



CONFLUENZA

The place where human and nature meet.



POLITECNICO
MILANO 1863

DIPARTIMENTO DI DESIGN

Mastercourse

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ABSTRACT

La sostenibilità non è una scelta o una nuova moda. La sostenibilità è un'esigenza che abbiamo avuto e che avremo sempre e che in questo momento fatichiamo a riconoscere. L'umanità ha sempre visto la propria crescita strettamente legata alle risorse naturali, eppure il primo articolo di avvertimento sul cambiamento climatico è databile agli anni '80. Da allora lo sfruttamento delle risorse naturali si è intensificato, al punto da definire il cambiamento climatico la sfida più grande a cui l'umanità è chiamata a rispondere.

Sfortunatamente c'è un enorme divario percettivo tra gli avvertimenti della comunità scientifica e i consumatori - coloro per cui produciamo e che hanno il potere economico di fare delle scelte.

Ma cosa significa esattamente sostenibilità? Questa è la prima domanda a cui questo lavoro cerca di rispondere. La sostenibilità è un processo e si basa sulle relazioni. Sostenibilità significa gestire le risorse naturali con un piano a lungo termine che consenta loro di essere disponibili per le generazioni future. Tuttavia la sostenibilità non finisce qui. Coinvolge anche il benessere sociale ed economico delle comunità e, soprattutto, riguarda la cultura. Senza la cultura la sostenibilità non può essere raggiunta.

Ciò porta alla seconda parte della ricerca in cui le aree protette designate dall'IUCN sono identificate come quelle che hanno lo scopo di studiare e proteggere la natura con una particolare attenzione ai parchi nazionali. Dopo la seconda guerra mondiale, nei grandi parchi degli Stati Uniti si affermava l'importanza del centro visitatori come zona cuscinetto tra un contesto fortemente antropizzato e quello naturale, dove condizionare i comportamenti dei visitatori e fargli percepire l'ambiente come un equilibrio incredibilmente delicato da tutelare.

Il problema, tuttavia, è che, nonostante il numero di rapporti dell'IPCC sull'emergenza climatica, le persone siano altamente disinformate e del tutto inconsapevoli del proprio potere nel combatterla.

Il progetto è quindi un sistema volto a colmare questo divario che spazia dalla pura conoscenza alla pura esperienza volta a chiarire la sostenibilità, il suo legame con la biodiversità e creare/diffondere una cultura comune. Dal restyling del centro visitatori (pura conoscenza del Parco Nazionale della Maiella e della sua biodiversità), si passa al padiglione in cui vengono esposti e chiariti temi legati alla sostenibilità e viene svelato il vero costo ambientale delle nostre scelte quotidiane. Questa parte è dove viene mostrato il potere delle persone. Poi c'è la guida che incrementa l'esperienza del visitatore nel parco fornendo approfondimenti puntuali. Ultimo elemento del sistema è Viewport, un'unità modulare realizzata con lo stesso sistema del padiglione, pensata per smart workers e ricercatori dove l'ambiente naturale è vissuto direttamente in modo sostenibile (pura esperienza).

ABSTRACT

Sustainability is not a choice or a new cool trend. Sustainability is a need that we have had and always will and that right now we struggle to acknowledge. Humankind has always seen its fortune strictly related to natural resources, and yet the first warning article on the climate change has been dated in the 80's.

Since then natural resources exploitation has intensified, to the point of defining the climate change the biggest challenge humankind is called to address.

Unfortunately there is a massive perception gap between the scientific community alerts and consumers - the one we produce for and have the economical power to make choices.

But what means exactly sustainability? This is the first question this work tries to answer. Sustainability is a process and is based on relations. Sustainability means managing the natural resources with a long-term plan allowing them to be available for future generations. However sustainability doesn't end there. It involves also the social and economic wellbeing of communities and most importantly, it is about culture. Without culture sustainability cannot be achieved.

This leads to the second part where the IUCN designed protected areas are identified as those which scope is to study and protect nature with a special consideration for national parks. After the Second World War, in USA national parks they affirmed the importance of visitors center as buffer zone between a heavily anthropocentric context and the natural one, where condition visitors behaviour and make them see the environment as an incredibly delicate balance to protect.

The problem however is that even though the number of IPCC reports on the climate emergency, people are highly disinformed and completely unaware of their power in fighting it.

The project is so a system aimed to bridge this gap that spaces from pure knowledge to pure experience aimed to clarify sustainability, its bound with biodiversity and create/spread a common culture. From the visitor center redesign (pure knowledge on Maiella National Park and its biodiversity), there is the pavilion in which sustainability related topics are displayed and clarified and the true environmental cost of our daily choices is revealed. This part is where people power is shown. Then there is the guide that will enhance visitor experience in the park providing punctual insights. The last element of the system is viewport, a modular unit made with the same pavilion system thought for smart workers and researcher where the natural environment is directly experienced in a sustainable way (pure experience).

00 SUSTAINABILITY

«While half the planet is suspended and even the Olympics as well as thousands of events (including the Salone) have been canceled or postponed, nature does not stop. Indeed, one of the most beautiful springs ever - clean air, clear skies, deafening chirping - blossomed punctually in the midst of the pandemic.

... Conflicting thoughts emerge in these days: there is the wonder of nature in the city, the amazement of breathing clean air. And, together, there is the sense of guilt and the feeling of having gone too far in our relationship with the planet and its resources.»

ELENA SOMMARIVA, 2020

1907

sustainability
n. [der. by *sustainable* + *ity*].

1. in reference to a legal objection

1610

sustainable
adj. [der. by *to sustain*].

1. a. "bearable"

1968

2. compatible with safeguarding needs of environmental resources: energy s.; **development s.**, a term used to indicate a technological and industrial development strategy that takes into account environmental conditions and compatibility in the exploitation of resources and production techniques.

1300

to sustain
v. tr. copulative [lat. *sustinere*, comp. by *sus-*, variation of *sub-* «from under», and *tenere* «hold»] (conj. as *tenere*). –

1. hold up, hold upright; furnish with means of support; bear, undergo, endure

1.0 Sustainability

1.1 relations

«Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.»

BRUNDTLAND REPORT, 1987

Defining the concept of **sustainability** is not easy.

In fact, this difficulty already arises from its very etymology. Searching the Treccani¹, mostly, and the Oxford dictionary for sustainability, it turns out that although there is no connotation with the environment, the term derives from **sustainable**. Therefore, following this line to the second result, for the first time there is a reference to the protection of natural resources. We are informed that this adjective, sustainable indeed, derives from the verb **to sustain**. Although this information does not seem to add much to the narrative, deepening we discover how to sustain is in fact a copulative verb and therefore, by itself, lacks predicative value making the sentence semantically uninterpretable.

Contextualizing this aspect in a purely linguistic frame, it is easy to imagine why it is so difficult today to be able to define unequivocally and mathematically what sustainability is.

Digging into the past to understand since the need to include environmental protection has become so urgent as to require its own space inside the public debate, we reach 1968. In that year, in fact, for the first time the United Nations Conference on human environment was convened and held in 1972 in *Stockholm*. Before continuing and understanding exactly what was established, however, it is necessary to take a small step back and ask why.

sustainability
sustainable
to sustain

¹ Some of the resources were preferred because belonging to the Italian cultural context, the same cultural context where the thesis case study is placed in

«When we talk about the environment we also refer to a particular relationship: that between nature and the society that inhabits it. This prevents us from considering nature as something separate from us or as a mere frame of our life. We are included in it, we are part of it and we are penetrated by it»

POPE FRANCIS, 2015

1.2 reaction

1.2.1 action | anthropocene

After the industrial revolution the cards on the table have clearly changed so that humanity continuing on his path of increasing development has begun to negatively affect the Earth system with more and more force (Angelini & Pizzuto, 2007). These actions have had such marked effects that in 2000 Paul Crutzen, Nobel Prize in Chemistry for the discoveries on the depletion of the ozone layer, identifies a new geological era: Anthropocene.

action

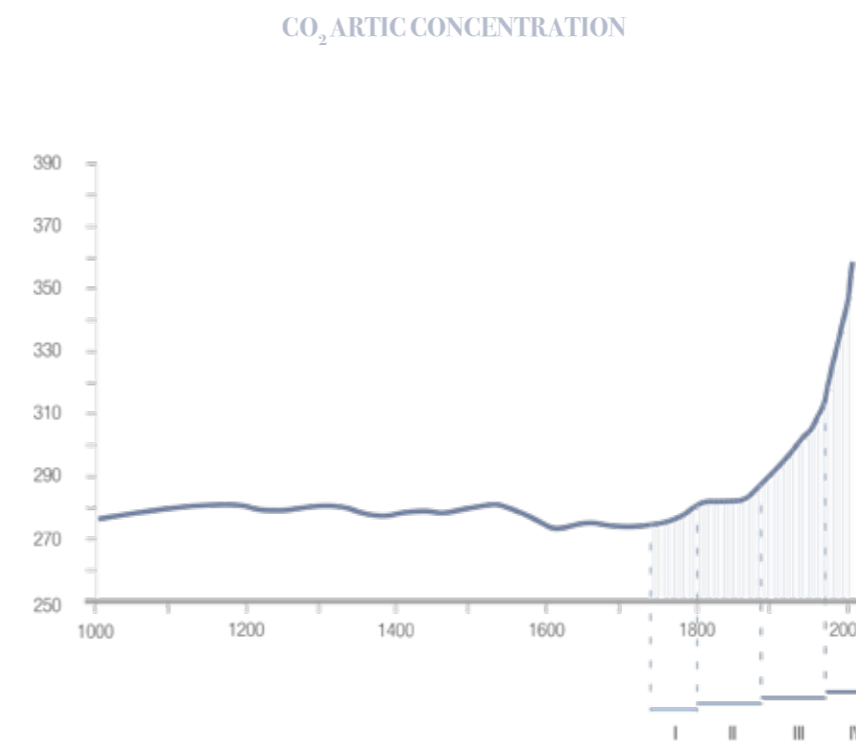


FIG. 1 - Etheridge et al.(1996), graphic elaboration of the author

Crutzen attributes its beginning to the invention of the first steam engine, in 1784 by James Watt: through the data collected, he demonstrates how man can be compared to a real geological force. In the air over the last two centuries, in fact, the levels of carbon dioxide and methane have been the highest ever recorded in the last 15 million years, leading to significant climate changes.

To have a concrete idea of how strong have the human activities and negligence influence the planet, the exhibition Broken Nature (Milan Triennale, 2019) denounced that a new geological formation is now present, the fossil we'll leave behind for future generations: plasticglomerate.

GLOBL THERMAL ANOMALIES 1850-2012

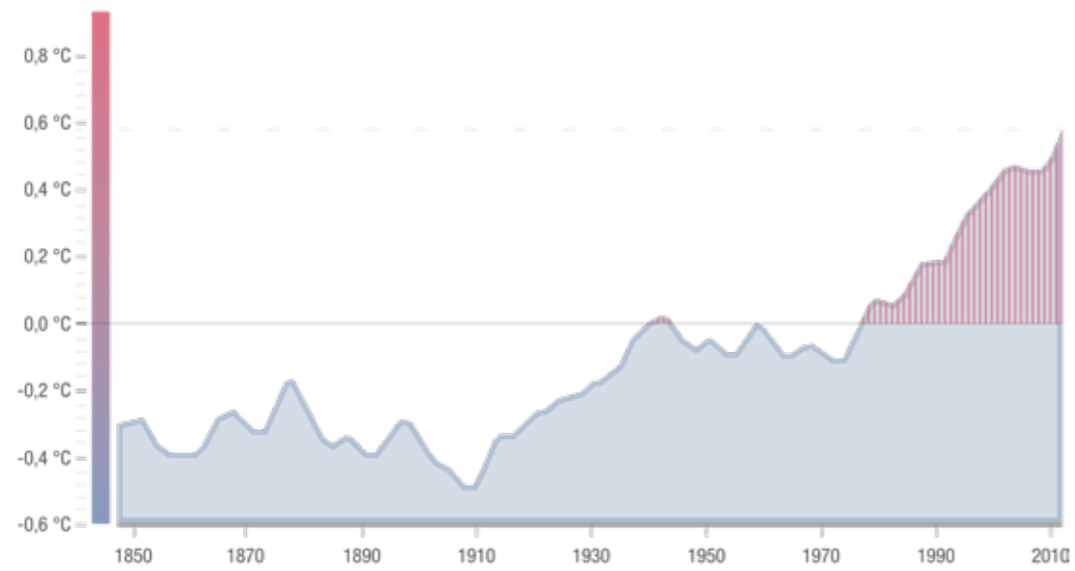


FIG. 2 - MetOffice - Hadley Center, graphic elaboration of the author

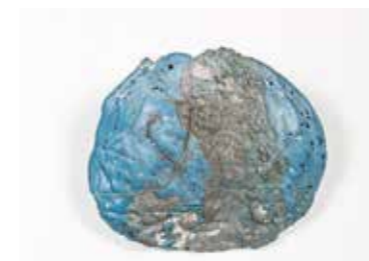


FIG. 3 - Plasticglomerate, © Kelly Wood

1.2.2 reaction | shaping sustainability

«For every action there is an equal and opposite reaction»

ISAAC NEWTON

During the first half of the twentieth century, culturally the climate that dominated the areas of greatest power had for years been driven into the blind faith in unlimited technical and scientific growth. There was positivism and later futurism that pushed for a world in which machines would have a dominant presence in bringing about an improvement in the quality of human life. With the two world wars and the other plagues that characterized those years, a point has been reached where the consequences of one's actions could no longer be ignored. From post-nuclear to other "minor" incidents that have led to the devastation of entire ecosystems, a greater collective sensitivity has begun to form.

sixties:
first cultural movements

In the sixties of the twentieth century, a new ecological sensitivity emerged, pressing the government offices to enact laws to protect environmental resources. Many clubs and associations have actively supported the dissemination of works by scientists, writers and artists who denounced the limits of man and how his indiscriminate work was ruining the planet, generating a real cultural revolution.

R. Carson
M. Gaye
P. Ehrlich

From Rachel Carson with *Silent Spring* who led President Kennedy to abolish DDT, to singer Marvin Gaye with his "Mercy mercy me (The Ecology)" (1971), to biologist Paul Ehrlich, who publishing with Club Serra, "The Population Bomb" shook public opinion. Ehrlich brought the problem of overpopulation to a mainstream level for the first time by explaining how the limitless population increase and its (indiscriminate) growth forecasts were incompatible with life itself on Earth as the natural resources available, on the contrary, are limited. His thesis had an incredible echo to the point that even Nixon took it upon himself by defining this phenomenon as "one of the most demanding challenges for the destiny of humanity in the last third of this century" (Nixon, 1968).

Stockholm 1972

A declaration of principles was therefore drawn up by the Stockholm Conference, aimed at establishing an international regulation on environmental matters shared by 112 countries.

The statement features a **anthropocentric vision**, that it considers the protection of the environment as a place where mankind lives, not as an end in itself.

From this declaration it emerges that man has a **fundamental right to freedom, to equality which corresponds to the responsibility to preserve the environment for both present and future generations**. Then emerges the contrast between the position of developed countries and that of developing countries, in particular with reference to the priority given to economic growth over environmental protection.

Brundtland report

Although it had a legal value, but not a binding one, it was of fundamental importance in marking a starting point, so much so that in 1987 the **Brundtland report², Our common future**. It presents an analysis that puts black on white the disparities between "the north and the south of the world" highlights how neither of these two poles is in fact sustainable.

sustainable development

The report therefore emphasizes the need to implement a strategy capable of **integrating the needs of development and the environment defined as "sustainable development"**, that is, to encourage and support the economic growth and development of each country by **managing natural resources responsibly, so as to ensure adequate supply for future generations**.

needs and time

In fact, two aspects of the relationship should be emphasized, both also mentioned in the Stockholm declaration: the first is the definition of the concept of needs, while the second is the relationship between the concept of sustainability and time.

On one hand, compared to the current average resource consumption of industrialized countries, there should be a drastic reduction of at least 90% (Ceschin 2012), on the other hand it is extremely difficult, if not impossible, to give a universal definition of need. In fact, the concept of need is extremely subjective and is influenced not only by the socio-economic context in which the subject is examined, but also by his age, ideology or even his beliefs. Furthermore, as pointed out by Costanza Parra, a person's need is the excess or death of another: when an individual sees his need recognized and satisfied, that of another person is generally denied (Dessein et al. 2015).

On the other, we cannot speak of sustainability without taking into consideration the time factor. You cannot allude to sustainability by addressing just the present, regardless of future repercussions. As well as time and needs, other key points also return within the various definitions that have followed one another.

Sustainability is carried out in **the relationship between human and nature and is respectful of the needs of the first and the resources of the second, administering and managing them so as to guarantee their availability indefinitely**.

human - nature relationship

² Brundtland Report - Our common future. Developed by the World Commission on Environment and Development (WCE), established in 1983, it is named after its president Gro Harlem Brundtland. Even today it is considered a valid guideline for sustainable development

«01. Man has a fundamental right to freedom, equality and satisfactory living conditions, in an environment that allows him to live in dignity and well-being, and is highly responsible for the protection and improvement of the environment in front of future generations. For this reason, the policies that promote and perpetuate apartheid, racial segregation, discrimination, colonialism and other forms of oppression and foreign dominance, must be condemned and eliminated.»

STOCKHOLM DECLARATION · PRINCIPLE 1, 1972

To do this, analyzing the definitions well, it should be noted that although they are different, they all revolve around some key points.

Sustainable development does not deny growth, on the contrary it maximizes it by focusing on systems specifically designed to be as efficient as possible within the limits imposed by the load capacity and life cycle of the ecosystem on which it operates. Not only that, strong and recurrent in addition to the theme of economic development, is that of social development, understood as an improvement not only of general well-being, but also of equity and cohesion, from macro to micro, present and future. The need to have universal access to natural resources is stated, placing sustainability as the cause and consequence of improving the quality of life.

growth maximization

Ultimately UNESCO speaks of **paradigm**³ citing the *three dimensions of sustainability: environment, economy and social*.

a new paradigm

«Sustainability is a paradigm necessary to think about the future in which the environmental, economic and social dimensions are related and balanced in order to pursue an improvement in the quality of life»

UNESCO

³ Paradigm / macro trend and trend. By paradigm or macrotrend, it is meant a slow and very deep and irreversible change, capable of changing all spheres of our experience and is composed of trends and microtrends of shorter duration. One paradigm was that of web digitization: its invention has, over the decades, completely changed every aspect of human life. Not only that, the paradigms are irreversible. Naisbitt J. (1984)

FIG. 4 - Timeline. Sustainability definitions, © Francesca Carlone



key words: needs | regenerative capacity | carrying capacity | future generations | improvement |

quality of life | development | economy | social | well-being | planet | interaction | impact | design

«Each local authority must open a dialogue with its citizens, local associations and private companies and adopt a Local Agenda 21. Through consultation and consensus building, local authorities can learn from the local community and businesses and can acquire the information needed to formulate the best strategies. The consultation process can increase households' environmental awareness. The programs, policies and laws adopted by the local administration could be evaluated and modified on the basis of the new local plans thus adopted. These strategies can also be used to support local, regional and international funding proposals»

AGENDA 21

1.2.3 program | Rio Conference '92

«States will cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the earth's ecosystem.»

RIO DECLARATION

Following what emerged from the Brundtland report, the **Rio De Janeiro Conference** was held in 1992, an event of historical significance due to the involvement of a very large number of political figures from all over the world and therefore its media coverage, as for having produced programmatic documents that have become real milestones.

Rio Conference '92

Four fundamental points were touched upon:

- **systematic examination of production patterns** - with particular interest in toxic waste;
- **alternative energy** resources to replace fossil fuels responsible for global climate change;
- analysis of **public transportation** to reduce the use of private vehicles and the consequent problems, not least those relating to health;
- **growing water scarcity**

At the end of the conference, five documents were drawn up that have influenced the development policies of the last three decades.

Rio Declaration on the environment and development which defines 27 principles, rights and responsibilities of nations with respect to sustainable development, the **Framework Convention on climate change**, then taken up again in 1994 in Paris in the convention against desertification, the **Principles on forests** that regulate its use and protection of its protection and finally the **Convention on Biological Diversity** (see chapter 2.1.2), and **Agenda 21**.

Agenda 21

Agenda 21 is a programmatic document that can be considered a manual for sustainable development "from now to XXI century"⁴.

« Think globally, act locally »

AGENDA 21

a complete sustainable development plan

Taking up the concept of "sustainable development" of the Brundtland report, it represents a **real and complete development plan**. Sets and defines the actions to be taken at international, national and local level by United Nations organizations, governments and administrations in every area where the human presence has an impact on the environment so that sustainable development can be achieved, focusing on involvement as broad as possible of all the stakeholders* operating in a given territory.

corresponsabilization

It is articulated on four fundamental points⁵ and operates on different principles.

