Example quotes	Distribution	Frequency
1. Sustainable approaches	Interviewees were asked about their approaches to organising their events, strength and weaknesses	1.1 Transportation of the equipment and staff reduces carbon footprint	"Notre souhait c'est d'étendre quand même le public tout en étant dans le respect des moyens de transport propres en mobilité douce de préférence et donc c'est à double tranchant c'est la raison pour laquelle on est obligé de regarder tout les paramètres." Interview 1  "la dernière forme de spectacle qu'on a jouer elle consomme 200 watt heures c'est-à-dire qu'on pourrait nous à bord là on a 3 kilos watts heure d'énergie donc on pourrait jouer 15 fois le spectacle en autonomie si on devait pas pédaler mais faut en garder pour l'aller le retour le lendemain si on a un spectacle " Interview 2	#1, #2	2/3=66 %

		<p><b>1.2 Documenting and open-sourcing of the festival's work and processes makes their tools, their approaches of management, and their difficulties free to the public, democratizing and facilitating others to try sustainable solutions.</b></p>	<p>"on invite d'autres artistes à se servir de ces outils pour repenser leurs pratiques leur mode de tournée et après du coup" Interview 1</p> <p>"que d'autres collectifs et d'autres artistes utilisent plus des remorques similaire et fassent des événements comme ça mais on n'est pas dans une démarche capitaliste où on a envie de dominer le marché et de prendre de plus en plus de place" Interview 1</p> <p>"que tout le code soit en open source et du coup là le but c'est que tout mettre en libre accès pour que les gens puissent refaire ça.(...) , que les gens puissent faire très facilement des scènes lumières à partir du matériel qu'on a aujourd'hui ok et qui puisse le faire eux même (...) Après il y a un gros travail de documentation qui est ça amélioré toujours, documenter tous ces objets, tout ce qui est fait maison et toutes nos pratiques, c'est les expliquer pour que n'importe qui puisse les comprendre les refaire les améliorer les partager." Interview 2</p> <p>"donc ya vraiment l'idée d'essayer de le faire tester dans d'autres contextes par d'autres gens et la on voit si c'est possible, fin ya d'autres festivals qui sont intéressés par le dispositif et on voit si on peut pas leur mettre à disposition, des choses comme ça." Interview 2</p> <p>"We document all our water usage on the day of the festival like showers, taps...etc but for the landcare project we don't" Interview 3</p>	<p>#1, #2, #3</p>	<p>3/3= 100%</p>
		<p><b>1.3 Festivals that use world building and to share values, process, and vision, allows and facilitates the education of their audience on issues and their solutions.</b></p>	<p>"où l'idée c'était de parler d'un d'un monde en 2070 qui sera un archipel d'îles (...) et les habitants de ce monde là en 2070 et qui racontaient leurs vécus dans cet archipel et le but étant de transmettre un peu ce mode de vie l'idée c'était d'avoir un peu un point de vue plutôt enfin c'est d'être un peu utopique (...) et en fait cette collecte elle est elle est en constante évolution parce que au cours des ateliers qui peuvent être faits ou des rencontres et Ben des fois il y a des nouvelles paroles qui s'intègrent au spectacle quoi et qui agrandissent toujours cet univers de d'ONIRI" Interview 2</p> <p>"il y a Juliette en fait au début qui va un peu introduire le spectacle, elle va raconter un peu bon bah aujourd'hui on est venu à vélo, on a monter le materiel du spectacle nous même avec des amis artistes designer designeuse ou ingénieurs et ce spectacle consomme tant de d'énergie, donc un peu donner les infos générales du spectacle en mode bah le spectacle consomme 200wH seulement qui est l'équivalent de 2 min de climatisation ou fin on utilise des exemples comme ça avec des actions du quotidien pour faire une petite introduction et pouvoir en parler au public mais après les gens on les invite à venir discuter avec nous à la fin du spectacle ducoup souvent les gens enfin c'est encore mieux de manière informelle