First of all there is the **corresponsabilization**: citizens, administrations and stakeholders must be made aware of their strategic role in achieving truly sustainable development. It therefore proposes a synergistic action between politics, the productive world and the behavior of individuals.

continuous improvement

Follows the principle of **continuous improvement** which requires constant monitoring and comparative verification of the data obtained in order to be able to recalibrate one's actions so as to best fulfill the programmatic points of development.

governance

There is the **governance**, that has to necessary change from an impositive view to a **participative one**, flexible and open to the various social components.

transversality shared vision

There are also the principles of **transversal** and **shared visions** where on the one hand the concept of sustainability fits into all sector policies, while on the other it focuses on the construction of a scenario that embraces as many stakeholders as possible. All this is completed with the **partnership** principle or the creation of partnerships based on a new way of understanding the public-private relationship, for the concrete implementation of concerted actions for sustainable development.

partnership

After Agenda 21, was promulgated the **Agenda 2030**. The objective of these con-

⁴ Agenda 21, where "21" is for XXI century

⁵ 1. Economic and social dimension; 2. Conservation and management of resources; 3. Strengthening the role of the most significant groups such as women, young people, NGOs, farmers, production sectors, the scientific community, [...]; 4. Means of implementing the program such as scientific instruments, training, information, international cooperation, financial instruments, legal instruments.

stant reinterpretations is carried out in the principle of continuous improvement which, in fact, requires constant revision and correction of the shot. Specifically, the 2030 Agenda focuses on the **17 Sustainable Development Goals⁶ (SDG)**. Biodiversity and ecosystems contribute to achieve many of the SDG, biodiversity and ecosystems are indispensable: Almost half of the planet's population are directly dependent on natural resources for livelihoods and basic subsistence needs and biodiversity is at the center of many economic activities, especially agriculture, forestry, and fisheries.

17 Sustainable development goals biodiversity & ecosystems

SDG are designed to contribute directly to improving human well-being and attaining our collectively agreed upon development priorities regarding the **economic, environmental and social sphere**.

1.3 3 + 1 pillars

1.3.1 3P model | people, planet, profit

As said before, in "classic" conception, sustainability is based on three fundamental pillars or dimensions: **environmental, economic and social**.

In 1987 *Triple Bottom Line (TBL)* theory was developed to its maximum by John Elkington⁷ and later called "**People, Planet, Profit**"⁸ (3P model).

3P model

⁶ 1 – poverty; 2 - end hunger: guarantee food security, improve nutrition and promote sustainable agriculture; 3 – good health: ... promoting the well-being of all at all ages; 4 – quality education: guaranteeing inclusive education for all ...; 5 - gender equality: ... empowerment of women and girls; 6 - clean water and sanitation: ensure the availability and sustainable management of water and sanitation for all; 7 - renewable and accessible energy: ensuring the availability of accessible, reliable, sustainable and modern energy services for all; 8 - good employment and economic growth: promoting inclusive, sustained and sustainable economic growth ...; 9 - innovation and infrastructure: building solid infrastructures, promoting inclusive and sustainable industrialization and fostering innovation; 10 - reduce inequalities; 11 - sustainable cities and communities; 12 - responsible use of resources; 13 - fight against climate change: take urgent measures to combat climate change and its consequences; 14 - sustainable use of the sea: conserve and use the oceans so to preserve their regenerative capability; 15 - sustainable use of land: protect, restore and promote the sustainable use of terrestrial ecosystems, manage forests in a sustainable way, combat desertification, block and reverse soil degradation and halting the loss of biodiversity; 16 - peace and justice; 17 - Strengthen the tools for implementation and revitalize the global partnership for sustainable development.

⁷ Elkington John, *Cannibals with Forks: the Triple Bottom Line of 21st Century Business*, 1987

⁸ Elkington John, *SustainAbility*, 1994

sustainable capitalism

Starting from what Freer Spreckley stated in Social Audit - A Management Tool for Co-operative Working (1981), the concept of "sustainable capitalism": a scenario in which the various companies try to improve their market position by maximizing profits, but at the same time taking into account the impact (which must be measured and be positive) on the social and environmental context.

from shareholders
to stakeholders

To do this, in conjunction with what was declared in the Rio Conference, it is necessary that the company focus shifts from shareholders⁹ to stakeholders¹⁰, that is, that it does not focus on the small by aiming at maximizing the profits of those in charge, but that it has a broader view. The company becomes a primary, active and reactive social actor in the context in which it operates.

People

social justice,
social equity

The 3P model provides that the company operates in the social sphere through interventions aimed at achieving social justice, guaranteeing social equity through, among many suggestions, adequate wages, a healthy work environment, tolerable working hours and denial (and the denunciation) of the exploitation of child labor. It conceives a reciprocal social structure in which the approval of the company, the workers and the interest of the other stakeholders are dependent on it, for this reason it is in its interest to "give back" to the community a part of its revenues in order to guarantee its development¹¹.

Planet

natural capital
CFP

Within the environmental sphere, understood as natural capital, a company must track, monitor and intervene on its carbon footprint (CFP)¹² and be aware of the Life

⁹ Shareholder vs Stakeholder. The first is the company owner, while the second do not own it, but have direct or indirect attachment to it (i.e. in an hotel, the owner is the shareholder, while employees, providers... are stakeholders)

¹⁰ Stakeholder theory and contrasts with that of shareholders. According to this approach, the interests of all stakeholders must be considered even if this causes a decline in company profitability. (Smith H. J., 2003)

¹¹ The Global Reporting Initiative (GRI) has published guidelines to facilitate companies and NGOs in estimating and comparing their social impact

¹² The carbon footprint is a parameter that is used to estimate the greenhouse gas emissions caused by a product, a service, an organization, an event or an individual, generally expressed in tons of CO2 equivalent (i.e. taking as a reference for all greenhouse gases the effect associated with CO2,

Cycle Assessment (LCA)¹³. It must therefore ensure that its actions have a neutral impact (or as little as possible) on the territory in which they operate and that they are fully absorbable by the same, i.e. that they do not consume natural resources beyond the limit within which it is impossible to their regeneration. It is responsible for its own energy needs and must therefore keep track of its energy consumption, eliminating waste and trying to draw from renewable energy sources instead of fossils.

LCA

Profit

In terms of profit, we clearly aim at maximizing profit always and only to the extent that no damage is caused to the environment or to the social context in which we operate. It is therefore asked to evaluate the economic impact that the company produces in local communities, trying to encourage their growth with their choices.

engaging local community

Collaborations between stakeholders and shareholders are encouraged to enhance local peculiarities.

1.3.2 the fourth pillar

«Culture has the power to gather and mobilize people. Inside there is the key to more inclusive and therefore more sustainable policies»

MOHAMED AMIN SBIHI,
MINISTER OF CULTURE OF MOROCCO

assumed to be 1)

¹³ Life Cycle Assessment or LCA is a methodology for assessing the impacts on the environment operated by all stages of production of a given product, process or service. As regards a manufactured product, the extraction process of raw materials (cradle), their transport, their processing, distribution, the impact generated during use and that generated by the possible replacement of parts, are taken into account its recycling or proper disposal

Although the theories previously analyzed are apparently complete, trying in their equilibrium to obtain satisfactory solutions for all three domains, they are still unconvincing and detached. In fact, paying attention to the definition promulgated by UNESCO, we note the term **paradigm**. By paradigm we mean a **slow and deep movement capable of impacting and revolutionizing all aspects of society and people's lives**. How then can sustainability include only the three pillars, systematically leaving out culture?

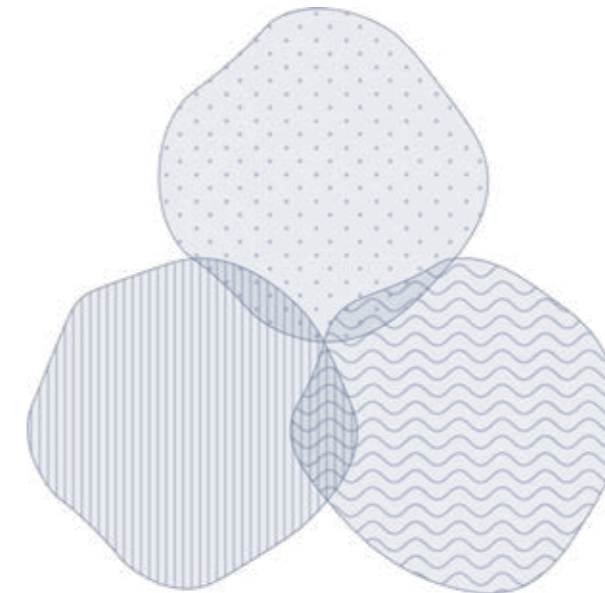
«A vibrant culture is synonymous with innovation and diversity. Culture creates jobs, generates profits and stimulates creativity. It is a multifaceted vector of values and identities. In addition, culture is a lever that promotes social inclusion and dialogue»

IRINA BOKOVA,
UNESCO GENERAL DIRECTOR

From the Convention for the Protection of the Intangible Heritage of Culture¹⁴ in which the fundamental role of the same was recognized, after eleven years we arrived in 2014 at the third UNESCO World Forum "Culture and the Cultural Industries: 'Culture, Creativity and Sustainable Development'" in which the **Declaration of Florence** is adopted. According to the Declaration of Florence, the role of culture must be maximized in the drafting of the post-2015 Agenda if sustainable development is to be achieved effectively. In other words, we come to the conclusion that **culture**, affecting all spheres of human life, is **indispensable for guaranteeing sustainable development**. Culture in fact is **essential for ecologic transition** both for its capacity of representing and, at the same time, **building new behavior models** inside a society, and for the **creative drive** that can bring.

Between 2011 and 2015 a multidisciplinary team of European researchers investigated the role of culture within sustainability in order to provide governments with an

14 Rectified by 150 Countries in 2003



people

The well-being of the **company** and the interests of the **stakeholders** are **interconnected**. The company therefore stands as an **active social actor** in the context in which it operates

planet

A company achieves a business model whose primary purpose is to control its **impact on natural capital**, regulating all its activities so that they have a minimal or **neutral impact**

profit

A positive impact on the **local economic fabric**. Local **know-how (culture and traditions)** is valued and used as a base from which to draw on innovation

«Beyond being more sustainable there is a huge challenge and a huge opportunity. The challenge is to develop a sustainable economy on a global scale: an economy that the planet is capable of supporting indefinitely.»

HARVARD BUSINESS REVIEW, 1997

FIG. 5 - 3P mode: People, Planet, Profit, © Soini & Dessein

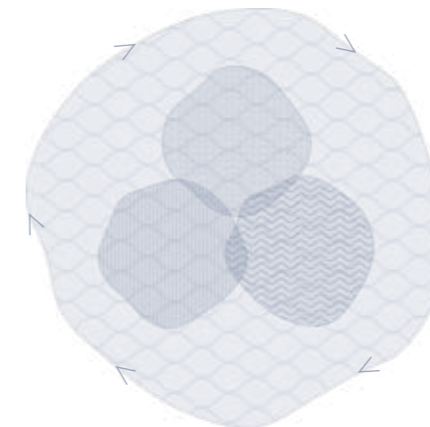
additional tool that they can use in planning their development policies.

Cultural geographer Katriina Soini, one of the main author of the research, says that:

«Culture is a fundamental precondition to realize sustainable development»

SOINI AND DESSEIN, 2016

Culture as sustainability (holistic paradigm for all pillars)



*'in-for-as'
the models of culture*

Based on **'In-for-as' cultural sustainability** approach, she proposed more sophisticated conceptual framework, the combination of above-mentioned roles of culture and added eight more 'dimensions' for conceptual 'sorting'¹⁵, that helped provide a more detailed definition.

According to Soini and Dessein (2016) this constitutes a kind of 'kaleidoscope' to analyze the complexity of the relationship between culture and sustainability at *meta level*. Combining together these two approaches ('In-for-as' and 8-dimensions sorting) in more synthetic way we could give the following analyses of cultural sustainability roles in sustainable development.

Culture as a paradigm. In this view culture allows to see more profound level of society. Culture gives a new understanding of the human place in the world, and recognizes that humans are an inseparable part of the more-than-human world. This representation encloses the other pillars of sustainability and becomes an overarching dimension of sustainability. In other words, sustainability becomes embedded in culture and leads to **eco-cultural civilization**. It is extending to semiosis and significations and their various influences both on intentional and unconscious behavior and functions over actions in human social life. In this approach, ecoculture is deeply related to social learning by working with **place-conscious** and **place-responsive teaching**.

culture as a paradigm

eco-cultural civilization

social learning:

place-conscious

place-responsive teaching

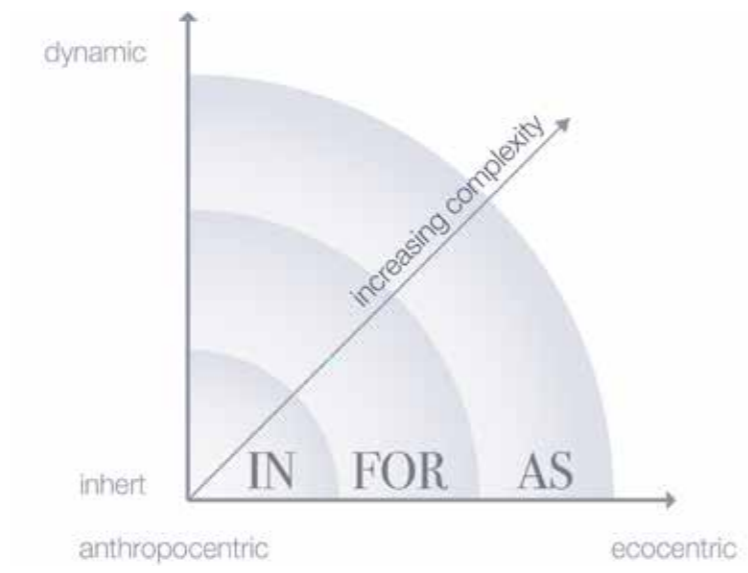
Sustainability is no longer seen as a set of options, but rather it becomes an inseparable part of a culturally embedded development paradigm that is largely shared among policy-makers, citizens, public and private institutions, and so on.

Due to the intrinsic and instrumental values of culture become both embedded in, and constitutive of, the cultural change. Culture, indeed, is considered not only as a structural component, but as a necessary agency in the transformation towards a more sustainable society. To be able to achieve it, culture calls for cross-sectoral or totally new policies that intrinsically accommodate sustainability principles that put the accent on nature perceived in parallel with the economy and the social.

cross sector policies

15 1. Definition of culture, 2. Culture and development, 3. Value of culture, 4. Culture and society, 5. Culture and nature, 6. Policy sectors, 7. Models of governance, 8. Research approach

How the three approaches relates to one another?



from a simple system
inert anthropocentric

to a complex system
dynamic ecocentric

According to Soini and Dessein, the evolution of culture in sustainability involves in a complexity crescendo, all th three models presented.

The graph illustrates the idea how all three approaches are interconnected. When moving from the first representation to the second towards the third, the ecological emphasis, but also the integration of cultural, social, and ecological aspects, as well as the overall dynamics, diversity, and openness of the representation, increase.

The Y-axis represent the inertia/dynamics of the system. X-axis represent the human/nature interface, from an anthropocentric approach to more ecocentric one.

The figure shows the relationships between the various representations (they are not mutually exclusive) and the increased complexity: as distance from the origin grow, the systems become more and more articulated.

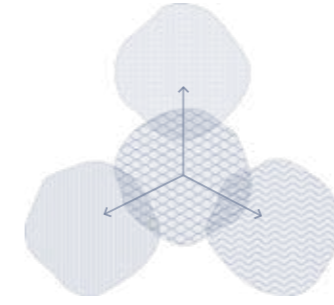
To conclude, the framework presented shows remarkable differences in the way culture can be understood within the context of sustainability. Consequently, when working on culture in the context of sustainability, we should be aware of the way culture is addressed. However, it can be argued that the network 'Investigating Cultural Sustainability findings represent only the first step, rather purely theoretical, and answer only question on how important is to include culture in sustainability.

IN



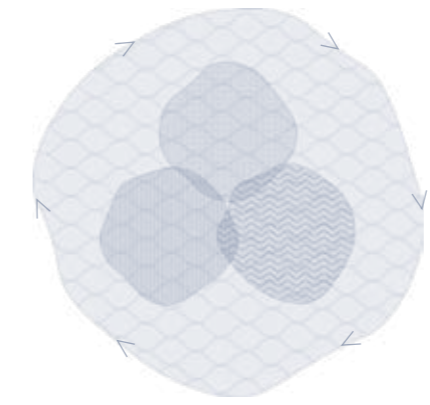
culture as a capital
culture as a goal in development plans
intrinsic
complementary
anthropocentric (men vision of nature)
cultural policies
hierarchical, 1st order
mainly mono and multi-disciplinary

FOR



culture as a way of life
culture as a resource and condition for development
intrinsic and instrumental
accessible
interaction between man and nature
all policies
co-governance, 2nd order
mainly multi and interdisciplinary

AS



culture as semiosis
development as a cultural process
incorporated
changing
nature as part of culture
new policies
self-governo, meta-government
mainly inter and trans-disciplinary

FIG. 6 - Diagram 'Complexity of sustainability'. © Soini and Dessein (2016)

1.4 conclusions

Finding a definition of the concept of sustainability was not easy.

The main problem is that it has not a meaning in itself, but it is a concept that exists when it is related to something other else. Be it between two people or between humans and the environment, to which it owes its major connotation.

*sustainability
is a paradigm
and affects
all the spheres of life*

From the Brundtland declaration, which has become one of the milestones, we have come to the latest UNESCO definition that sees sustainability as a **paradigm**, that is, a phenomenon so profound as to impact all aspects of life. However, to understand what it is about more concretely, it is necessary to follow the fil rouge that embraces all the other definitions that have been promoted over time and that see certain key points repeated cyclically.

Need.

Sustainability is not questionable. Converting the current systems of indiscriminate development into systems of sustainable development is essential to guarantee a future in which the next generations can take advantage of our own resources. Any scenario that does not see sustainability as humanity's primary goal is catastrophic and destructive for humanity itself, as well as clearly the planet and the species that inhabit it.

*sustainability
is not an option*

Relations.

Sustainability is intrinsically linked to the relationships that exist between people and their surrounding context made up of both other people and nature. Formalizing this thesis J. Elkington formulates the 3P model where he speaks of sustainability as a balance between the economic, social and environmental spheres.

*sustainability
is made of relations*

Time.

It is necessary to ensure that the environmental load generated by human activities is adequate to the scope of the reference system so as to allow the renewal of resources and guarantee their availability for future generations, therefore the environment and the personal interests of man are equal.

*sustainability
preserves the same conditions
through time*

Equity.

Sustainability recognizes the value of others by promoting the development of systems aimed at inclusion in which tangible and intangible resources are made equally accessible. Both contribute to the economic and social progression of a country and allow the creative contribution necessary to globally develop new strategies that allow the achievement of sustainable development.

*we all are equal and equally
resourcefull, there fore we all have
the same resources rights*

Participation.

Although we speak of sustainability as an end, in fact it develops not as a result of

*sustainability
is effective just when*

the relationship, but in the relationship itself. Sustainability is in the relational process and requires all parties to be active participants. It cannot be achieved only by individuals in their own small way, just as it would fail if the attention to these issues concerned only the legislative powers. It is necessary that everyone is fully aware of how urgent sustainability is now and actively cooperate in a process of self-responsibility, intervening on their own impact and promoting policies and modus operandi that go as much to raise awareness among the population, as to intervene on those processes that are unsustainable and cause damage both in the short and medium-long term.

*it is participative
and shared*

Think global act local.

Synthesis between the global thinking that considers world wide dynamics intercurring between people, their culture, their business and the local know-how that considers the different peculiarities of a certain place. There is not a general formula suitable for everyone, instead there are universal tools and innovative exchange of ideas on a global level that can be applied to built a local strategy to preserve biodiversity.

*global network,
local solutions*

Culture.