en voyant le matos tout ça, après des fois on fais des bords plateaux du coup en fin de spectacle on fait un question réponse un peu officialisée du coup là ça dépend des gens des fois ça va partir plus sur la technique, sur l'imaginaire, sur le ressenti, mais assez souvent on parle quand même du système technique de toute la réflexion et de la philosophie." Interview 2</p> <p>"que si on arrive à les émerveiller rien que par l'esthétique et l'artistique du spectacle et bah a la fin en discutant ils comprennent que il y a tous ces questionnements et ces façon de faire sois même différemment tout ça bah ça rajoute une pierre à l'édifice quoi." Interview 2</p> <p>"les gens se questionnent beaucoup enfin ça perturbe un peu les gens. Avant y avait pas le</p>	<p>#2</p>	<p>1/3= 33%</p>

			<p>discours de Juliette au début qui expliquait un peu le délire du spectacle et du coup c'était marrant parce que les gens il regardait ça comme un spectacle habituel et c'est que à la fin quand il voyait tous les petits trucs qu'ils se disaient « bon en fait c'est pas habituel votre matériel » enfin du coup ça ramène beaucoup de questions " Interview 2</p>		
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		<p>1.4 Festival that involve collaborative workshops and sensibilization are beneficial for community building, awareness and tutorials to share skills and ideas.</p>	<p>"y ai toujours une personne de dispo pour faire de la sensibilisation sur ça et répondre aux questions des gens qui viennent et que ça intrigue." Interview 1</p> <p>"on fait aussi un peu de médiation à côté donc ça va être de la sensibilisation, des ateliers de fabrication d'instruments à partir de déchets, des trucs autour de la musique mais un peu désacralisée pour vraiment être ensemble et faire des projets musicaux ensemble" Interview 1</p> <p>"pour transmettre aux gens ce qu'on fait on fait beaucoup d'ateliers aussi avec du jeune public dans des lycées ou dans des MJC ou avec des profs aussi où là on explique nos systèmes et on essaie de transmettre les outils et d'apprendre à fabriquer." Interview 2</p> <p>"Ouais je comprends je pense qu'il faut un peu des 2 en fait les 2 sont assez complémentaires, prcq t'as des festivals fixes qui fonctionnent très bien et où il y a il y a moyen de faire vraiment des efforts sur les points de vue sociaux et écologiques de tester des nouvelles choses et d'inviter le public à voir d'autres choses " Interview 2</p> <p>"on a fais de la bidouille électronique pour que ça puisse fonctionner en mode vélo générateur et ducoup recharger les batteries et donc tu as ce côté-là où c'est hyper bien l'autonomie pour faire de la sensibilisation " Interview 2</p> <p>"le matin c'était un peu théorique (...) pourquoi on faisait ça ?, les enjeux ? et tout ça, et l'après on a fait 3 petits ateliers, un atelier pour imaginer son événement éco-conçu, un atelier de montage et démontage d'une run box solaire, fin le branchement électrique et un atelier de calcul de consommation " Interview 1</p> <p>"pour moi il peut y avoir plein de petits slowfest qui se développent mais il faut faire beaucoup de sensibilisation donc de travail d'acculturation" Interview 1</p> <p>"donc avant de tuer ces gros festivals et il faut véritablement passer par la sensibilisation de tout le monde, du public au producteur et artistes" Interview 1</p> <p>Interview 3 also used workshop on syntropic agoforestry</p>	<p>#1, #2, #3</p>	<p>3/3= 100%</p>
		<p>1.5 Any raw material used should be kept as natural as possible (exp; paint, dye, cutting, screws). Focus of Reusing, Repairing, repurposing...etc</p>	<p>"réemployer aussi un maximum de choses à essayer de pas trop modifier la matière première pour qu'elle puisse être réutilisée dans d'autres contextes" Interview 1</p>	<p>#1</p>	<p>1/3= 33%</p>