In 2015 it was officially defined as a **sine qua non medium** for achieving a sustainable development. Interventions that stimulate the creation of a shared and adequate culture in terms of the environment are essential to be able to make the ecological transition. It's value is intrinsic (e.g. of the local know-how) and given: culture is the key factor to sensitize the mass. In 2005, in an article entitled "What the warming world needs now is art, sweet art" Bill McKibben wrote

*culture
the sine qua non medium*

«We were aware of climate change, we still did not really know it because it was not yet part of our culture»

BILL MCKIBBEN, 2005



VISITOR CENTER

FIG. 7 - Western Flag, © John Gerrard, Texas (2017)

02 . VISITOR CENTER

«Always design a thing by considering it in its larger context - a chair in a room, a room in a house, a house in an environment, an environment in a city plan»

ELIELSAARINEN



FIG. 13 - Illustration of teen picking mangos from tree pollinated by bees, Cynthia Alonso for UNICEF

2.0 Human | nature

2.1 Better with or without? (PAs)

«A sort of national property, in which every man has a right and interest who has an eye to perceive and a heart to enjoy»

WILLIAM WORDSWORTH

Almost in conjunction with the first Industrial Revolution, in 1776, the Tobago Main Ridge Forest Reserve was established and two years later the area surrounding Bogd Khan Uul Mountain was declared protected. For the first time humanity felt the need to protect some part of the planet from himself.

*origins:
action/reaction*

In the following century similar initiatives in different places of the world happened. In USA in 1864 Yosemite territory and the Mariposa Grove of Giant Sequoias were claimed with a law under the control of the state of California. It was established upon the simple yet ground-breaking idea that **wilderness should be preserved from commercial interests for the sustainable use and enjoyment of all people** and not even later than a decade, in 1872 another area was designed to be specially protected: the Yellowstone National Park¹. From then on an ever increasing number of sites, from every corner of the planet, had been added to the list. The phenomenon has been so strong that in the middle of the last century a task force² was pulled up to restore all the visitor centers in America's National Park and more of one hundred structures were counted in.

At the very beginning PAs were spontaneous local initiative with no global direction and was found that they struggled to dialogue with other sites, even if from the same country. To order them, catalogue them, give a rational definition and create a world recognized network, the first UNESCO General Director, the biologist Julian Huxley,

*IUCN
global direction*

¹ At the time the IUCN (International Union for Conservation of Nature) that classified and regulated the PAs, didn't exist, nor the "National Park" concept as intended nowadays.

² The operation was the Mission 66 (see paragraph 2.4.1)

PROTECTED AREAS EVOLUTION TREND

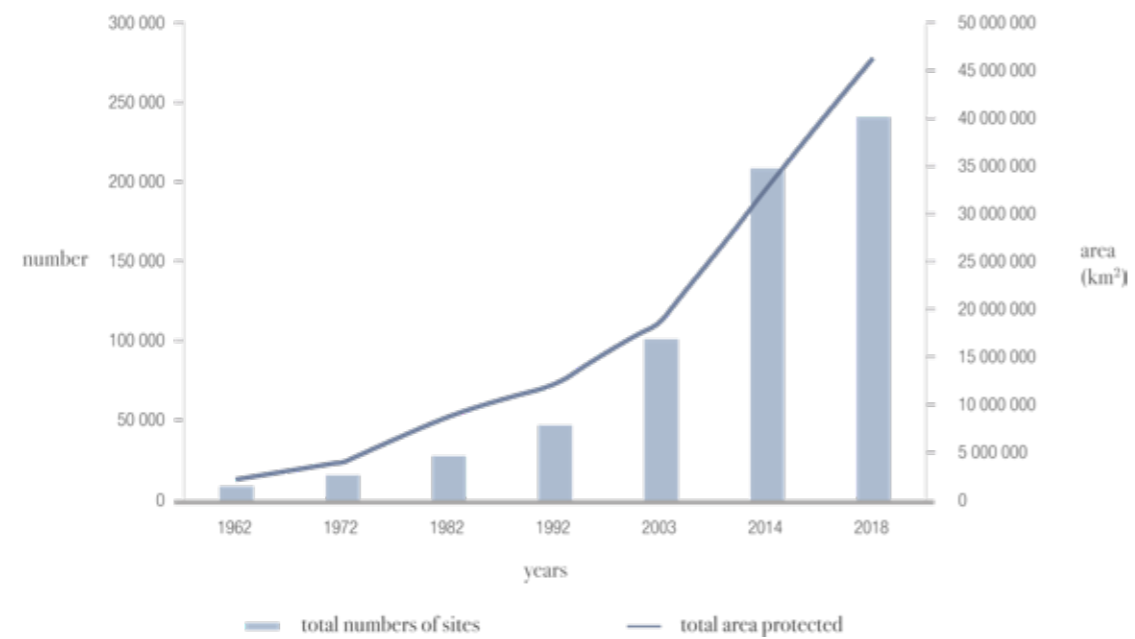


FIG. 14 - Evolution of the terrestrial and marine protected area network, in number of sites (light blue bars) and in area (km², blue line) since the first World Parks Congress in 1962, based on previous versions of the UN List (Source: UNEP-WCMC 2018, with data from Chape et al. 2003) | One of the Aichi goals - just partially achieved (see paragraph 2.1.2), was to protect 27% of all the terrestrial (17%) and marine surface (10%)

year	number of sites	total area protected (km ²)
1962	9 214	2 400 000
1972	16 394	4 100 000
1982	27 794	8 800 000
1992	48 388	12 300 000
2003	102 102	18 800 000
2014	209 429	32 868 673
2018	238 563	46 414 431
2021	265 941	50 600 000

FIG. 15 - Cumulative growth of the reported protected areas (terrestrial, marine and OECM - Other than Effective area-based Conservation Measures) network since 1962 (Source: UNEP-WCMC, 2021)

along with representatives of governments and conservation organizations signed a formal act constituting the *International Union for the Protection of Nature (IUPN)*, now known as IUCN (International Union for Conservation of Nature)³.

IUCN defined seven categories of different protected areas (PAs):

7 protected areas

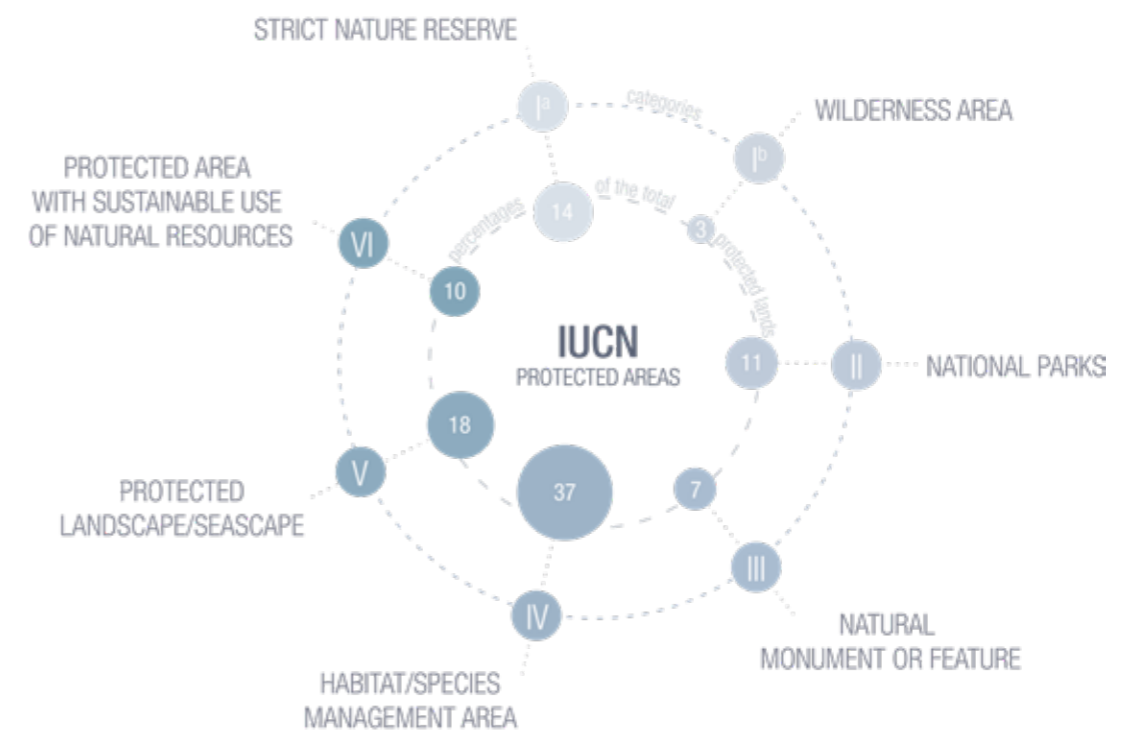


FIG. 19 - Global Protected Areas Classified by IUCN Management Category (2001), graphic rielaboration of the author

³ IUCN was established in 1948 in Fontainebleau. It was initially called the International Union for the Protection of Nature and Natural Resources (1948–1956) and has also been known as the World Conservation Union (1990–2008).

I^a Strict Nature Reserve

*biodiversity
geological features
very limited
human presence*

The main goal is to preserve a certain area **biodiversity and also possibly geological/geomorphological features**. They are strictly protected and human activities and impact are rigorously controlled and limited to ensure protection of the conservation values.

I^b Wilderness Area

*wilderness
forbidden human presence*

To this category belongs all the natural areas in which the **human presence has not been significant or permanent. Wilderness has remained untouched**, retaining its natural characters and influence, which are protected and managed so as to preserve their natural conditions.

II National Parks

*large-scale
ecological processes
ecosystems
cultural/educational
environmental/scientific
visitors opportunities*

«Large natural or near natural areas set aside to protect *large-scale ecological processes*, along with the complement of *species and ecosystems characteristic of the area*, which also provide a foundation for *environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities*»

IUCN

III Natural Monument or Feature

*specific natural monument
high value for visitors*

Generally small PAs set aside to preserve a **specific natural monument**, which can be a landform, sea mount, submarine cavern, geological feature, often **highly valuable**

for visitors.

IV Habitat/Species Management Area

These areas priority is to protect a **single entity** that can be a particular specie or habitat. Their main intervention is to **manage the natural resources** so to preserve the optimal conditions for ensuring the survival of their target.

*natural resources
management
single target*

V Protected Landscape/Seascape

The focus of this category is to protect all those environment in which **human and nature interaction** has been present for centuries and has produced a **virtuous sustainable circle where both parts are codependent by another**. Safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

*anthropic environment
human/nature
codependency*

VI Protected area with sustainable use of natural resources

PAs that conserve **ecosystems and habitats**, together with associated **cultural values and traditional natural resource management systems**. They are generally large, with most of the area in a natural condition, where a proportion is under **sustainable natural resource management** and where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.

*sustainable resources
management*

«For the benefit and the enjoyment of the people»

ULYSSES GRANT, 1872

«A National Park has to manage visitor use for inspirational, educational, cultural and recreational purposes at a level which will not cause significant biological or ecological degradation to the natural resources and to contribute to local economies through tourism»

IUCN

2.1.1 II national parks

Of the five PAs categories, National Parks are among those with a larger surface protected and complex systems management. According with IUCN the primary goal for the over 4000 National Parks (2012) is to protect their **natural biodiversity by preserving and managing its underlying ecological structure**, supporting environmental processes. National Parks have also to **study** their territory and **promote education and recreation for visitors**.

*primary goal
study,
preserve,
divulgate*

The National Parks have also secondary goals:

- To **manage** the area in order to **perpetuate**, in as natural a state as possible, **representative examples** of physiographic regions, biotic communities, genetic resources and unimpaired natural processes;
- To maintain viable and **ecologically functional populations** and assemblages of native species at densities **sufficient to conserve ecosystem integrity and resilience in the long term**;
- To contribute in particular to **conservation of wide-ranging species**, regional ecological processes and migration routes;
- To manage visitor use for inspirational, educational, cultural and recreational purposes at a level which will not cause significant biological or ecological degradation to the natural resources;
- To take into account the **needs of indigenous people and local communities**, including subsistence resource use, in so far as these will not adversely affect the primary management objective;
- To contribute to **local economies through tourism**

*territory management:
preserving biodiversity
and genetic resources*

*regulate the populations
for ecosystems integrity*

*conservation
of ecological processes*

*divulgate entertaining visitors
regulate environmental impact*

*needs
of local communities*

tourism and local economy

National Parks, therefore, have a mediator role that on one hand **studies the ecosystems dynamics and needs to preserve** them and on the other hand **spreads the acquired knowledge on a mainstream level, educating while entertaining (*enjoyment*) the visitors**. This makes National Parks disseminators on a cultural level and supporters (not just managers) of the local community.

edutainment

This vision of National Parks, though, has not always been predominant: there were and locally are consistent line of thought that actuate preservation by discouraging, strictly limiting, or in some cases forbidding, human presence/interaction in PAs.

*human / nature
setting the boundaries*

It has also to be considered that in very densely populated region, like Italy, where the wilderness and human spaces overlap, the institution of PAs has caused different problems. Firstly there had been the acceptance. Sustainability is doubtless a ne-

cessity, but what happens when we shift our perspective from what is sustainable right to actually respond in first person for achieving it? From a certain moment on, some part of Abruzzo, some towns selected because in a valuable natural context had to respond to another "lawyer". To fully and quickly understand this concept *imagine that from one day to another someone has the last word on the project you have stored for your activity or your home actually limiting what you can and cannot do with your own resources*. How would that feel?

popular resistance

At the time sustainability and in general the protection of the environment was not so "popular" there fore, **without a proper cultural substrate** these initiatives have found a certain **resistance** and against National Parks limits where people would **lit wildfires** or do **poaching**.

supportive interventions

After this rough start the regions where the National Parks are, started refunding policies act to economically restore the damage done by wild animals and promote cultural activities that would focus on the value of the resources protected.

human & nature

Nowadays with the new generations and a better but not complete sensibility towards sustainability the situation is changed. It is time to do a step further: **National Parks have to be bolder and more integrated** and caring of the local communities. The actual line of action puts people and environment on the same level. It is not possible to achieve a sustainable scenario by keeping human and nature in two separated spheres. The only possible future is to find a solution together, therefore **National Parks**, have to become **living laboratories** able to create and test models that can be exported.

national parks as living laboratories

2.1.2 Biodiversity

«Biological diversity is the variety of life forms, the ecological roles they perform and the genetic diversity at all levels of biological systems (i.e., molecular, organismic, population, species and ecosystem)»

s

BRUCE A. WILCOX, 1982

Preserving **biodiversity** is the main reason-to-be of all the PAs and, exactly like sustainability, is hard to point out, or to better say, it is hard to concretely realize how much human kind life really relies on it.

biodiversity = variety

Biodiversity is the variety of life on this planet or a given ecosystem. It is not only linked with the number of different animals, plants, fungi, corals... That can be found, but also with their sub-species⁴ and the genetic diversity⁵ between different individuals.

Approximately *1.9 million species* have been *identified*, but this number leaves out very large numbers of organisms, particularly those that are microscopic or that live in inaccessible, hard to study places such as the deep oceans. Many scientists have estimated the *total number* of species on Earth to be around *15 million*, but even this figure may be a significant underestimation.

1.9 million species identified

15 million species may be on Earth

The question though that rises among those that are not in the field is: why biodiversity is so important?

⁴ The sub-species concept is quite articulated from a taxonomy point of view: are the genetic traits and the phenotypic to determine if a species can be divided into biologically significant subcategories. In this specific context, a design thesis meant to explain to a large, "laic" public the general meaning and differences. Not being a taxonomy research, it is used in a simplified way.

⁵ Genetic diversity is the genetic heritage of each single individual. When, for example, people tried to save from extinction a certain animal, often the problem is to have a good number of individuals that can reproduce together: if there are too few individuals, the risk is to have the same genome repeated and consequently the disease that affects it.



the variety of life forms,



subspecies,



genetic diversity

FIG. 20 - Biodiversity

«Most people experience the loss of other species and the disruption of ecosystems as intangible, abstract events, happening somewhere else, separate from themselves. In spite of this, they may feel the losses deeply—ethically, spiritually, and aesthetically—and may even understand some of the ecologic and economic costs involved. Yet, it is still difficult for them to grasp what this impoverishment of Nature has to do with their daily lives.

The challenge for those of us working to preserve biodiversity is to convince others, policy-makers and the public in particular, that we human beings are intimately connected with the animals, plants, and microbes we share this small planet with, and totally dependent on the goods and services they provide, and that we have no other choice but to preserve them»

ERIC CHIVIAN & AARON BERNSTEIN, 2010

Everywhere on the planet, species live together and depend on one another. Every living thing, including man, is involved in these complex networks of interdependent relationships, which are called ecosystems.

interdependent system

Healthy ecosystems clean our water, purify our air, maintain our soil, regulate the climate, recycle nutrients and provide us with food.

Biodiversity is the key indicator of the health of an ecosystem. A wide variety of species will cope better with threats than a limited number of them in large populations. Even if certain species are affected by pollution, climate change or human activities, the ecosystem as a whole may adapt and survive. *The extinction of a species may have unforeseen impacts, sometimes snowballing into the destruction of entire ecosystems.*

*variety = multiple tools
= resilience*

unpredictable snowball effect

Specifically biodiversity is at the base of the **ecosystems services**.

ecosystems services

Ecosystem services are organized according to four categories (Chivian et al, 2010):

- **Provisioning services**, food, fuel, and medicines
- **Regulating services**, purifying air and water, mitigating floods, and detoxifying soils
- **Cultural services** that meet our aesthetic, spiritual, and intellectual needs
- **Supporting services**, which make possible all other ecosystem services, like pollination, nutrient cycling, and the photosynthetic capture of the sun's energy and production of biomass by plants, called "primary production."

food

*purification
and detoxification*

*aesthetic, spiritual
and intellectual*

supporting other ecosystems services

«We need ants to survive, but they don't need us at all»

EDWARD O. WILSON, HARVARD UNIVERSITY



FIG. 21 - Illustration of a child and animals caught in a wildfire, Cynthia Alonso for UNICEF

The Convention on Biological Diversity (CBD) is the international legal instrument for «the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources» that has been ratified by 196 nations in 1992 after the Rio Conference. It has been effective since December 1993 and meets every two years to check the progress made to fulfill the established goals. Its overall objective is to encourage actions, which will lead to a sustainable future by preserving biodiversity, a common concern for human kind. It has two supplementary agreements, the Cartagena Protocol⁶ and Nagoya Protocol⁷.

a concern for human kind

To define a more programmatic approach, each ten years are formalized a number of goals that needs to be achieved by the end of the decade.

Aichi 2020 targets

For the period 2011-2020 where formulated the 20 Aichi Targets. 6/20 have been just partially achieved. The other 14 have been completely missed. Specifically we completely missed all the goals that involved a mainstream integration of biodiversity in our culture.

6/20 just partially fulfilled

01. By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use in sustainability.

biodiversity awareness

02. By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.

biodiversity value integration

Even though all the goals concurred to preserve biodiversity, the number 12 was specifically about preserving at least known threatened species from extinction.

We did not only missed it but the current loss of biodiversity is accelerating: the actual rate is 100-1000 times higher than the natural one. It means that supposing there are 15 million species on Earth, each year we loose 15 of them due to extinction.

the sixth great extinction

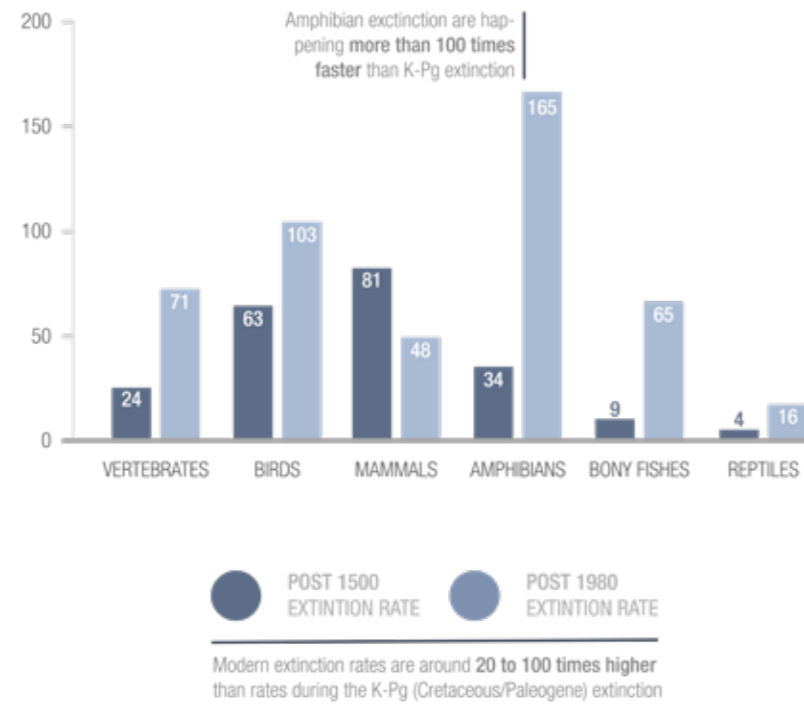
In Europe some 42% of European mammals are endangered, together with 15% of birds and 45% of butterflies and reptiles.

Because of the very high level of current extinctions, scientists say we have now entered “the sixth great extinction event”, the fifth having occurred sixty-five million

⁶ The Cartagena Protocol on Biosafety (2003) is an international treaty governing the movements of living modified organisms resulting from modern biotechnology from one country to another.

⁷ The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) (2014) provides a transparent legal framework for the fair and equitable sharing of benefits arising out of the utilization of genetic resources.

EXTINCTION RATE
POST 1500 vs POST 1980



HAS THE EARTH'S SIXTH MASS EXTINCTION ALREADY ARRIVED?

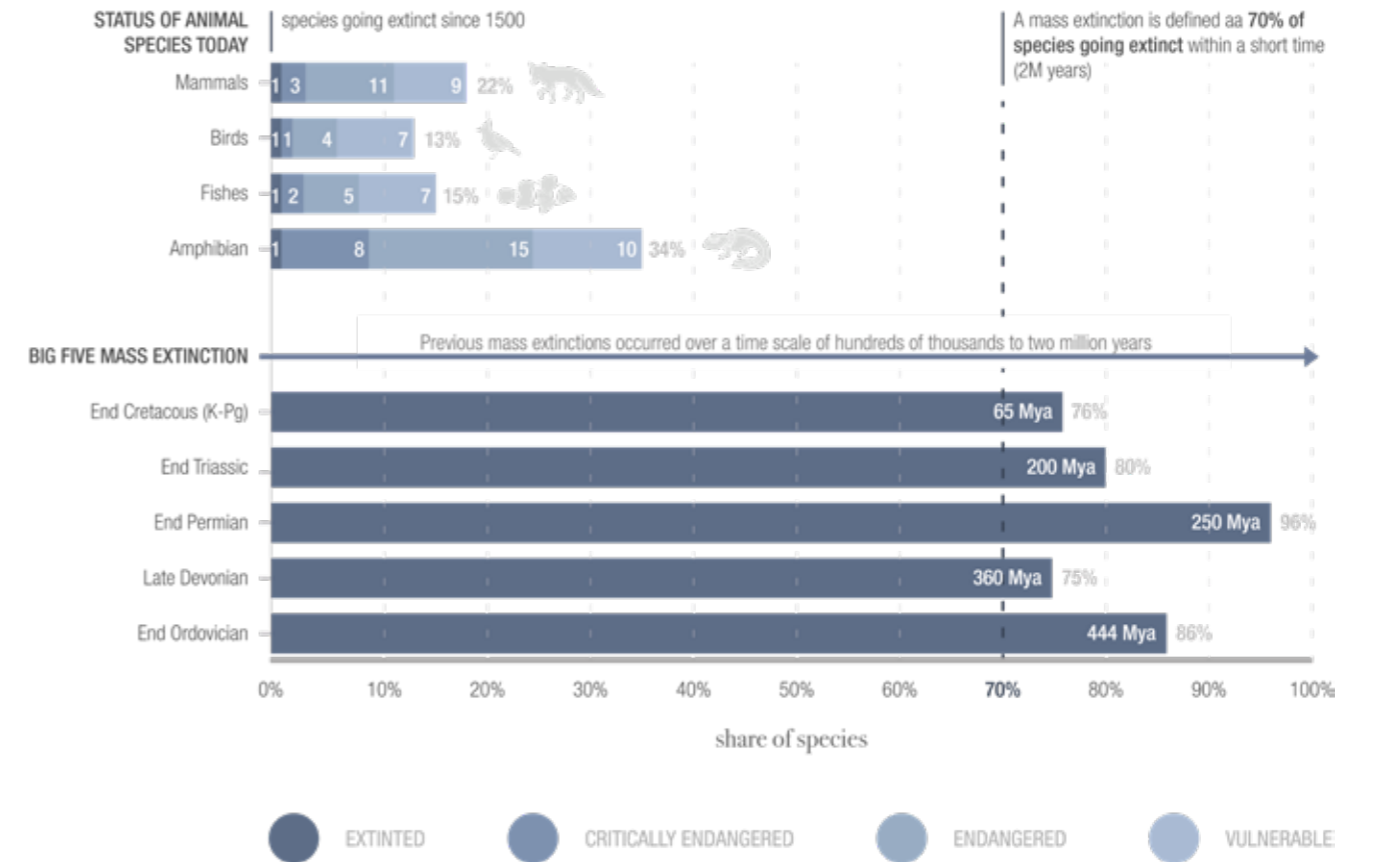


FIG. 22 - McCallum (2015), OurWorldinData.org, Ritchie (2021), graphic elaboration of the author

FIG. 23 - Barnosky et al. (2011), IUCN Red List (2021), OurWorldinData.org, Ritchie (2021), graphic elaboration of the author

years ago, when *dinosaurs* and many other organisms went extinct. That event resulted from natural causes, perhaps including a giant asteroid striking the Earth; this one we are causing.

«Ecosystems provide goods and services that sustain all life on this planet, including human life. *If damaged, we cannot fully restore them, no matter how much money we spend*»

ERIC CHIVIAN & AARON BERNSTEIN, 2010

Case study:

Saving the Italian wolf from extinction

«We are the same you and I ... we smell the same ... we speak the same language ... we are brothers»

PAOLO BARRASSO



FIG. 24 - *Canis Lupus Italicus*, Paolo Forconi

2.1.3 *Canis Lupus Italicus*

case study with a happy ending

«Wolves, like all wildlife, have a right to live in their natural state. This right is in no way related to their known value to mankind. Rather, it derives from the right of all living creatures to coexist with man, as part of natural ecosystems»

EUROPEAN COUNCIL, 1979

The wolf and the history of its conservation in the twentieth century are the symbol of the reversal of negative paradigms and prejudices that have accompanied the evolution of the man / environment relationship. Always labeled as a bloodthirsty and dangerous monster, it is now present in the PNM logo, to sanction not only a - relatively profound - reconquered pacification, but also the recognition of the ecological and cultural bond that binds the large carnivore to the Park territory.

Not only that: the wolf has also become an attractive factor for an ecotourism that is increasingly attentive to the values of environmental integrity and experience in nature. The benefit that tourism receives directly from its presence has, for example, been certified by the WWF (2016) in the mountainous area of Culebra, in Spain, where in 20 years the wolf effect for guests of local accommodation facilities is worth 50% , in some cases up to 80 of the appeal of the area.

the wolf-effect

In 1921 the doctor and zoologist Giuseppe Altobello, for the first time identified two subspecies in the Apennine settlements of wolves and bears, effectively separating them from the remaining European population: the Marsican Brown Bear (*Ursus Actors Marsicanus*) and the Apennine Wolf (*Canis Lupus Italicus*).

the "first"
Canis Lupus Italicus

At the time their presence on the territory was still very widespread, especially that of the wolf, whose range extended along the entire Apennine chain, from Liguria to Sicily.

the tale of the bad wolf

The Wolf, however, although widespread, has always and everywhere in the world been the catalyst of a negative mythology, of prejudices and imaginative elaborations linked to a profound misunderstanding leading to aversion, and not only in popular culture but also, up to the middle of the century. last, in the same scientific fields.

a conflict of interests

The label of bloodthirsty and "noxious" animal certainly originated in large part from the conflict with the interests of the still numerous communities settled in the same Apennine territories, and in particular of that agro-forestry-pastoral economy on which their tiring subsistence was based. An economy that, on the other hand, had achieved significant changes in the forms and availability of natural resources for wildlife, in a process of anthropization of the landscape which, if from our point of view appears substantially soft and harmonious, involved ecological imbalances. These unbalances generated increasingly frequent clashes with the wolf (for example the disappearance of wild herbivores, the main natural prey of the wolf, due to the widespread and preponderant spread of sheep, which has stolen their pastures).

«For all these reasons, to avoid that the wolf, from a scary historical memory, returns to being alive and throbbing reality ... it is legitimate to ask ... that in any time, in any place and to any person the killing of the wolf is allowed , and that an adequate cash prize is always granted, which encourages everyone to kill it with all the means at his disposal»

ALTOBELLO, 1924

destroying livestock habitat

The expansion of cultivated lands, led to the disruption of the domestic livestock natural habitat. This process led to the disappearance of the the great predator preys: the beginning to a real extermination campaign.

a semantic of violence

An interesting albeit indirect indicator of this wave of persecution which in the course of the twentieth century led to the extermination, in Europe as well as in America, of wolf populations is provided by linguistics, which documents the significant spread of

toponyms such as *Mazzalupo (Wolfkiller)*, *Cecalupo (Wolfblinder)*, *Scannalupo (Wolf-slaughter)* (Calabrese, 2015, cited by Tattoni, 2019), relating to a semantics of violence and referring to places where evidently such actions were carried out.

Wolf populations were thus eliminated as early as the 1920s in the Alps, twenty years later in Sicily (Bocedi, 2004), remaining only with relict and disintegrated nuclei in the Sila and, in particular, in the area of the PN of Abruzzo and the the Maiella massif, until it reached its historical minimum at the beginning of the seventies. But a cultural revolution began that would radically change the perception not only of the wolf and its role, but of the very interaction between man and the environment.

a close step to extinction

first protection laws

Significant stages in the legislative path towards the protection and recovery of the species are the 'Natali' decree issued by the Italian Ministry of Agriculture and Forestry in 1971, which eliminated the wolf from the list of so-called "vermin", and five years later the 'Marcora decree' which forbade their direct hunting or killing through the practice of poisoned morsels. Finally, the 1979 Berne Convention recognized *Canis Lupus Italicus* as a "strictly protected fauna species".

«...*Master of woods and kings ...
Yet you still sculpt the wind
Along the sunny valleys
And sometimes the moon again
Hear the lament of us.
For us; yes i met you.
Revised, and then I kept quiet*»

FRATELLO LUPO - WOLF BROTHER, PAOLO BARRASSO



FIG. 25 - Luparo. Begging around the city, everyone is called to contribute for the "service" rendered to the community.

San Francesco operation

«With all beings and with all things we will be brothers»

RED INDIANS AMERICANS - OPERAZIONE SAN FRANCESCO

The legislative process was accompanied - indeed it was a direct spur - by the first scientific campaign of census and evaluation of wolf populations, significantly titled 'Operation San Francesco', which began in 1971 in the Abruzzo National Park but was largely conducted on the Maiella, in collaboration with the international WWF and with the participation of the most expert researchers on the world scene (Boitani, Zimen and Mech).

*an international
multidisciplinary team*

The data of an accurate and innovative field research conducted with the techniques of *wolf-howling*, *snow-tracking*, crossed with interviews with the residents of the areas involved, especially the "*lupari*" (wolf hunters) themselves, allowed to define the remaining areas of the Apennine Wolf and define the actual number of remaining specimens, which was around the alarming number of **100 specimens** (Boitani et al, 1975 ca.)

100 wolves to extinction

Considered the most successful eco-sociological campaign of the last century (Tassi, 2012), the operation not only reached the finally **scientific awareness of the ecological status and role of the wolf**, but also promoted a real cultural revolution through a wide action of information and awareness especially in the communities where the conflict was more deeply rooted. This allowed the rehabilitation of the animal also in the general perception, undermining the ancient paradigm of the "bad wolf".

The other decisive action in the history of the protection of the wolf was the establishment, starting from the same period, of new PAs which led, after half a century, to cover just over 11% of the Italian territory.

Paolo of the wolves⁸

«At the call of Paolo, but also of ours, the response of the specimens of the herd took on an exciting crescendo of goosebumps sensations»

EMIDIO MARIA DI LORETO

A young biologist from Abruzzo, Paolo Barrasso, who returned to Abruzzo after various research experiences in England and the Alps, also took part in Operation San Francesco towards the end of the Seventies.

Not only the conservation of the wolf is linked to his name and his work, but the whole path of enhancement of the Maiella, which thanks to his action in synergy with the former ASFD⁹ of Pescara, saw the birth of the first state nature reserves (which will form the basis for the birth of the PNM) and the annexed structures, including the **Caramanico Visitor Center complex**, named after him after the tragic and untimely death in a mountain accident in 1991.

Paolo¹⁰ (accompanied by his inseparable four-legged companion Orso, an Abruzzese mastiff) is entrusted with the second phase of the field research, based at the San Leonardo Pass, a pass between the Morrone and Maiella massifs. The programmed capture of the specimens of the area and the application of the radio collar, which

⁸ "Paolo dei lupi", title taken from the play of the same name, (D'Amico, 2019)

⁹ Rangers

¹⁰ Having been born and raised in these same places and having had the good fortune to know the people who have been part of Paolo Barrasso's life also by actively participating in the Operation San Francesco, and therefore, having always heard of him appealing to him with an affectionate "Paolo" the author has deliberately chosen to maintain the same degree of informality. Because basically, Paolo, it was like that. And perhaps in the end, people should be remembered for the experiences they leave us, but also for how they have decided to live.

by emitting geolocation signals of the animal allows you to monitor its movements and habits, allows you to **reassemble a further piece of the complex mosaic of the wolf's ecology**. The cause of the demographic collapse of the species is not only the persecution by man, but also the absence of trophic resources¹¹, with the disappearance of its natural preys, deer and roe deer, the large herbivores had progressively disappeared from the Italian peninsula (Carnevali et al, 2009).

Lonely and thin wolves turn to landfills, then widespread everywhere and always available sources of food (also given the contemporary boom of mass mountain tourism, which periodically crowds the holiday homes), with evident etho-ecological distortion of the species.

It was therefore clear the need to reconstruct the missing pieces in the food chain that belonged to this large carnivore, with the reintroduction of large herbivores.

The deer, which remained only in the PN D'Abruzzo - as early as 1900 Royal hunt reservation - were reintroduced into the Orfento Valley Reserve in 1983-1984 with a small group of 9 specimens. A small number to manage a slow population growth, also desirable to favor the gradual readjustment to this new availability (Ciampoli, 1999). Subsequently, in 1986-1987, 14 specimens of roe deer were reintroduced with the same method, a smaller and much more delicate ungulate than the deer, while the last reintroduction, both in the Orfento Valley and in the nearby Lama Bianca Nature Reserve, date in the mid 90s.

50 years later, it can be said that Operation San Francesco was a success. To date, the population of the Apennine Wolf is not yet safe from the danger of extinction (WWF¹², 2017), but counts more than 1600 specimens.

The success of this operation is not only attributable to a wise scientific management of wildlife, but also to the enlightened awareness of the need to build a cultural consensus, starting precisely from the territories where the conflict with the wolf was most bitter and atavistic. Without the involvement of the communities, of ordinary people and not only of the scientific world, no serious and lasting goal would ever have been achieved. Paolo's field action took place not only in the woods and in the mountains, but also in the squares, in the halls and meeting places of the Maiella villages, dedicating time to tell about a wolf different from the believed bloodthirsty monster, to try to unhinge an ancient hatred, while listening to the fears and needs of the mountain people, called to be protagonist of a difficult but possible

*hunting
and the disappearance
of large herbivores*

*the reconstruction of the
food chain*

*the deer
and the roe deer*

*"I was behind that dream
and from that I lived that's
what I hoped for "*

*(plaque in memory
of Paolo Barrasso)*

¹¹ trophic resources: preys

¹² Although the WWF refers to the wolf as *Canis Lupus*, and therefore to the wolf in general



FIG. 26 - Distribution area of the Apennine Wolf, 1900
(Randi et al., 2000)



FIG. 27 - Distribution area of the Apennine Wolf, 1973
(Boitani e Zimen, 1975)



- Apennine population
- Alpine population

FIG. 28 - Distribution area of the Apennine Wolf, 2012 (Kaczensky, 2013), with the Alpine population also highlighted (Marucco, 2014)



«Where Paolo is passed by, life has come back...»

2.2 A need beyond survival

«Small wonder that during times of acute stress like we're in now, a walk outdoors feels more important than ever. Access to natural settings is especially critical for *cities*, where *green space is at a premium*, and where more than *half of all people live*»

LAURENCE C. SMITH, APRIL 2020

*simultaneous balance
of the opposites*

In his book *Fantasia* (1977), Munari claims how it exist a *simultaneous balance of the opposites*. Specifically he sustains that we, consciously or not, try to always balance the reality we are in: in the desert, where the landscape is flat and anonymous, there are the pyramids clear landmarks, the doctors working clothes would have a color (generally green or blue) opposite to the red-pink shades of the flesh so to give their retina a counterbalance... And a person always immersed in a urban environment needs a natural one to compensate and balance the over exposure.

«Those elements represent the instable balance that is in life [...]. A person runs from the traffic in the city and goes find his balance in a calm spot surrounded by nature»

BRUNO MUNARI, FANTASIA

Even though Munari's theory was about design and the need people have to compensate excesses, for the interaction human/nature it had been proven right with sci-

entific bases. In 1989, professors Rachel and Stephen Kaplan¹³ defined the Attention restoration theory (ART).

ART
Attention restoration theory

ART asserts that people can concentrate better after spending time in nature, or even looking at scenes of nature. Natural environments abound with "soft fascinations" which a person can reflect upon in "effortless attention", such as clouds moving across the sky, leaves rustling in a breeze or water bubbling over rocks in a stream.

Restoration or psychological restoration in the environmental psychology field is the recovery of depleted resources which can be psychological (attention and emotions), physiological (stress) and/or social. This results from interaction with a restorative environment to change negative states to positive ones. Psychological restoration can be described as *the capability of perception of restoration, as an observer can perceive the properties of an environment that relieves the mental fatigue and stress in a person.*

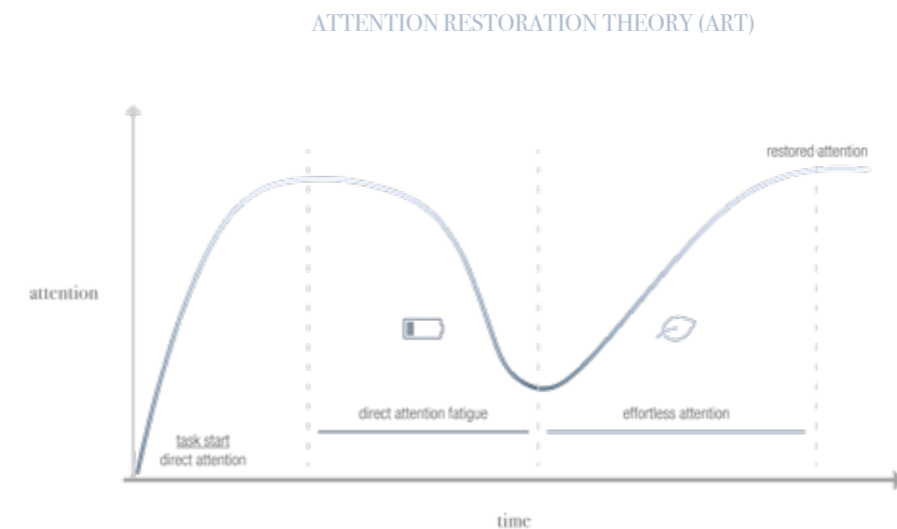


FIG. 16 - ART, Kaplans R. & S. *The restorative benefits of nature: Toward an integrative framework.* *J Environ Psychol.* 1995;15(3):169-82., graphic rielaboration of the author

13 R. and S. Kaplan professor specialized in environmental psychology, University of Michigan

This assumption has been tested by numerous researcher, in particular M. G. Berman, J. Jonides and S. Kaplan, discovered in 2008 how one hour of walk in the nature can **upgrade the attention spans over 20%**, a benefit similar to the one obtained meditating. The One University of Michigan confirmed that the restoration of cognitive skills happens because in natural environment people are subjected to moderately interesting stimuli able to keep our mind active but gently enough as not to overload the cognitive system. Contrary to that, one hour walk in the city or in a heavily **urbanized environment** with its multiple, loud stimuli, specifically designed to keep people attention up, downgrades it further, consummating more mental resources than it actually restores.

four characteristics
for restorative
natural environment

The Kaplans describes four characteristics that an environment must have to be restorative.

- **Fascination:** the ability of an environment to generate awe in people; the amount of awe can give the directed attention a rest as the involuntary attention appears in its place.
- **Being away:** a feeling that can be objective or subjective in form, e.g. a person can be far away from a location or can let his or her mind go from everyday life and worries.
- **Extension:** the connection between each element found in an environment; the feeling of being able to travel through the environment in order to look for the information it provides.
- **Compatibility:** characteristics found in an environment that meet the preferences and goals of a person.