		<p>1.6 There is a need for a rethink or transformation of <b>social and cultural norms</b> of fun because of the social and environmental impact of big festivals</p>	<p>"Moi je pense qu'il peut y avoir plein de petits SlowFest en Europe mais qu'il y a un changement culturel à opérer avant l'acceptation du grand public de ce qui est fun à faire.(...). Il y a pas mal de gens encore qui kiffent aller à Dour et faire des trucs immenses où il y a 6 scènes et avec des grands campings machin, ça je pense que ça va être amené à disparaître faute de ressources assez prochainement parceque c'est que c'est des gros pics de consommation" Interview 1</p> <p>"Donc ouai au début je sais pas y a un peu ce côté impressionnant et au fur et à mesure les gens à force de discussions comprennent et ça les intrigue ça donne envie de de comprendre en fait comment ça fonctionne beaucoup plus que sur du matériel classique où les gens vont être en mode « ah oui d'accord c'est un projecteur acheté et faut avoir une formation pour le mettre en route » là les gens comprennent que en fait c'est des objets de leur quotidien et qui sont un peu transformés un peu hacké donc ça titille la curiosité souvent ça donne envie au gens." Interview 2</p> <p>"C'est dur c'est dur d'interdire aux gens (on the audience coming to the festival) (...) c'est complexe de savoir comment sensibiliser à ca." Interview 2</p>	<p>#1, #2</p>	<p>2/3=66 %</p>
		<p>1.7 Transportable festivals allow <b>rural outreach</b> and development</p>	<p>"mettre en place des parades où on invite vraiment le public à, fin on a toujours fait ça, des événements en mobilité où les gens l'utilisent à vélo et tout mais là il y a carrément des SMAC (Scènes de Musique Actuelles) qui nous démarchent pour faire venir leur public à vélo et du coup on met du son on part du centre-ville et on va jusqu'à la salle et ça fait partie de la soirée donc je pense montrer aux gens que voilà le vélo c'est accessible et que, et donné un peu envie par rapport à ça c'est un des principaux impacts qu'on a." Interview 1</p> <p>"l'idée c'est de pouvoir jouer vraiment dans des endroits où il n'y a pas du tout de culture d'habitude (...) on a pas envie que les gens viennent de loin du coup pour ça on demande aux gens de faire la communication que très locale" Interview 2</p> <p>"Bah il vont nous payer déjà, et ensuite ça nous permet d'avoir un ancrage local, on s'inscrit dans une dans une programmation locale avec des gens du coin ils vont pouvoir faire la com auprès de leurs adhérents,(...) et enfaite ce serai hyper complexe de rentrer dans nos frais parce que du coup il faut prendre un hébergement, il faut qu'on ait un lieu pour stocker le matos le soir enfaite il nous faut un ancrage local sinon c'est c'est très compliqué quoi" Interview 2</p> <p>"d'aller voir les gens qui n'ont pas habituellement accès à la culture et donc après sur les mobilités on tourne à vélo et on déplace tout le matériel du spectacle à vélo et le truc c'est que si on va dans un endroit et qu'en fait il y a des gens qui font 3 h de route en bagnole pour venir nous voir bah ça a pas trop de sens. " Interview 2</p> <p>"Oui mais en plus de ça c'est que le fait de se déplacer en itinérance on va vers le public et non l'inverse si on est positionné 3 jours sur un festival c'est le public qui viendra à nous donc là je trouve que c'est déjà assez énorme comme différence" Interview 1</p>	<p>#1, #2</p>	<p>2/3=66 %</p>

	<p>1.8 Festivals should participate and facilitate a <b>restoration of land</b> at the festival area (syntropic agroforestry)</p>	<p>"Planting trees is one thing, it's easy, but taking care of them takes way more time." Interview 3          "In summer we need to water all the trees which is like 6 days a week every morning and evening to do all of them. Hopefully now some trees are going to start needing less water" Interview 3          "And also last year we decided to keep the shades used on the campsite to help trees need less water" "We used the festival infrastructure to kind of cheat on the syntropic process" Interview 3          "Soil here is super dead because of the monoculture" Interview 3          "Our dream would be to ask the monoculture eucalyptus farmers to give a hectare or half a hectare and to design a system for syntropic agroforestry of eucalyptus, but how fast can we restore the degraded soil? Can we design a system that could give similar revenue to the original monoculture system? thus changing their perspective." Interview 3</p>	<p>#3</p>	<p>1/3=33%</p>