Other studies show also how a natural environment helps reduce stress levels (Berto, 2014) and the journalist Richard Louv (2005) described how nature deprivation is critical especially for children development but heavily affects also adults. Specifically he claims that the "**nature deficit disorder**" can provoke obesity and psychiatric disorders including depression and anxiety.

stress levels reduced

nature deficit disorder

Aside for the theoretical studies, the effects of outdoor and specifically nature contact deprivation on people were clearly visible in Italy during the 2020. The **lockdown** caused by the **Covid-19 pandemic** was very strict: contrary to the policies adopted in other countries, Italians were asked to stay home except for serious reasons like going to the grocery stores, walk the dog, go to the pharmacy... This had increased the numbers of stray animals adoptions, never higher as before¹⁴, and an **exodus of people towards PAs**¹⁵ were experience a closer contact with nature and balance the previous deprivation.

"Covid-19 awakens"

«As bats swoop around me, I feel like I'm being visited by eccentric friends. This feeling of connectedness is exactly what I've needed, ever since all my loved ones were banished to a distant planet called Zoom»

SADIE DINGFELDER, 2020

FIG. 17 - The four characteristics of a restorative natural environment, Kaplans R. & S., 1989

14 AN // Hopefully all these adopted animals will be treated as such and not just as a means to recover a little of outdoor time in critical times, forgotten as soon as the emergence is passed

15 PAs of proximity registered a consistent increment, while PAs sited in Africa registered an important loss

2.2.1 Covid-19 nature deprivation: the Orfento Valley case study

case study
Covid-19
collateral effect

+150% presences
(approximately)

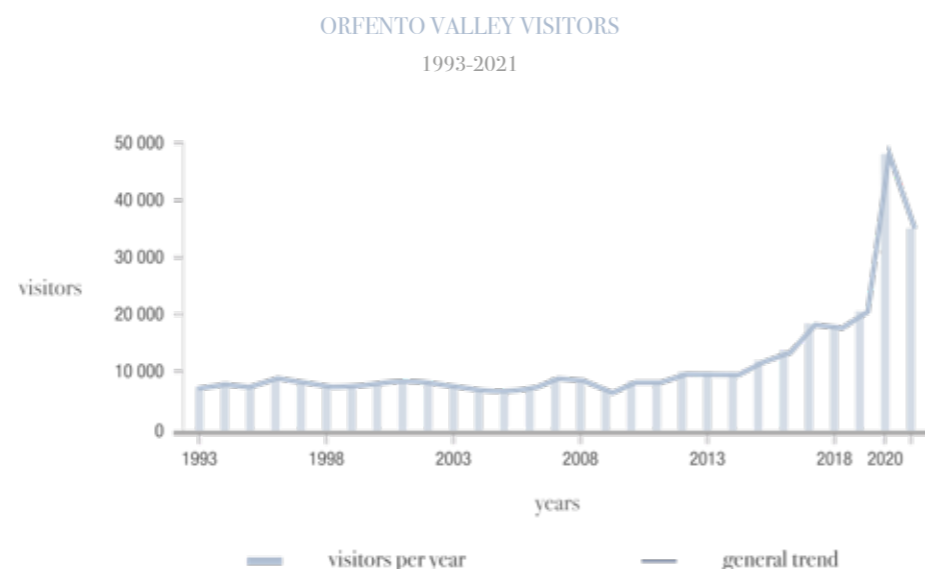


FIG. 18 - Case study: Orfento Valley visitors 1993-2021, data provided by Majambiente

A perfect case study able to show this phenomenon is the **Orfento Valley** (I^a, 1971 IUCN)¹⁶, in the **Maiella National Park** (II, 1991 IUCN).

Since 1993 presence were counted¹⁷ and analyzing the data is clear how for almost twenty years the situation, even with its physiological fluctuations, has remained stable without particular variations. Recently however, the number of people that visited this protected area has increased so much that in 2020, even though the closures caused by the pandemic, it has more than doubled the **20 323 visitors registered in 2019**, with a total number of **47 920 presence in 2020**.

¹⁶ Due to the Italian morphology and population density, all the major PAs, especially those along the Appennini chain, are characterized by an important coexistence of human and nature, even in PAs

¹⁷ It has to be noted that in 1993 data collection about PAs was important but not as much as it is today. Specifically for this case study, the data collection method consist in a free registration in the visitor center that used to be optional while in recent years has been set as mandatory to have access to the valley

2.3 A growing interest in nature

2.3.1 Tourism in PAs

Tourism in parks and PAs has shown everywhere in the last few decades to be one of the liveliest sectors with the greatest potential within the general global market. According to an estimate by the World Resource Institute (WRI, 2004), this segment now registers a constant and higher rate of growth compared to other segments, and will amount to approximately 20% of total travel over the next 20 years.

nature oriented tourism:
20% of the total

But how often people visit PAs? Except for general estimations and despite PAs covering one-eighth of the lands and being a major focus of nature-based recreation and tourism, it's not know for sure.

To be more precise, a team of scientists compiled a globally-representative database of visits to PAs and built region-specific models predicting visit rates from PA size, local population size, remoteness, natural attractiveness, and national income. Once tested 550 different PAs, they were able to built equations able to apply this model to 140 000 PAs around the world.

The astonishing results are that not only the majority of the tourists are headed both in Europe and in North America PAs, but the suggest that all PAs receive roughly **8 billion (8x10⁹) visitors per year**. But they were not done yet. They found that **USA expenditure** for safeguarding and keep running PAs is around **\$10 billion/y**, an amount defined by scientists, WWF and conservation experts as "grossly insufficient"¹⁸, while the income generated by visits is approximately **US \$600 billion/y in direct in-country expenditure and US \$250 billion/y in consumer surplus** (Balmford et al., 2015). According to Dr Andrea Manica, co-author of the study, the collected data are just conservative calculations: visit rates are likely to be higher than eight billion a year, and there's no doubt, as well, that the market is, consequently, bigger than the one calculated.

8 billion
visitors per year

\$ 850 billion market

The reason why **80% of the visitors** concentrates in Europe and North America, can be hypothesized, as Dr J. Green sais, in proximity. Most of the people that visits PAs, aren't actually searching for a long vacation period fully immersed int the exotic, wild nature. They go to «the nature reserve on their doorstep where they walk the dog every Sunday» (Green, 2015). This translates in PAs relatively small, but close to people such as the Orfento Valley¹⁹ in the Maiella National Park and the Fowlmere nature

80%
Europe and North America

proximity

¹⁸ They have called for greatly increased investment in the maintenance and expansion of PAs – a move which this study shows would yield substantial economic return – as well as saving incalculably precious natural landscapes and species from destruction

¹⁹ the Orfento Valley is a particularly protected area inside the Maiella National Park.

«We've shown that through tourism nature reserves contribute in a big way to the global economy – yet many are being degraded through encroachment and illegal harvesting»

ANDREW BALMFORD, 2015

reserve few miles away from Cambridge, having together around 70 000 visitors/y. In Africa, in the majority of the countries, adding all the visits/y to all the national PAs, the number doesn't rise over 100 000 presences/y.

Tourism, therefore, can represent a privileged line of action through which to pursue the goal of sustainable local development, because it is a complex product that needs and includes all the best resources - environmental and human - of a territory. Since it is precisely the factors of environmental, artistic and cultural attractiveness that build its main appeal, the safeguarding and enhancement of these factors are perfectly consistent with the promotion and development strategies. The protection and conservation of environmental resources, at the same time, favors an increase in their quality, so that they can maintain their value and their tourist attractiveness over time, in a virtuous and circular logic.

Sustainable tourism is, therefore, an activity that seeks to minimize the impacts on the environment, culture and society while simultaneously generating income, employment and the conservation of local ecosystems in a broad sense.

The attention and appreciation for nature are obviously the basis for this demand, but also rooted in a deeper cultural and value change, which has determined the transition towards an ever profound and more aware approach not only to the natural world itself, but to the methods of the trip and vacation.

*tourism
for sustainable development
attractiveness factors*

sustainable tourism

change of perspective

TOURISTIC APPROACH VARIATION

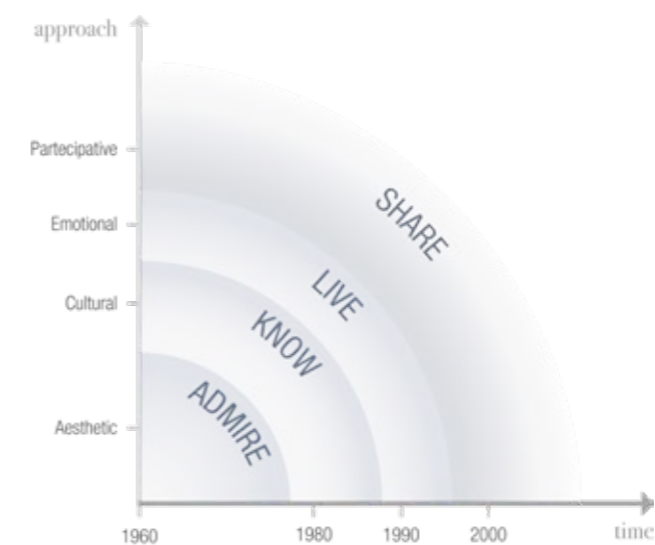


FIG. 30 - Viganò, 2000, graphic elaboration of the author

From an aesthetic-recreational and emotional relationship, essentially dominated by the appreciation for the beauty of the landscapes and the relaxation deriving from them, we have moved on to a **growing curiosity and drive towards knowledge**, a more "scientific" interest which has evolved from ever more widespread awareness of nature as an ecosystem, with its infinite and fascinating interrelationships of which we too are part, and **nourished by the urgency of major environmental emergencies**.

*participatory approach
holiday as experience*

All these modalities, which can be traced back to the paradigm of living an environment, show in recent years a further evolution towards the more complex paradigm of sharing, that is, towards a **participatory approach** that also transforms **the holiday into an experience**, not only external and recreational, but actively oriented towards the encounter with the territory and with the multiplicity of its peculiar components.

Tourism *nature-oriented* is subdivided in multiple categories some of them known (eco-tourism adventure travel, wilderness travel, car camping), while others are yet to be known (Eagles, 2001).

ecotourism

An ecotourist not only "consumer" of landscape and natural assets, but more attentive and aware, who takes in consideration all the typical aesthetic features, but also cultural and productive, linked to traditions and identity of the places.

Wilderness travel involves personal re-creation through primitive travel in natural environments that are devoid of human disturbance.

Adventure travel is a personal accomplishment through the thrills of dominating dangerous environments.

Car camping is safe, family travel in the interface between the wild and the civilized (Eagles, 1995).

2.3.2 Identity and destination management

*(biodiversity)
focus on the specificities*

The offer has to be multi layered and varied so to be able to intercept a demand more and more complex and aware, it must be based on some essential requisites, first of all the ability to **enhance all the specificities, which constitute both the primary resources and the elements of competitiveness that characterize and qualify the product**.

identity of a territory

It is, therefore, necessary that all the elements of **identity of a territory**:

- are **recognized** and come into the general awareness of the **promoters of the offer**;

- are usable and **organized in a network** so as to be easily accessible and respond to the multiplicity of interests of the demand;

- are supported by **adequate skills and services**;

- involve **all the stakeholders** of the territory in a **coordinated and coherent strategy**.

Like the naturalistic heritage of a protected area, this complexity therefore requires to be managed, and with suitable methods that can be borrowed from the company management processes, given that **the territory can be interpreted, from this point of view, as a large and varied one "business reality"**.

*territory
as business reality*

The center of this action can be indicated in the concept of **destination management**, which summarizes the demands of supply and demand, where **destination is obviously a concept that goes beyond that of a simple 'locality'** chosen by the tourist for their holiday and underlies its general and functional context, and **management implies the accurate and strategic plan of the processes connected to the offer**.

destination management

Destination management is, therefore, the set of strategic, organizational and operational decisions aimed at preparing the offer and the attractive factors that feed tourist flows to the destination, maximizing the results that can be achieved in the long term with a view to sustainability.

A destination will be all the more successful the more and better it will be able to amalgamate the set of resources and skills of the territory, of the individual companies operating locally and of the system as a whole.



FIG. 31 - Illustration of a child hugging the only Cinchona tree left, Cynthia Alonso for UNICEF

2.4 Confluence: the visitor center

2.4.1 Mission 66 | the visitor center birth²⁰

«[The national parks are] victims of the war»

NEWTON DRURY, 1949

With this statement Drury, the fourth director of the American National Park Service and the executive director of the Save the Redwoods League, brought the attention on National Parks and specifically visitor centers in the post WW II era. He denounced that, even though in the period 1931-1948 the national parks visitors dramatically increased from 3 500 000 to 30 000 000, the facilities had remained the same. This had lead people to wildly explore the PAs on their own, without a proper guidance or sensibility, to the point that their presence was causing a severe damage to the "protected" ecosystems. Many popular magazines featured stories warning the public of the dangers of visiting the parks and the slum-like conditions encountered within park boundaries, to the point that social critic Bernard DeVoto led the crusade for park im-

«[...] the floor of *Yosemite Valley* had become a parking lot littered with cars, tents, and refuse. Brilliant Pool, a popular thermal feature at *Yellowstone*, looked like a trash pit»

SARAH ALLABACK

²⁰ At the beginning visitor centers were intended just for PAs. For ones included in the Mission 66 program were defined different connotations: natural, historical, recreational... Nowadays the visitor centers that have received more attention in the general design are related to other subjects such as the Apple Park visitor center. For this thesis purpose, the reference is to the PAs related visitor center.

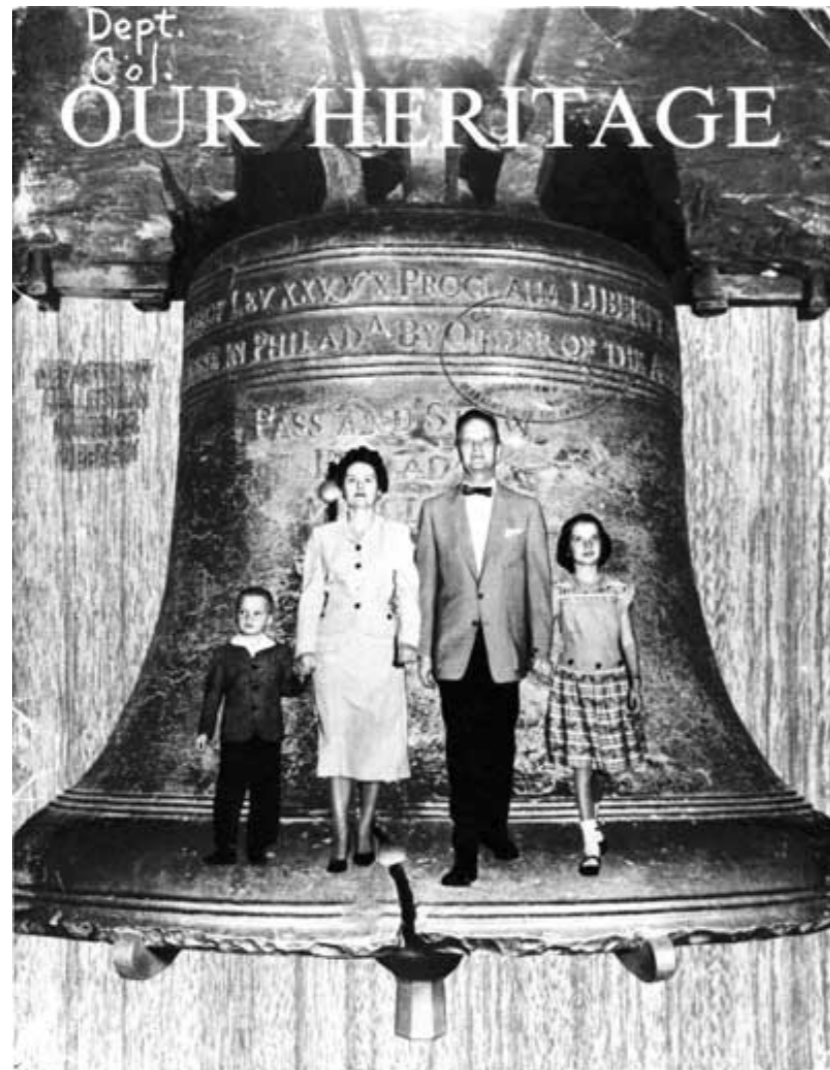


FIG. 32 - Our Heritage, (Mission 66 promotion) brochure cover, National Park Service, 1955.

provement with an article in his Harper's column, "The Easy Chair", entitled "Let's Close the National Parks," suggesting to keep the parks free from the visitors until funds could be found to maintain them properly.

*keep the parks
free from the visitors*

Drury realized that new, modern facilities could help conserve park land by limiting public impact on fragile natural areas.

«[Mission 66 was designed] to meet the needs of a much greater number of visitors and at the same time safeguard fully the wilderness, scenic, scientific and historic resources entrusted to the National Park Service»

NPS

As a symbol of national recovery, intrinsically connected with the competition for the design of the Gateway Arch National Park in St. Louis won by Eero Saarinen with his famous arch, the ten-years Mission 66 program was thought to celebrate the 50th anniversary of the establishment of the institution of the National Park Service (NPS) with a modern mass-statement. The intervention would aim to elevate the parks to modern standards of comfort and efficiency, as well as an attempt to conserve natural resources. Between 1956 and 1966, the National Park Service renovated/built more than 110 visitor centers, 216 utility buildings, 257 administrative and service structures, 575 campgrounds, 1 239 park housing structures and 2 767 miles of new and repaired roads constructed throughout the national parks, among other amenities (nps, 2002 & Beere, 2021). When the The Gateway Arch National Park was finished in 1965, Mission 66 had left a legacy of modern architecture in the national parks.

*a symbol for
America rebirth*

Until Mission 66, in fact, the dominant aesthetic for parks-related buildings, was the Rustic style. It was characterized by timber, shingles, shakes, and stone—the picturesque "log cabin in the wilderness" aesthetic, while for the planning the standard was the "park village": a decentralized plan hosting different functions spread out in an arrangement of individual, rustic buildings.

*from Rustic style
to a modern concept*

With the Mission 66 the idea was to remain coherent with the Rustic style tradition of architectural design in harmony with the surrounding landscape, by adapting its

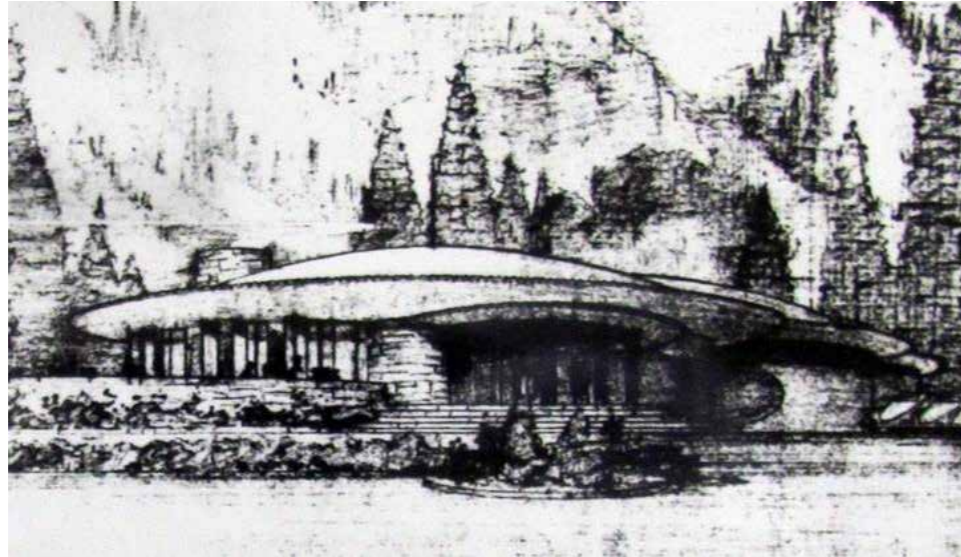


FIG. 33 - Frank Lloyd Wright's conceptual sketch for Degnan's Restaurant (Yosemite National Park Research Library)

methodology to contemporary design based on the "modern" materials such as concrete and steel, with expanses of glass to put the emphasis on the view. Specifically the Mission 66 buildings were intended to be modern, blending into the landscape through their plainness, rather than by identification with natural features. The buildings must not draw attention on themselves, since their reason to be was to serve a practical function. The new buildings had to be much larger than their predecessors to accommodate the new high level of usage, so modernism's low-slung forms with minimal ornamentation and modern construction efficiencies were perfectly suited for the scope. As if to illustrate this point, the Park Service refused to approve a restaurant designed by Frank Lloyd Wright for the concessioner at Yosemite Valley in 1954. Wirth called the building «a mushroom-dome type of thing. A thing to see, instead of being for service».