	<p>1.9 <b>Renounce energy-heavy practices/Reduce gaudiness (aesthetic, technical aspect)</b> would result in a lower energy and resources usage. As well as choosing what is absolutely necessary in a creation.</p>	<p>"on est obligé de tout calculer en amont et de savoir ce qu'on va pouvoir brancher dessus et tout ça ça contraint forcément autant dans la création puisque si tu crées un spectacle et que tu peux pas le faire tourner sur les outils à ta disposition ça sert à rien et dans la diffusion du coup faut tout le temps adapté par exemple quand il y a des artistes en dehors du collectif qui viennent jouer sur nos remorque et sur notre sono solaire en général il y a un long travail de coordination avec notre directeur technique pour voir bah qu'est-ce qu'on va pouvoir brancher qu'est ce qui est vraiment essentiel dans votre set ou pas" Interview 1</p> <p>"lumières tout ça consomme moins de 1 kwh donc moins qu'une lumière d'une salle de spectacle habituelle et du coup cette contrainte là était assez sympa parce que ça a permis de donner un cadre, donner un objectif (...) l'étape suivante c'était de comprendre la consommation de du spectacle tel qu'il est à ses débuts combien il va consommer donc, tester la puissance demandée par chaque objet, chaque point du spectacle donc combien il consomme et après se questionner sur bah est ce qu'il est nécessaire ou pas, est ce qu'on peut l'enlever ? est ce qu'on peut le transformer sinon ? et enfin l'optimisation du coup une fois qu'on a que le nécessaire et bah essayer d'optimiser, d'aller vers une performance énergétique on va dire." Interview 2</p>	<p>#1, #2</p>	<p>2/3=66%</p>
	<p>1.10 Festival should have a <b>short-circuit localised</b> for everything consumed and material sourcing as it lowers carbon emissions of transportation, favors a local social network and location development, as well as social collaborations.</p>	<p>"C'est plus par rapport à où elle est sourcée et comme je disais au début faire en sorte de modifier le moins possible la matière pour qu'elle soit... enfin toujours penser à des trucs réversibles" Interview 1</p> <p>"In the meantime we also have the garden production, which the past two years we had food for ourselves living here but also food that we sent to the festival kitchen, now we're doing it a bit different this year we have like 1 certain area that makes foods that we would like to supply as much as possible from the garden so now they tell us what they need and we are going to try to produce that so it's a bit different approach." Interview 3</p>	<p>#1, #3</p>	<p>2/3=66%</p>

		1.11 If a festival use more sustainable tools that lower the energy consumption of one equipment, then they should <b>conceal</b> this vision with their overall electricity consumption	<p>"En fait on s'inscrit dans la décroissance parce que tu vois par exemple on utilise des panneaux solaires et tout ça qui sont quand même des nouvelles technologies et on trouve que ça a pas trop de sens de garder la même consommation énergétique en mettant en place ces alternatives et ça a vraiment du sens si on réduit notre consommation énergétique en parallèle puisque ça consomme quand même" Interview 1</p> <p>"cette contrainte technique du kilowattheure qui était là et Ben ça forçait à faire des choix quand même quoi. Donc voilà cette réflexion elle à amener à fabriquer beaucoup de choses soi-même " Interview 2</p>	#1, #2	2/3=66 %
		1.12 <b>Smaller festivals</b> allow a smaller carbon emission total, less energy usage, and an easier sensibilization and organisation process	"Ouais ça c'est assez important pour nous de faire des événements pour des petites jauges parce que ça permet d'avoir vraiment le contrôle sur beaucoup de facteurs (...) la consommation électrique (...) quand tu fais des petits événements, petite jauge, avec des petites équipes, t'as beaucoup plus le temps d'expliquer ta démarche et de trouver des solutions avec des gens qui sont pas forcément habitués à ça" Interview 1	#1	1/3=33%