Frank Lloyd Wright
design refusal

«... a thing
in its larger context»

Mission 66 goals:
preserve wilderness,
improve interest and
knowledge

The Mission 66 multidisciplinary team was composed by architect, landscape designer and museum specialists. They were given two main goals: the first was to preserve PAs by intercepting and directing visitors flow towards specific target rather than having them wandering randomly in the park with destructive patterns of use, while the second was to improve interpretation and stimulate public interest in the park.

The idea was to have a center that could show a "preview" of all the most iconic site inside national parks, concentrating on the park's "story" that was to be told as clearly and effectively as possible. According to Robert Utley, chief historian for the Park Service, even though *the preservation of cultural and natural resources sometimes became a concern, it was rarely articulated* (Allaback, 2000).

Mission 66 historians and planners believed that more effective public education justified such encroachments, and that the resulting understanding of sites would lead to greater support for preservation. The visitor center, in fact, facilitated, yet concentrated, public activities and so helping in the prevention of more random, destructive patterns of use.

As a result, Mission 66 development plans (at least in larger parks) usually called for the intensification of development in existing front country areas, rather than opening back country areas to new uses. The visitor center was therefore sited in relation to the overall park circulation plan, in order to efficiently intercept visitor traffic (Allaback, 2000) and to offer the best experience possible to the visitor, providing paths and elevated terraces offering an overlook to the surrounding panorama as well as seeking and highlighting the most suggestive glimpse.

At the end of this meticulous process was defined for the first time the visitor center and its standard features.

the best possible
visitor experience

a standardized facilities model

«Each park was to have a uniform entrance marker listing park resources, a minimum number of employees, paved trails to popular points of interest, and other amenities; visitors could expect the same basic facilities in every park»

SARAH ALLABACK

FIG. 34 - Beaver Meadows Visitor Center, Rocky Mountain National Park, by Taliesin Associated Architects (founded and profoundly imprinted by F. L. Wright), 1967



FIG. 37 - Clingmans Dome observation tower, Great Smoky Mountains National Park, by Bebb and Olson, 1959



FIG. 35 - Wright Brothers National Memorial Visitor Center by Rogers & Poor, 1966

FIG. 38 - Cyclorama Building, Gettysburg National Military Park, by Richard Neutra, 1962



FIG. 36 - Dinosaur Quarry Visitor Center, Dinosaur National Monument, by Anshen and Allen, 1958



FIG. 39 - Henry M Jackson Visitor Center, Mount Rainier National Park, by Whimberley, Whisenand, Allison & Tong, 1966

2.4.2 visitor center | building an archetype

The visitor center was a building that *combined old and new building programs, strategically placed so to intercept the visitor flow*: they were situated at the centers of primary interest sites, designed as the hub of each park's interpretative program.

In order to do that, the "park village" model had to be radically changed into a completely different asset: the visitor center. A center that meant **regrouping all the previously scattered functions in a larger, more complete structure that could host different number of visitors while offering the same basic orientation and services in the most efficient way possible**. The underlying theory relates to contemporary planning ideas such as shopping centers, corporate campuses, and industrial parks, all of which sought to give new civic form to emerging patterns of daily life and urban expansion in the late 1940s and 1950s. Like the shopping center, the visitor center made it possible for people to park their cars at a central point, and from there have access to a range of services or attractions.

All the visitor center design, in fact, rotated around the **visitor flow**. **Centralized activities created a more efficient pattern of public use, essential to achieve a better park preservation**. Park Service architects confronted such issues in the development of building "circulation" or "flow" diagrams. Visitor circulation patterns were particularly important in this type of building, because people were expected to use it in different ways; while some would study the exhibits and watch the films, others were only interested in visiting the restrooms or purchasing a park map.

So what are the components of "visitor center archetype"?

Looking at the visitor centers around the world and specifically through the analysis made by Palmer et al. over the nps design evaluation of twelve Mission 66 visitor centers, there can be defined **three categories of elements**: the essentials, the secondary and the third. **The essentials are the facilities without which a visitor centers doesn't exist, the secondary are applicable to all the visitor centers and are subjected to space restrictions (are present in medium and large sized visitor center), while the third are strictly determined by programmatic orientation of the building and are generally shaped by the context.**

I - Essentials

For the essentials there is the **reception area**, the **exhibition area** and the **services**. **Reception area** consists of a **lobby**, an **information point** and a **sales area**. According to the scope of the visitor center, their surface and therefore the importance given can significantly change. *Generally the exhibits space and the reception area dispose of the same amount of meters square, with, of course some particular exception.*

The reception area is the first the visitor comes in contact with and especially the lobby is intended as «a transition area for the harassed visitor between the crowded

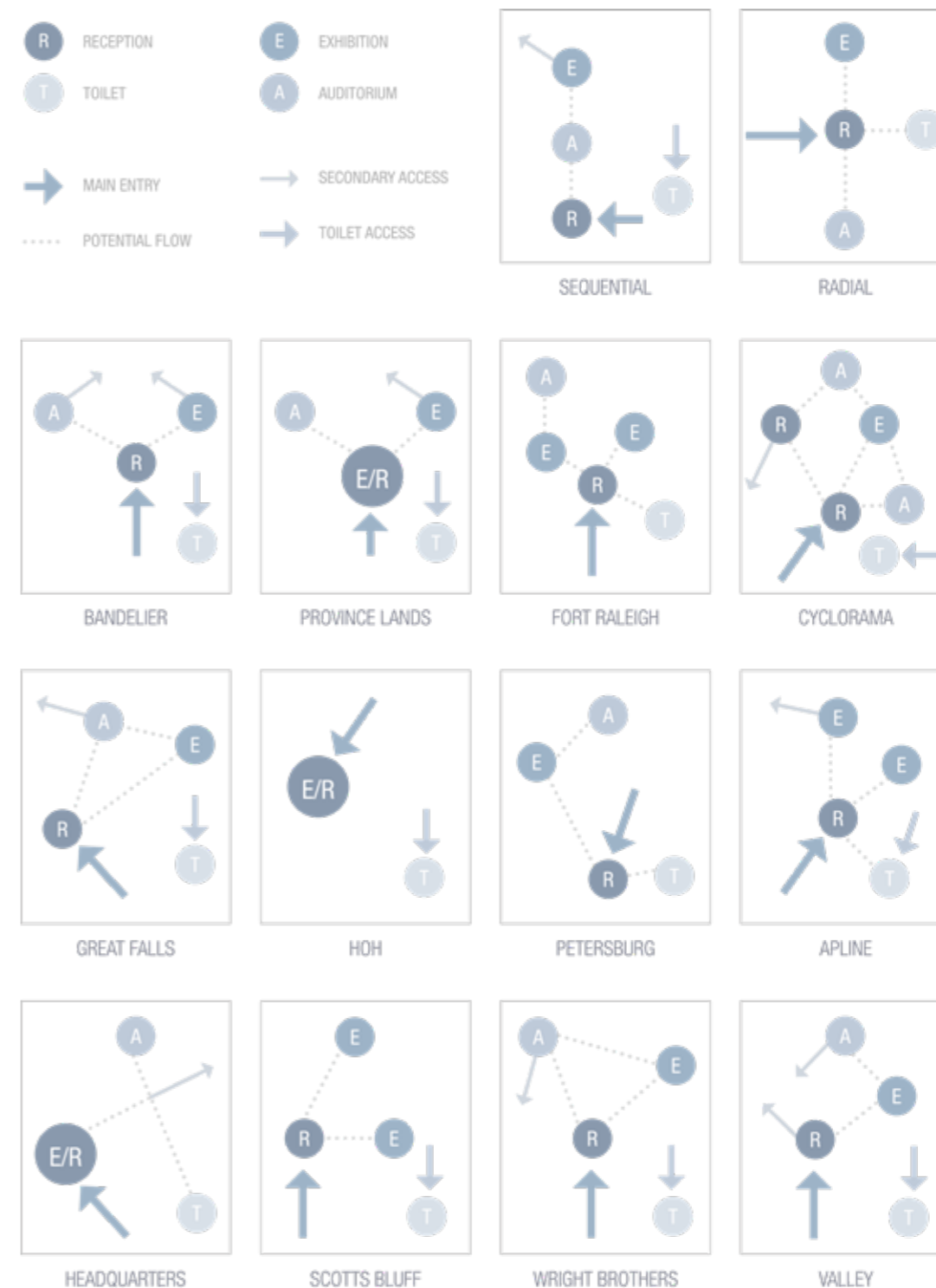


FIG. 40 - Interior space relationships and potential visitor flow applied to two main model (up) and extracted from twelve Mission 66 visitor center, Palmer et al. (1976), graphic rielaboration of the author

visitor flow, visitor center
from the park village to the visitor center
different number of visitors, same service

different visitors interests, same building usability

the "visitor center archetype"

I - essential
II - secondary
III - contextualizing

I - essential
reception, exhibition,

services highway and the park atmosphere», it should «convey a mood and invite a relaxed frame of mind» *able to immerse the visitor «into the park atmosphere»* (U.S. Department of Interior, 1957). Then there is the information desk and the sales area. **The information point** is obviously fundamental: while the exhibit helps people understand and perceive the context they are in a human-media relationship, the info point is the space in which they can have a direct confrontation with a human-human interaction.

reception: lobby, the transition zone **The sales area** may be perceived as a marketing habit, but it is a space with a great potential. There can be proposed a great range of objects and services: it has, in fact, not to be intended as a display for magnets, but also as a space in which culture can be delivered both in a material (books, maps...) and immaterial form (excursions, experiences...) and that can be used as a tool to educate people towards a more deep and respectful attitude regarding the site.

info point, a human-human interaction **The exhibition space** is the area common to all the visitor center, but also the reason-to-be. Their function is to show and divulge the knowledge acquired over a certain site. Is the element that, with its content, gives a meaning to the structure and delivers to the public the intrinsic values of the site they are visiting.

sales, the underestimated space

the exhibition **The services** are intended in this thesis as both **restrooms** for visitors and the employees, and the **back office** with the **storage unit**. For the **restrooms** the preference is to have them outside the main building, especially in visitor centers related to PAs, so to be available even when it is closed. The **offices** and the **storage unit** are instead very variable: for smaller visitor center they occupy a very small area, while for the structure with a more complex program, the space required increase.

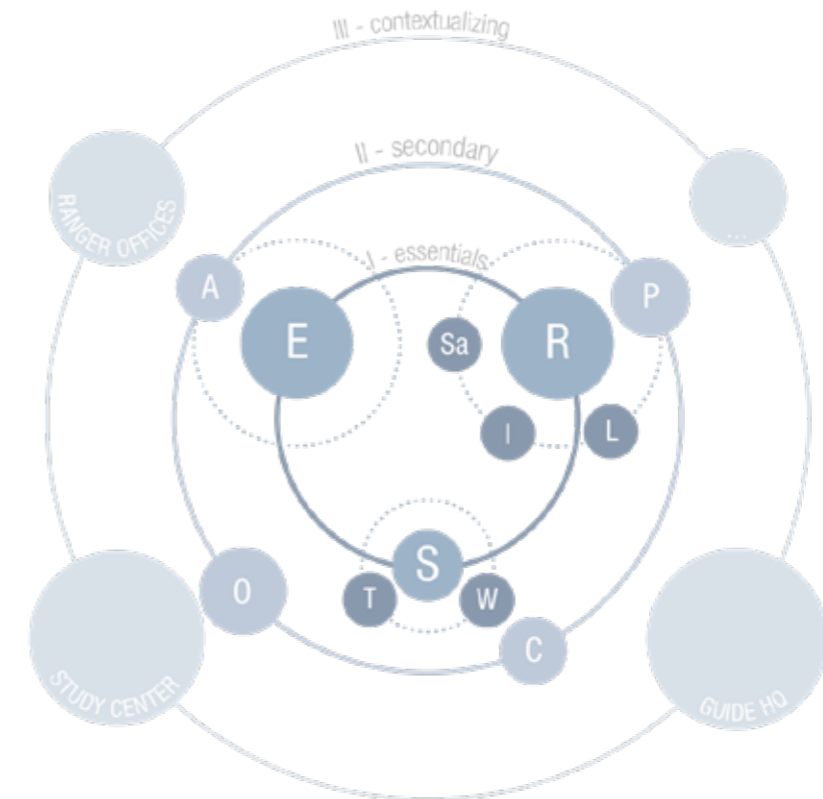
the services

II - Secondary (space)

facilities subjected to the importance /size of the visitor center The secondary spaces are subjected to the importance/size of the visitor center. They are not essential, but able to improve the visitor experience and comfort. The secondary space par excellence is the **auditorium**. It is a place aligned with the visitor center programmatic scope that **helps divulge site-related contents and develop a better sensibility**, and that, in some cases in which visitor centers are in strict proximity with an urbanized area, *serves also the community, reinforcing the bound between the structure and the local community.*

auditorium better community relationship Another secondary facility is the **parking lot** that can be both for visitors, for the employees or the officers (see next point). Even though at the Mission 66 was intended for the single family cars, when Palmer et al. published their study in 1976, the situation was already changed and the researcher team denounced the difficulty that different structures were meeting in hosting buses. Nowadays, as for the sales area, this can be a very interesting space in which **deliver and promote new, more ecofriendly, behaviour through a series of services suited for a sustainable mobility.**

the parking lot



- | | | | |
|---------------------|---------------------|--------------------|----------------------|
| A AUDITORIUM | E EXHIBITION | I INFOPOINT | L LOBBY |
| O OFFICES | P PARKING | R RECEPTION | Sa SALES AREA |
| S SERVICES | T TOILET | W WAREHOUSE | |

FIG. 41 - Visitor center: the three levels, author's elaboration and graphic ©

III - Contextualizing

The third level of elements is made of all those things that are directly related to the context. They depend strictly from the visitor center program and are extremely variable: for a PA visitor center, for example, there can easily be a ranger offices as for the Flamingo Visitor Center²¹, Rocky Mountain NP-Headquarters²², ... or a connected park study and research center as for the Maiella national park.

facilities,
spaces given
by the context

2.5 conclusions

In this chapter the focus was in how the **relation human-nature** manifests itself. Frequently is not easy and through history, more often than not, has been severely damaging for the natural environment, to the point that **spontaneously PAs were claimed** until an international organization was created to imprint a general direction: the IUCN.

spontaneous
protected areas

IUCN

National Parks

BIODIVERSITY
life calls fo life

More in dept, **National Parks** are one of the PAs category with the larger surface and to whom is assigned the duty to preserve not only single species but habitats and entire ecosystems. To ensure their correct functionality PAs and more so National Parks **have to preserve biodiversity, which is the best possible resilient tool to fight climate change and the implosion of the habitats and therefore human survival.** Biodiversity is in fact, **the variability of living form present on the planet:** each one of them gives a specific irreplaceable support that is intrinsically interlaced in the ecosystems balance. The more varied it is, more chances it has to absorb human activities overloading. Not compromising or, at this point, compromising ecosystems the least possible is essential to guarantee our - human - survival. An healthy ecosystem is varied and capable of resist disease spread, famines, drought, impoverishment: **life calls for life.**

Looking through this perspective s essential that we shift our perception from anthropocentric to ecocentric or to better say, realize that we are not the "administrator" of the Earth-system, but rather a part of it and therefore we have to know, follow and respect its rules through sustainability.

We need nature.

ART

This is proven by thousands of searches, as for example the one developed by the Kaplans (researchers and professors of environmental psychology): **ART - attention**

21 1956, Everglades National Park, Florida Bay, designed by Cecil Dotyand & Harry L. Keck

22 1968, Taliesen Associated Architects, Ltd., Arizona Midwest (Nebraska) H. Baker (NPS)

restoration theory. According to Rachel and Stephen Kaplan's theory when a person spend time in nature, his/her attention gets restored. Contrary to urban environment, studied to constantly stimulate mercilessly a person attention, nature offers more gentle stimuli. This means that while an hour in the city decrease further more our mental resources, the same time spent in a natural environment restores it, **increasing it up to 20%.** Other studies identify nature deprivation as source of stress, mental and physical disease, capable of affecting not only the development of a child, but also the correct functioning of an adult.

+ 20% attention span

Besides them though, humanity had an incredible chance to experiment it firsthand in the last two years. During the **Covid-19 pandemic**, people, especially in some countries, went through an intense **lockdown** that obliged them to stay at home and limit their time outside the domestic walls.

Covid-19
nature deprivation

As *Munari* recalls with **the simultaneous balance of the opposites**, this has brought an unheard of thirst of wilderness that has translated in a boom of PAs visits, an increment in an already estimated market valuable over \$ 850 billion/y (Balmford et al., 2015). Due to the travel restrictions an already existing phenomenon has intensified: **tourism of proximity.** 80% of the visits interested PAs sited in North America and in Europe, while others sited in Africa for example suffered from lack of tourists and, therefore, economic sustain. This has led to a thinning of the staff resources that had to preserve those areas and a consequent increase of illegal poaching and other exploitation activities. In PAs close to the main cities, on the contrary, the amount of visitor was so unexpected and massive that a lot of the interested **ecosystem suffered because overloaded beyond their capacity.** Considering that history is destined to repeat itself, is easy to find an analogous case in the past: **Mission 66.**

proximity tourism

overloading the ecosystems

In that case PAs were living a trend of constant tourism incrementation and, like today, they were **lacking of the main facilities** that connects the visitor with the national park system: **the visitor center.** More specifically the impact of visitors (and their uncaring behavior) on the natural environment was so marked that Bernard DeVoto along others, suggested a *temporary closure of the PAs* meanwhile a solution was found.

Mission 66:
the visitor center archetype

The Mission 66 started an intensive ten-year program specifically designed to restore and build park facilities the intercept and channel visitors, imprinting their behavior towards a more aware and respectful of the wilderness one.

Its focus had been the visitor center, and more than 110 of them were built or restored so to create a **standardized model**, where people can find a **reception area, an exhibition space and restrooms** (often separated from the main building) **along**, in case of bigger visitor centers, **with other facilities, like the auditorium, which scope is to receive, entertain, make aware and educate people.**

active educative scope

Since then PAs visitor center have known a "popularity" decline: all the visitor center built in the last decades have been mostly about other topics, with a particular predilection towards the companies one's like the Apple Park Visitor Center.

«Just because something has always existed, does not mean that the people are going to be interested in it forever»

ANHOLT, 2009

*aesthetic evolution,
programmatically stillness*

Of the visitor centers found²³ the description was provided by the architects which focused on how the main structure should blend into the natural context for shape and materials. From the Rustic style that used natural materials, to the Mission 66 modern era in which concrete, glass²⁴ and steel were preferred, the current preference goes towards local material. The real problem though is that the visitor center potential from a programmatic point of view, has not been fully explored yet. As RIBA realized in 2018, a visitor center can be the perfect space in which promote learning, wellbeing, curiosity and nature.

*the new visitor center,
a confluence space
between PAs
people and
local community*

To conclude, the theory behind this thesis is that a **PA visitor center** (especially if in a national park) **is the joint between an institution and the general public**. With the urbanism, people have lost even more contact with nature and the visitor center is the perfect space where people can understand and concretely and meet sustainability and most importantly where new more aware behavior can be delivered. **Visitor center can be effective in the destination management**, helping spread the visitors through the whole territory - avoiding harmful peak for the ecosystems - and promoting **all the identity main features of a certain region balancing the visitor flow**. A **confluence space** where institution, local community (and local entrepreneurs) and visitor can meet and build dialogue imprinted on sustainability.

23 *The research for this specific thesis focused on PAs related visitor center*

24 *This style change brought a new interior-exterior sensibility, where the extensive use of glass was studied so to put the visitor in direct contact with the PAs most significant glimpse*

MIND THE GAP

03 . MIND THE GAP

«[...] In our room, in our home, in our workplace and in our neighborhood we use the environment to express our identity»

POPE FRANCIS, 2015



FIG. 42 - Caramanico Terme, vivigreen



FIG. 43 - Urban environment, google images

3.0 MIND THE GAP!

3.1 Detachment

«More than half of the world's population now live in urban areas – increasingly in highly-dense cities. This transition has transformed the way we live, work, travel and build networks»

HANNAH RITCHIE & MAX ROSER

According to the World Bank based on data from the UN Population Division, 2007 has been the year in which the number of people that lived in urbanized areas¹ has surpassed the one of those who preferred rural areas. The number of people living in cities is destined to increase and by 2050 more than two-thirds of the population will be concentrated there.