		1.13 Festivals stand as a space to <b>foster activism</b> and put ideas into action	<p>"en général c'est les artistes qui en parlent sur scène notamment SlowFest Orchestra qui est l'orchestre résident de l'asso, ou, y a pas mal d'artistes qui ont d'autres projets à côté mais qui se rassemblent dans ce groupe pour vraiment porter les valeurs de SlowFest eux ils en parlent beaucoup sur scène de ce qu'on fait pourquoi on fait ça et c'est important" Interview 1</p> <p>". On a fait pas mal de collaboration mais plus avec des associations militantes sur des événements alors souvent sur des manifs quand même mais aussi parfois sur des évènements comme la Caravane des Possibles qui était une tournée à vélo en 2019 avec L'ANP COP 21, Green Peace et d'autres, c'était vraiment un truc militant pour aller à la rencontre des citoyens, des petits villages associatifs dans les villes tout en faisant des petits concerts." Interview 1</p> <p>"looking for some sort of space to apply the science of like the so-called transformational experience of a festival to prove the model thus we could also probably have a better idea about the impacts short term long term of the experience of such an events in that into the calculation" Interview 3</p> <p>" il y a plein de trucs critiquables, mais au moins essayer de faire quoi et explorer c'est quoi les gros enjeux les gros problèmes, les points complexes et pour pouvoir en parler aux gens en fait et se servir aussi du spectacle comme moyen de sensibilisation, moyen de discute." Interview 2</p>	#1, #2, #3	3/3=100%
2. Alternative tools	Interviewees were asked about the tools that would result in lowered carbon emissions or energy use and their process of creation and implementation	2.1 Low energy/Low-tech <b>mapping/video</b> tools involve a better understanding of the equipment, and result in reduced energy consumption.	<p>"a cette idée qui est venu dans la tête de plusieurs personnes d'utiliser des miroirs, qui permettraient d'avoir moins de sources lumineuse, tu mettrai un proj assez large et ensuite des miroirs et ducoup ça reflèterai dans d'autres direction comme des réflecteurs enfaite." Interview 1</p> <p>" il y a des moments où on avait rajouter des capteurs de bruits, de CO2 par exemple pour que quand il y avait des passages de personnes ca pouvais interagir avec la lumière donc de rajouter des interactions mais sur ONIRI2070 on a décidé de pas trop en mettre." Interview 2</p>	#1, #2	2/3=66 %

		<p>2.2 Low energy  <b>Scenography</b>  (Redesigned LED systems, Painting, Stage design)</p>	<p>" Avant on était à l'acrylique et du coup quand on a voulu poncer les remorques on a bien rigolé, et ducoup pour les Furtives on a fait de la peinture à la farine qui se ponce beaucoup mieux et qui d'ailleurs déteint (technique de peinture des maisons Suédoises)" Interview 1</p> <p>"Après on aimerai bien aussi utiliser ducoup des lampes qui sont pas dutout faites pour le spectacle à la base, genre les petite lampe de chantier qui consomment rien mais qui éclaire très fort là. Pour la lumière vu qu'on joue souvent de jours en vrai on pense pas vraiment à ça mais en général on branche de la LED et ça consomme rien quoi." Interview 1</p> <p>"mais après sur combien de lumières il faut Ben ça va être plus esthétique donc c'est un peu un équilibre à trouver (...) Après par exemple sur les lumières il y avait une contrainte avant qui était quand Alex jouait sur scène aussi lui du coup il avait un mini studio cinéma on va dire sur scène donc là fallait qu'il est très très peu de pollution lumineuse pour pas influencer ces captations qui etaient faites en direct, " Interview 2</p> <p>"donc là il y a eu fabrication de toute une régie lumière faite maison en basse tension en 12 volts donc c'est des ampoules de de bateau ou de caravane de camping-car qui sont transformés en lumière de spectacle donc avec du bois, du PVC, tout fabriqué maison essayer d'avoir des lumières qui vont focaliser enfin qui vont éclairer une toute petite zone, d'autres qui vont éclairer très large...etc ; essayer d'avoir le même vocabulaire qu'avec des lumières de spectacle mais avec des lumières faites maison." Interview 2</p> <p>", y avais deux vélo sur scène et on demandais à des personnes du public de pédaler pour allumer des lumières en fait ducoup à certain moments du spectacle y avais cette interaction là. La on le fait un peu moins maintenant parce que c'est aussi un peu complexe de se déplacer sur scène en fait il y a beaucoup de câbles il y a beaucoup de trucs du coup c'est pas toujours évident d'inviter le public sur scène mais ça pourrait se faire. " Interview 2</p>	<p>#1,  #2</p>	<p>2/3=66  %</p>
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		<p><b>2.3 Autonomous electric systems (batteries, solar and human strength)</b></p>	<p>"Ils disaient que en salle surtout pour le matériel électrique genre les batteries, les onduleurs et tout, si t'as pas les factures qui prouvent que c'est neuf par exemple on n'a pas le droit de les utiliser dans les ERP" Interview 1</p> <p>"là les batteries de vélos électriques nous servent à faire tourner le spectacle en fait vu qu'on a une consommation d'énergie très très faible ça nous a permis d'être autonome mais c'est très critiquable. Là vu qu'on consommait peu on pouvait aller vers l'autonomie si tu consommes beaucoup c'est une connerie d'aller vers l'autonomie. Et même nous la ça peut être critiquable" Interview 2</p> <p>"la dernière forme de spectacle qu'on a jouer elle consomme 200 watt heures c'est-à-dire qu'on pourrait nous à bord là on a 3 kilos watts heure d'énergie donc on pourrait jouer 15 fois le spectacle en autonomie si on devait pas pédaler mais faut en garder pour l'aller le retour le lendemain si on a un spectacle "Interview 2</p> <p>"Là vu qu'on consommait peu on pouvait aller vers l'autonomie si tu consommes beaucoup c'est une connerie d'aller vers l'autonomie(...) sur l'autonomie ça te fait passer sur des batteries lithium sur des moteurs avec des aimants permanents c'est des choses qui sont assez énergivore à produire donc l'autonomie c'est un sujet délicat c'est pas forcément idéal non plus comme fonctionnement" Interview 2</p> <p>"dans l'autonomie énergétique, l'énergie devient palpable et on étudie ce qu'il y a dans les batteries " Interview 2</p> <p>"disons qu'en salle tu vas avoir tendance à te reposer sur le matériel qui est présent dans la salle et peut-être à moins réfléchir sur l'impact de ce que tu consommes tout ça, alors que quand t'es en extérieur tu pars de 0 et du coup tu dois réfléchir à des systèmes vraiment optimisés " Interview 1</p>	<p>#1, #2</p>	<p>2/3=66 %</p>
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		<p><b>2.4 Transportable festivals can be done by having equipment that is designed to be robust, low energy, minimal, light and transportable by bike.</b></p>	<p>"se démonter et se caler dans un coin jusqu'à ce qu'on en ai encore besoin de la prochaine fois euh donc voilà c'est vraiment des trucs qui sont vraiment démontables, réutilisables, pèsent pas lourd, du coup ça passe quand même pas mal par de la peinture des remorque, s des trucs en textile du coup se plier se transporter facilement" " Interview 1</p> <p>"Quand on produit des spectacles on est capable d'assurer une prestation pour 300 personnes, aujourd'hui on sait le faire, mais pour aller au delà il faudrait repenser notre part de matériel, rajouter des remorques, et on peut pas se permettre d'investir ou de refaire des chantier de remorques qui pourrait ne pas nous servir du tout, 300 c'est déjà beaucoup" Interview 1</p> <p>"Ducoup les Pop up box c'est des remorques à vélo qui se transforment en élément de scène, il y en a 2 qui vont être des enceintes, donc là c'est des enceintes qu'on avait récupéré c'est des enceintes DB tech(...) que là on a transformé on a récupéré tous les éléments et on a fabriqué les remorques à vélo on a intégré les