*urban areas
vs rural areas*

One of the problems that this tendency can cause is the further detachment from the natural environment from a perception point of view. In the cities, in fact, nature is controlled and determined in a given area. In the moment in which it grows and expands beyond the predefined volume that was originally designed, it is dimensioned again or suppressed. This approach can be applied to everything: the current general human interaction with nature, is one of pure utility. Nature is considered a resource in the moment of need and neutralized when it is perceived as uncomfortable.

detachment

Eva Horn in her studies focuses on the climate control, starting with architecture

¹ The definition of "urban area" is, nowadays, still controversial. This causes sensible fluctuations on the interpretation of the data. The European Commission applied a universal definition of settlements across all countries: Urban center (< 50,000 inhabitants plus a population density of at least 1500 people/km² or density of build-up area greater than 50 percent); Urban cluster (< 5,000 inhabitants plus a population density of at least 300 people/km²), Rural (> 5,000 inhabitants).

NUMBER OF PEOPLE LIVING IN URBAN/RURAL AREAS
WORLD 1960 - 2020



URBAN AND RURAL POPULATION PROJECTED TO 2050
WORLD 1500 - 2050

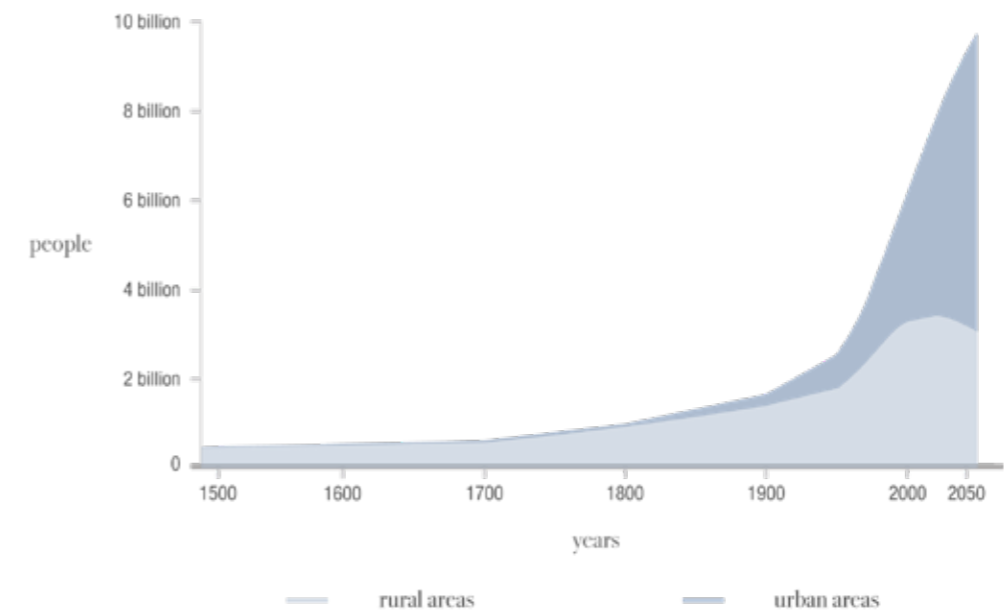


FIG. 44 - Ritchie & Roser (2020), OurWorldinData.org, World Bank based on data from the UN Population Division, graphic elaboration of the author
note: Urban populations are defined based on the definition of urban areas by national statistical offices

FIG. 45 - Ritchie & Roser (2020), OurWorldinData.org - OWID based on UN World Urbanization Prospects 2018 and historical sources, graphic elaboration of the author
note: Total number of rural population, given as estimates to 2016, and Un projections to 2050. Projections are based on UN World Urbanization Prospects and its median fertility scenario.

and its first priority: provide shelter. This need of thermal comfort has become so ex-tremed that infinite strategies were developed to obtain a standardized interior climatic performance.

*the world:
a series of identical
air-cocoons*

The world is therefore a series of identical air-cocoons, a barrier that besides being extremely polluting, has detached people even further from the natural environment. It doesn't matter where someone is, it can be the North Pole or the Sahara desert, inside an enclosed space the climatic conditions the user will experience are the same. This prolonged un-exposition the natural climatic conditions, according to Horn, **has reduced our climatic intelligence** and made us even more refractory to the climate crisis signal.

climatic-intelligence

3.2 MIND THE GAP!

3.2.1 Thoughts

«An awakening to reality is urgently needed and a common effort is needed to repair not only the bonds but also our vision of the position of the human being in the universe»

PAOLA ANTONELLI

How much consumers actually care about the planet well-being?

This question was addressed by multiple subjects, from the United Nations, to private corporates and the results are both comforting and astonishing. If it is clear that a *new shared social conscience sensible to the climate crisis is awakening*, it emerged also that *consumer strongly struggles to take actions against it and to connect the climate crisis effects to their daily choices*.

All of the surveys show how there is an important gap between the climate crisis effects and people perception of the impact of their behaviors.



FIG. 46 - MIND THE GAP, google images

People's Climate Vote
UNDP + Oxford

The United Nations Development Program (UNDP) in collaboration with the University of Oxford has developed a survey among over 50 countries². With 1.2 millions of respondents, Peoples' Climate Vote covers over 56% of the world population³ and right now is the most complete survey on a worldwide scale.

What people think of the climate crisis?

64%
"the climate crisis is a global emergency"

Worldwide 64% of people believe that there's a climate crisis and that it is a global emergency. Among all groups the countries were sorted, the group of Small Island and Developing States (SIDS) are the most sensible, even more than the High Income Countries group. Even so the countries that showed more awareness were Italy and United Kingdom with both 81% of people worried about the climate crisis.

59%
"we should act now"

Except for a 20% that believes we should do nothing or that the world is already doing enough, there is a 20% that believes we should act slowly meanwhile we study the better options and a predominant 59% of people convinced that we should be addressing climate change urgently (respectively 78% in Italy and 77% in UK).

51%
"our behaviour can make a positive impact"

According to a survey conducted by Mintel over 16 Countries⁴ on consumers choices, on average 54% of those who were surveyed agreed that there was time to save the planet and 51% believed their behavior could make a positive difference to the environment. The most pessimistic Country though, is Japan: only 15% of people questioned believed their behavior could make a difference and only 35% believed there was time to save the planet.

² Algeria, Argentina, Australia, Belize, Benin, Bosnia and Herzegovina, Brazil, Bhutan, Canada, Chile, Cote d'Ivoire, DRC, Djibouti, Ecuador, Egypt, France, Fiji, Georgia, Ghana, India, Indonesia, Iraq, Italy, Japan, Jordan, Kyrgyz Republic, Moldova, Morocco, Mozambique, Namibia, Nigeria, Pakistan, Panama, Philippines, Poland, Russia, Spain, Sri Lanka, South Africa, Sudan, Sweden, Thailand, Trinidad, Tobago, Tunisia, Turkey, Uganda, United Kingdom, United States, Viet Nam.

³ Based on the population of countries over the age of 14. It is assumed that fewer people will have completed the survey under the age of 14. Since there are 2 billion people under the age of 14, this makes a considerable difference to population coverage.

⁴ The survey took place in 16 countries: Brazil, India, China, Japan, the UK, the US, Italy, Spain, South Korea, Australia, Thailand, Canada, Ireland, France, Poland and Germany

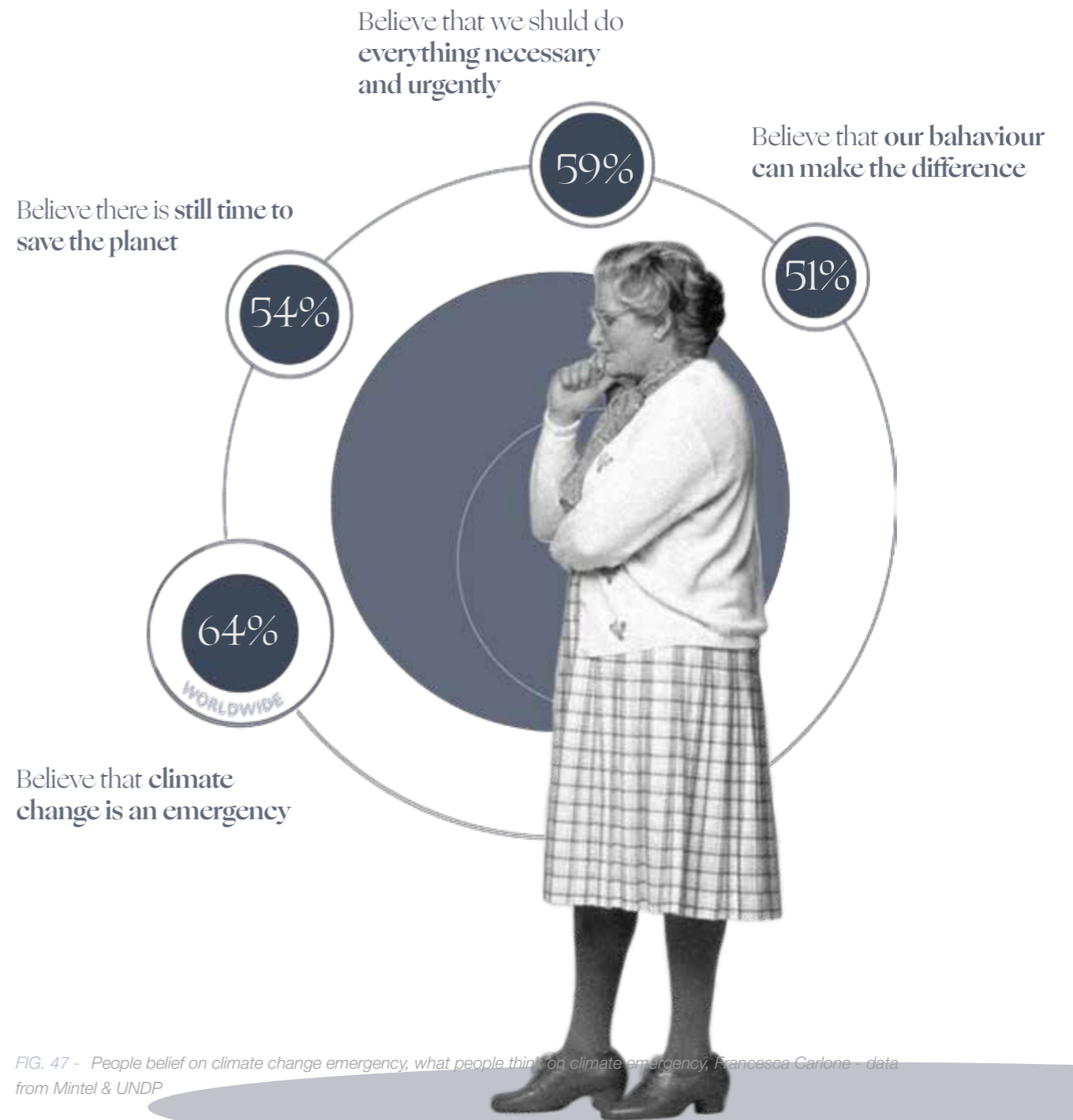


FIG. 47 - People belief on climate change emergency, what people think on climate emergency, Francesca Carlone - data from Mintel & UNDP

+ 40%
"I want more informations on goods production impact"

Companies & products

It found that consumers wanted companies to be clear about the environmental impact of their products so they could make an informed choice about whether to buy them or not. **47% of people, in fact, wanted labeling showing the environmental impact** in terms such as amount of CO₂ emitted in production, and **42% were looking for information measuring impact** in understandable terms such as liters of water used or distance traveled.

41%
"I want a recognizable certification I can trust"

About **41% wanted to see recognizable certifications** to prove companies standards, such as **B Corp status**, a certification awarded to companies that sign up to a legal declaration to consider the impact of their decisions on their workers, customers, suppliers, community and the environment.

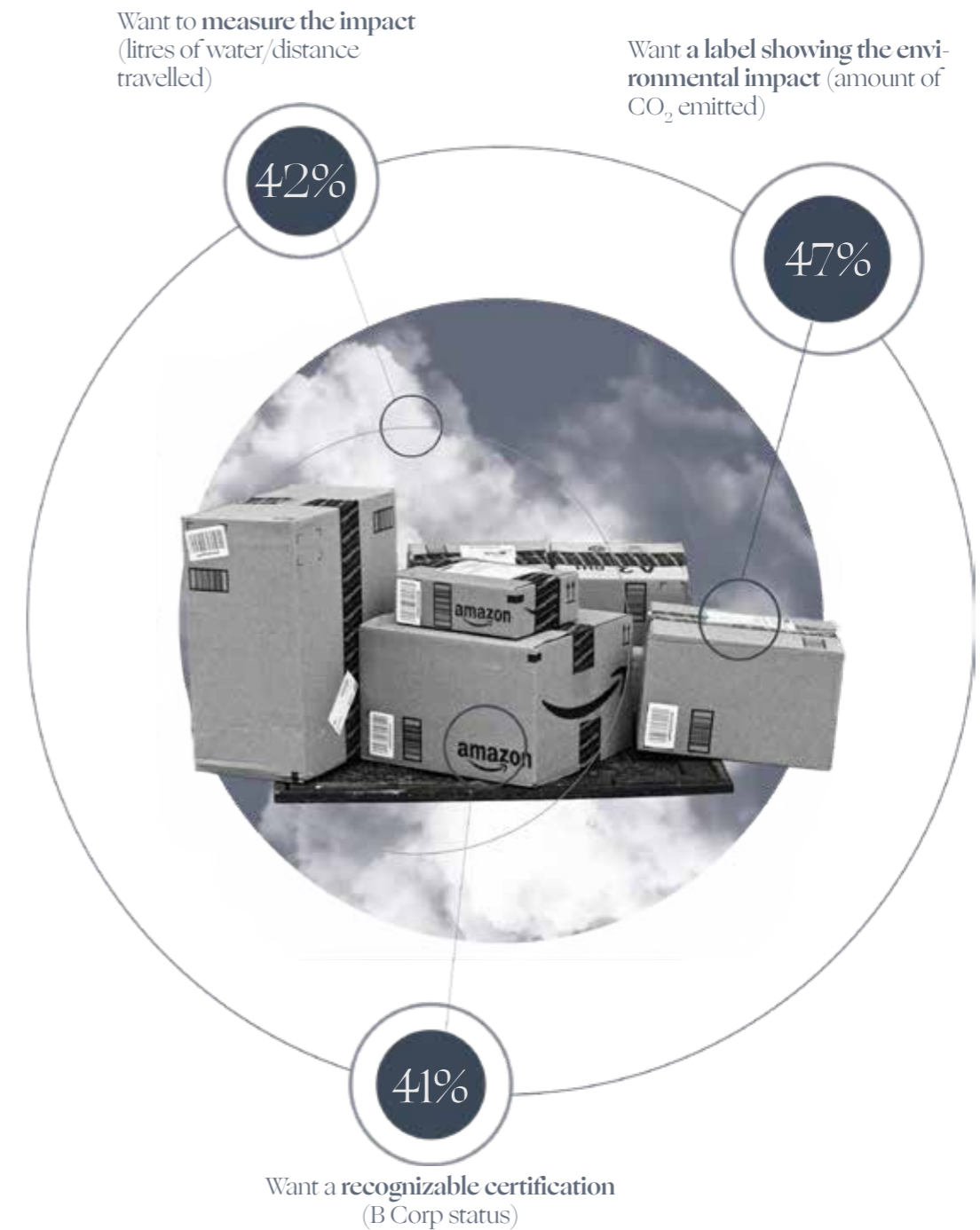


FIG. 48 - People belief on climate change emergency, companies & products, Francesca Carlone - data from Mintel & UNDP

3.3 PERCEPTIONS!

Who is to blame?

The survey revealed also differing views on who was to blame for global heating. According to the research, in fact, consumers were more likely to think their own country was suffering from climate change than causing it.

«It is fundamental that the public understands that their own consumptions are integral to reducing emissions in its roadmap to net zero»

INTERNATIONALENERGY AGENCY

33% "my country is causing climate change" While an average of 33% believed that the country where they live was contributing to climate change, about 44% of consumers from the 16 nations said the country where they lived was suffering from climate change.

44% "my country is suffering from climate change" People in Italy (20%), Brazil (21%), South Korea (24%), and Spain (29%) were the least likely to believe their country was contributing to climate change, while those in the UK (44%), Germany (45%), the US (46%) and Canada (51%) were the most likely to believe their nation was culpable.

+50% "of the emissions are linked to consumers behaviours" Even so, according to the International Energy Agency (IEA), *more than half of the cumulative emissions reductions required to reach net zero were linked to consumer choices and behaviors.*

beliefs vs choices Despite the awareness among the buying public of climate responsibility and the impact of individual choices, there is a huge gap between their beliefs and their daily choices. In the 16 nations that took part to the survey, many individuals wanted solutions to make their lives easier, but which would put the planet more at risk.

A clear representation of this attitude is given by the more than positive forecasts

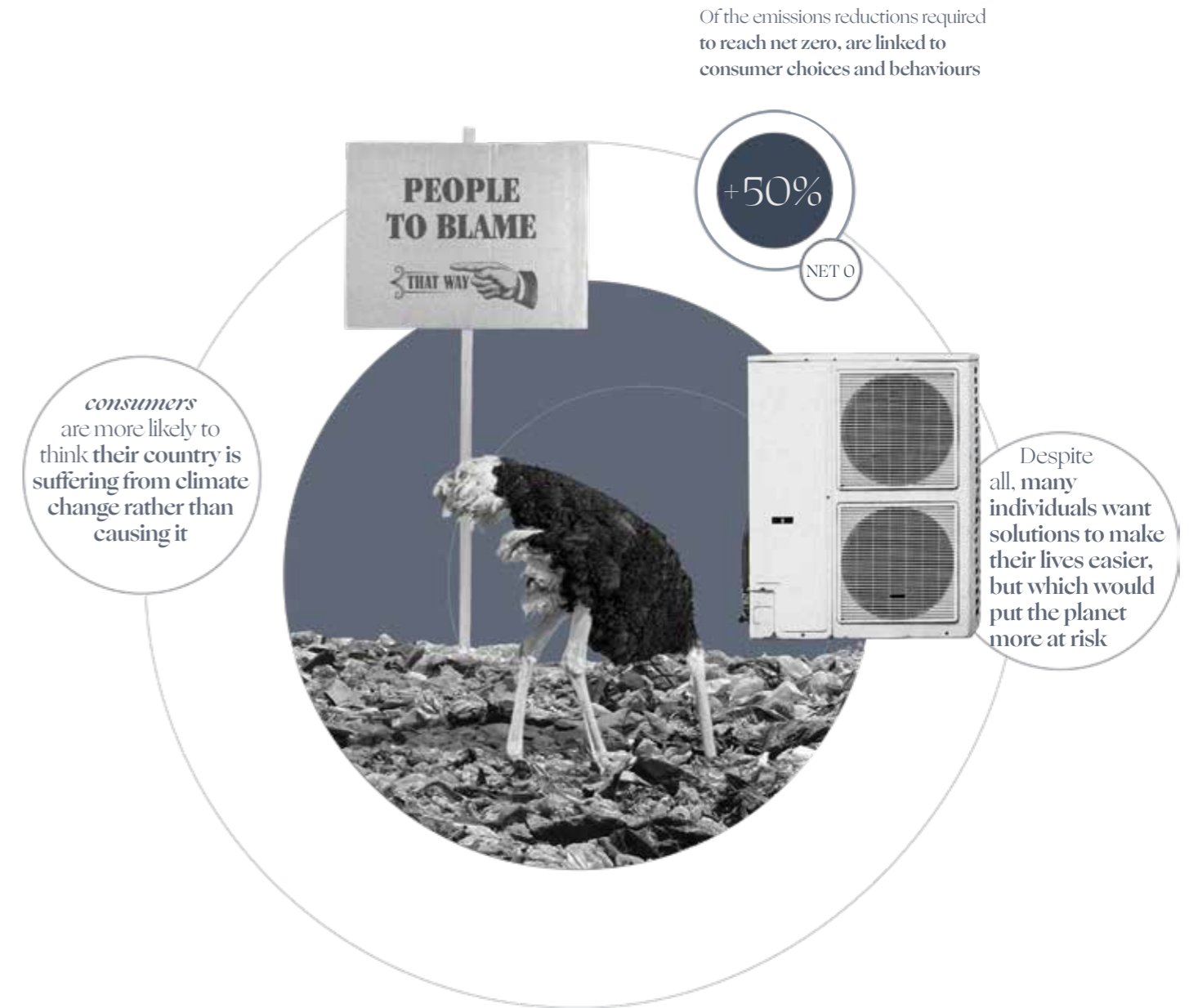


FIG. 49 - People belief on climate change emergency, who is to blame?, Francesca Carlone - data from Mintel & UNDP

air-conditioner paradox

for the air-conditioning and air-purifier markets.