membranes dedans ce qui fonctionne assez bien parce qu'au final le volume intérieur et mieux adapté aux haut-parleurs et du coup ça sonne encore mieux. Il y a 2 pop-up box qui servent d'enceintes et après il y en a 2 autres qui servent de table sur scène et de stockage de matos quand on roule." "Interview 2</p> <p>"C'est des vélos qui sont des vélos achetés d'occasion quoi qu'on a transformé en vélo électrique donc là on a acheté des kits chez Ozo c'est un revendeur français de de kit électrique du coup on a électrifier les vélos et on a essayé de faire des batteries maison mais au début c'était un peu compliqué dans les salles de spectacle ils voulaient pas trop qu'on vienne avec nos batteries maison parce que c'était dangereux, vu que c'était pas certifié ça leur faisait peur et du coup on a dû faire l'achat de de batterie industrielles on va dire c'est un peu dommage et mais bon du coup on roule à vélo électrique et les batteries et les moteurs nous permettent de tirer les remorques qui ont quand même un certain poids. On a des petits panneaux solaires au-dessus des remorques qui rechargent les batteries un petit peu pendant qu'on roule." Interview 2</p> <p>"on développe des outils qui sont des remorques vélotractée avec des panneaux solaires avec lesquels on produit ou coproduit des événements" Interview 1</p> <p>" nous on considère que il est bien pour 150 personnes le système son, le truc c'est qu'on pourrait jouer même pour 250 je pense que le système son est tiendrait, mais pour un truc vraiment confort et audiophile avec une très très bonne qualité audio c'est 150 personnes max en extérieur. " Interview 2</p> <p>When asked about the possibility for using their tools for a more dancable festival rather than live performance: "Totally, that's one of our future goal (...) the tool is robust, very polyvalent, and adapts to many other contexts" Interview 2</p>	<p>#1, #2</p>	<p>2/3=66 %</p>
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		<p>2.5 A <b>low-tech</b> tool needs to be repairable, understood, and sharable.</p>	<p>"Nous vraiment ce qu'on fait de plus low-tech à nos yeux c'est nos remorques dans le sens où elles sont vraiment adaptées à nos besoins, c'est quelque chose qu'on a réfléchi par rapport à ce qu'on faisait au fur et à mesure et on les a fabriqués nous-mêmes, qu'on est capable de les réparer, qu'on sait comment ça fonctionne et leurs limites." Interview 1</p> <p>"Je dirais qu'elle soit robuste ,qu'elle soit fait un maximum en réemploi ou avec des matériaux locaux, et qu'elles soient pas trop éphémères, qu'elle puisse resservir sur différentes formes , différents spectacles (...) il y a des structures qui sont faites pour chaque spectacle elles sont souvent réutilisées, hacker, transformés sur les autres donc c'est un peu ce côté-là quoi réemploi et et après bah là c'est un peu mon avis mais éviter des trucs trop extravagants si c'est juste pour être extravagant enfin je pense que c'est une réflexion à avoir sur cqu'est ce qu'on veut transmettre et la manière de le transmettre qui nécessite le moins de gadgets et le moins de choses qu'on ne peut pas réparer qu'on peut pas faire soi-même ni rien et après y a le côté faire soi-même qui est pas mal je trouve, <b>de savoir la réparer en fait que la scéno soit pas du consommable</b>" Interview 2</p> <p>"Toutes les lumières sont fabriquées maison et les cartes électroniques qui contrôlent les lumières aussi sont dessinées maison par des amis qui bossent dans l'électronique donc y avais l'idée de faire soi-même pour pouvoir avoir des choses très personnalisables très adaptables et qu'on puisse tout réparer sois même" Interview 2</p>	<p>#1, #2</p>	<p>2/3=66 %</p>
		<p>2.6 Sustainable techniques for festivals infrastructure</p>	<p>"The campsite is just empty, blank land, so we put enough for 8000 people of shade structure, cable wires, green shades (plastic net), made on size so they reuse every year." Interview 3</p> <p>"Reversible white dome that was transported by horse" Interview 1</p>	<p>#1, #3</p>	<p>2/3=66 %</p>