Even though to cool interiors it emits a generous quantity of CO₂ that rises up the temperature even further worsening the general climate conditions, increasing numbers of people are planning to install it in their homes. Not only that, but conscious of the aggravation of the air quality, to locally improve it more and more consumers are thinking about buying air purifier.

present well-being among everything else

The final data is that no matter how sustainable a person likes to define itself, there are clear "red lines" that the consumer is not ready to cross. One of them is the very present well-being.

«Global warming creates a vicious circle by increasing demand for air conditioning, which then uses more energy»

MINTEL, 2021

The Italian Pareto

case study: 81% sensibility / 20% responsibility

This paradox is well represented by the Italian population. Despite being the most sensible towards the climate change emergency (81%), is one of the population that thinks to be less accountable for it (20%). The general perception is to be a developed country that consumes goods, but at the same time that Italy is not the most polluting one and compared to the other countries efforts, is doing its fair share to contrast climate change. This perception, joined by a difficulty in finding the informations on sustainability and on products production impact, has helped detach even further the sense of emergency from the concrete impact of the daily choices

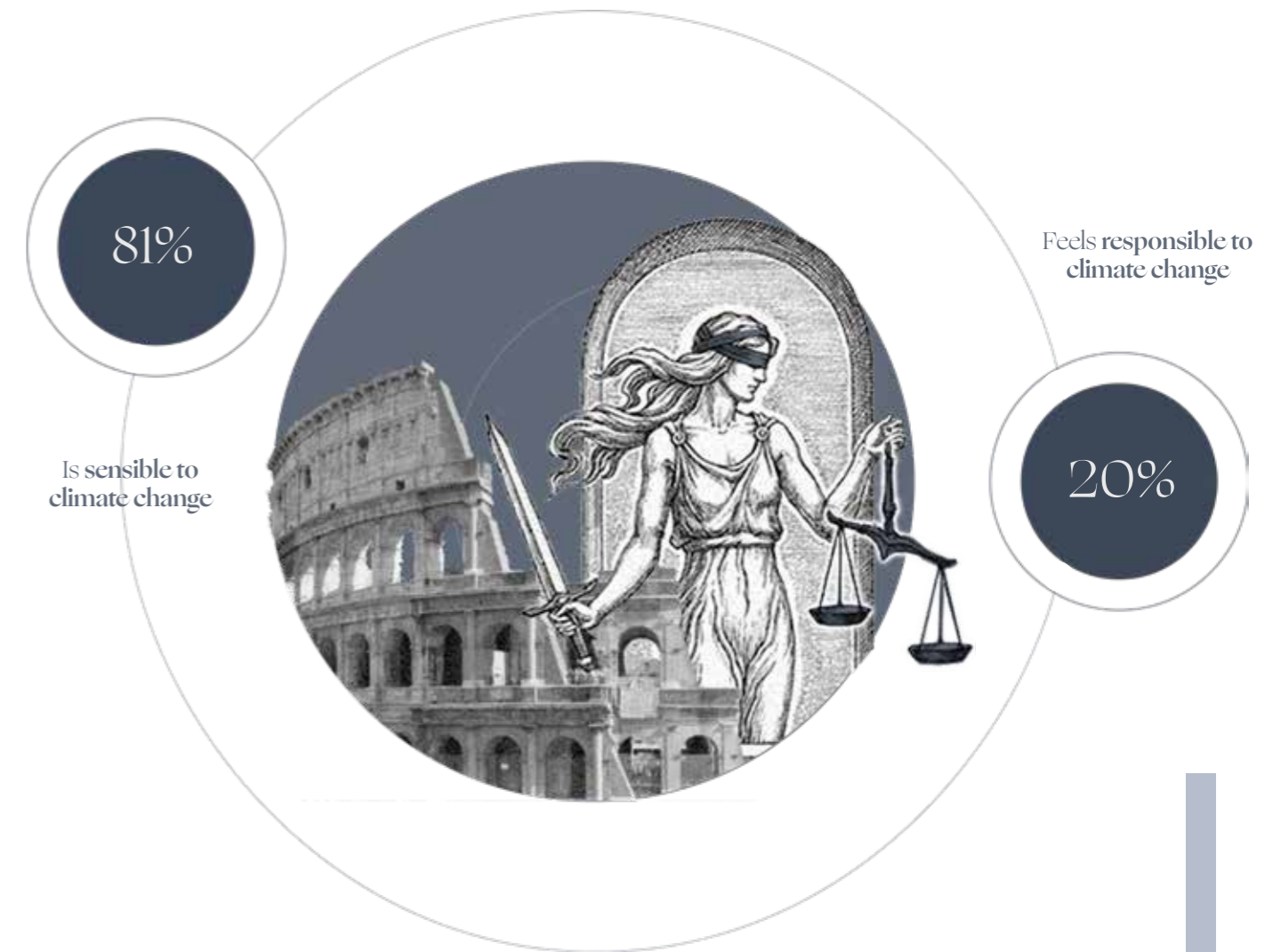


FIG. 50 - People belief on climate change emergency, Italian Pareto, Francesca Carlone - data from Mintel & UNDP

responsibilities share:
 little - consumers
 medium - companies
 large - governments

that consumers do.

Unfortunately Italians are not the only one to have this unreal perception of reality. As shown in the graph on the next page, **over eleven themes regarding sustainability, consumers never felt to be the main responsible**. On average they think to be accountable just for a little more than 20% of the issue.

Companies were considered mainly accountable for the transportation sector: from the emissions produced by the vehicles to the ones produced to fly. According to consumers, is up to them also incrementing the recyclable packaging. They have a shared responsibility with governments for what concerns a fair work condition and payment and avoiding that polluted water contaminates rivers and seas.

The main responsible though, happen to be governments. Consumers think they are in charge of 8/11 points both directly (6) and alongside companies (2).

mind the gap!

This data clearly clashes with the previous ones: **people are convinced that their behavior can have an impact on the climate crisis and yet they refuse to acknowledge their responsibility**. There is so the condition in which we know that to reach net zero more than half of the effort has to be done by the single person, but in reality this burden is clearly dodged and left to others, may be companies or even further in the perception field, governments.

«Think of *Queen Elizabeth*: the entire ship and her rudder. And, then, the fact that there is a small piece, called the *trim-tab*, correction flap. It is a miniaturized rudder and it is precisely the movement of that small fin that creates the pressure that makes the rudder rotate. It requires almost no effort. So, I told myself that *a single person can be the trimtab*»

BUCKMINISTERFULER, 1972

USA consumers 'top three' purchasing priority

case study: sustainability ranking

44% of USA citizen interviewed think they are responsible through their actions of the climate crisis and 37% of them declared that climate change is the second⁵ most important problem in US right now.

Consumers broadly have feelings about brands' responsibilities — but also understand profits need to be valued, but what happens when it comes to their purchasing decisions?

Over six categories taken in consideration, *apparel, beauty, beverages, cleaning products, furniture and packaged food*, sustainability is on the last place just in two categories: cleaning products and beauty. Among consumers just 20% of them puts sustainability in the top three purchasing priority in both cleaning supplies and baby food. In beauty and furniture shopping about 15% of the consumers recognizes sustainability an important feature, while for apparel, packaged food, beverages and pet food, the amount of people that would choose a product led by its impact are barely 10% of the total.

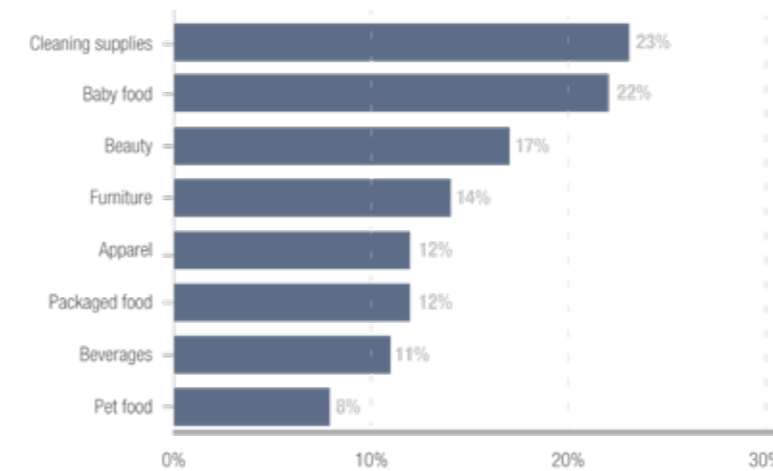
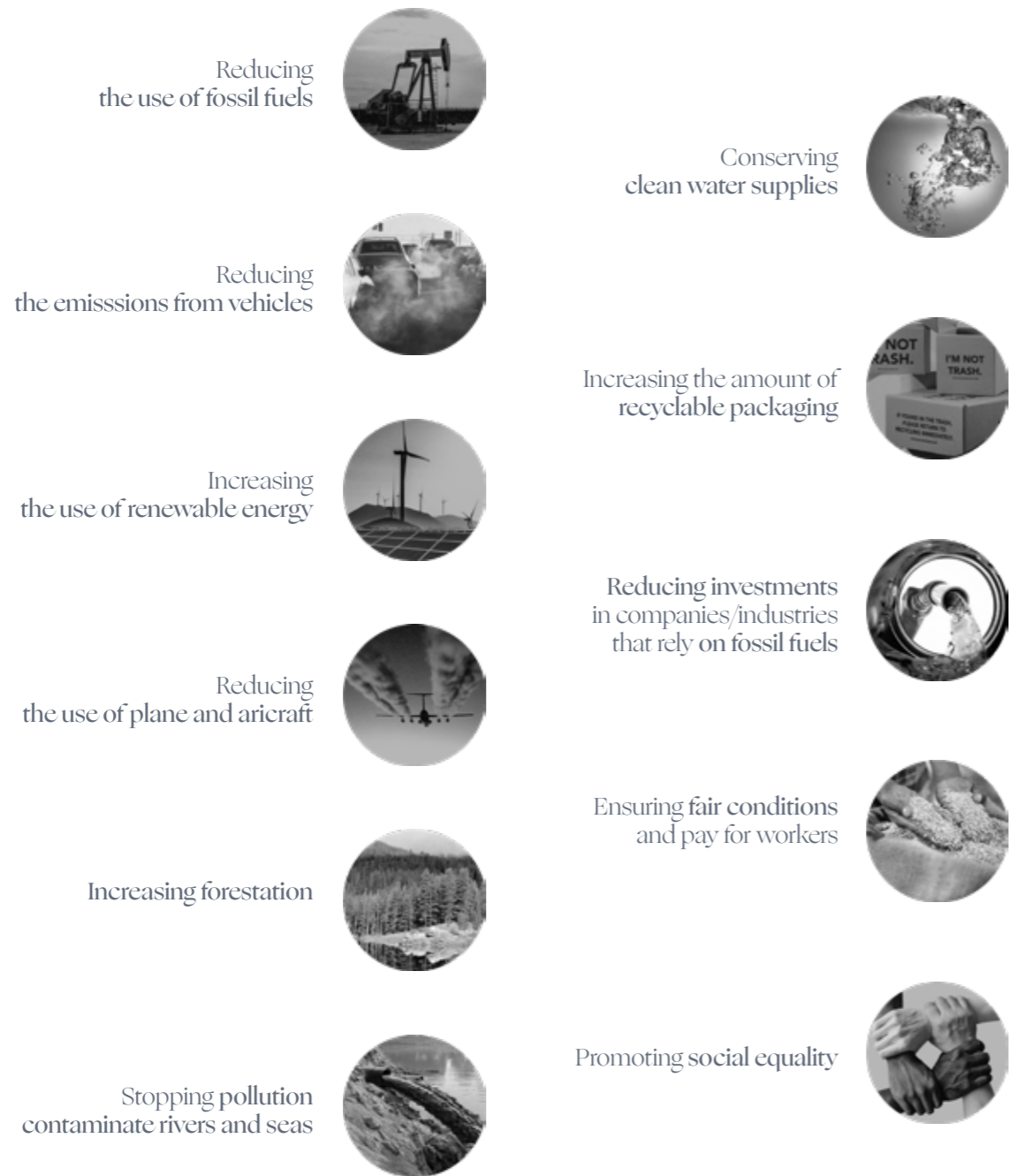


FIG. 51 - Consumer trends survey 2022 (2021), data: Consumer Trends Survey, powered by Toluna, graphic elaboration of the author

⁵ The first is COVID-19, Inflation in third place, poor leadership, in fourth and the healthcare system in fifth



WHO CONSUMERS THINK IS MOST RESPONSIBLE FOR SUSTAINABILITY ISSUES?

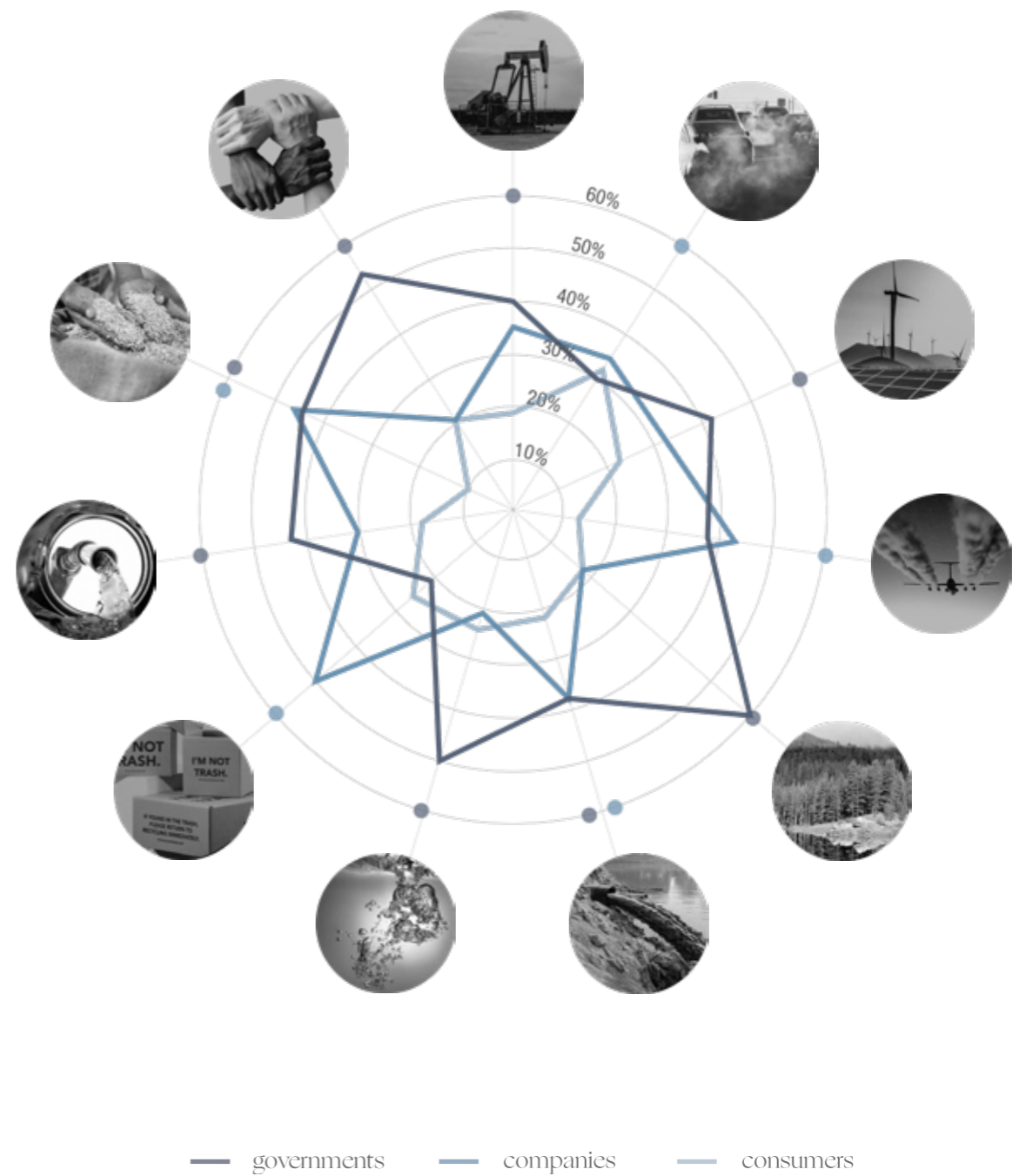


FIG. 52 - From Dynata, Lightspeed & Mintel, (2021), graphir rielaboration of the author
 note: based on answers from 500 internet user aged 16/18+. No social question have been asked in China.

3.4 Bridge the GAP

When terrible events happen, usually looking backwards there is a seek for the responsible. The question that rises in everyone's conscience is how something that bad had the chance to endure and grow so big to shake the whole planet?

Don't Look Up

«[Don't Look Up] is an analogy of modern day culture and our inability to hear and listen to the scientific truth»

LEONARDO DI CAPRIO, 2021

don't look up
adam mckay (2021)

Recently Adam McKay in *Don't Look Up* (2021) has made an analogy the actual generalized passive attitude aimed to satisfy the immediate pleasure and to avoid pressing issue that would mine our lifestyle, despite the scientific alerts. In the film, every time the scientists are on TV trying to alert the population, the hosts make jokes lightening the mood and mitigating the drama of the moment, weakening indeed the message. It also focuses on the general mistrust in science and the diffused negationism that along with the conspiracy theories have imprinted the pandemic and are likely to characterize the climate crisis. *It is clear now that were information doesn't penetrate or there is confusion, those attitude have a fertile ground.* The main message McKay wanted to deliver, though, is that it is not granted that everything will be fine and it is important for all of us to understand that we all have to *act now*.

This is one of the most direct and powerful message offered recently to sensitize the mass towards climate change, yet is not the only one.

Daily news

TG1
evening edition

In Italy for example starting from June 2020, every evening on the most followed news of the day, at least five minutes are dedicated to sustainability and climate change. The effort is to make sustainability a mainstream topic and give the mass a simple clear information service able to reach transversally the population, especially those that feel not directly interested, and build a common-knowledge base.



FIG. 53 - Adam McKay, *Don't look up*, 2021

Natural Capital

«Natural Capital aims to experiment with a new design medium, turning data visualization into a tangible, spatial experience, bringing the natural and the artificial worlds a little bit closer together»

CARLO RATTI, 2021

*natural capital
milan design week 2021*

*carlo ratti associati x eni
2021*

Natural capital is an installation created by Carlo Ratti Associati + Italo Rota for Eni. It was located in the Brera Botanical Garden during the Fuorisalone 2021 and the main focus was helping people visualize data so to gain more awareness.

The project aims to demonstrate the key role that trees play in producing oxygen, by showing how much CO₂ each individual tree species can capture and store. It **promotes forestry protection** by helping the visitor visualize data of the amount of CO₂ that would be released in the atmosphere if the trees were removed.

Besides the almost dream-like space, especially at night where it seems to be in a magic garden, the message delivered is very powerful. **At the entrance of the garden, there is a giant sphere that allows the visitor to visualize the amount of CO₂ emitted by a human body in an year.** The inevitable comparison with the other spheres, much smaller, make the visitor suddenly realize how extended is the impact of humans and how tight is their relationship with nature.

This installation is a very interesting example on how it is **necessary and possible reduce the gap between the scientific data and people understanding of them.** By visualizing data, in a captivating yet physical installation, CRA were able to make part of the sustainability context more approachable to a large number of people.



FIG. 54 - Carlo Ratti Associati, Natural Capital, 2021

The Climate store

«Pricing at The Climate Store demonstrates the true climate impact of food and production solving the issue where it really matters, at the point of purchase»

NEW FOOD, 2021

the climate store
sweden

felix
2021

Identified by Trend Watching as a «*meaningful, trend-driven innovation opportunity for 2021*», a very recent initiative aimed to help the client understand the true price of the food they eat. The Climate Store initiative intervenes on food production emissions, about 25% of the total greenhouse gas emissions, by acting on the issue where it matters the most: the purchasing.

It has its own currency and to each consumer is given a weekly budget of 18.9kg⁶ CO₂e⁷. The food is priced based on its carbon emissions, this means that customers will have to choose foods carefully, avoiding options with higher carbon footprints to avoid blowing their budgets.

Pricing foods based on their climate impact shows the difference between plant-based foods and animal-derived foods. Although many people would love to make a difference by avoiding such foods, it's not always clear which items are worse for the planet. If customers can be aware of the foods that contribute most carbon, they can make decisions that will help reduce these emissions.

The Climate Store has been adopted in more than 30 countries, had a reach of more than 225 million of costumers and signed +17% of sales growth for sustainable vegetarian products. The brand will be adding labels to all its products to indicate their impact on the environment. Felix expects such labels to help customers reduce the use of environmentally impactful products and increase the intake of plant-based products.

6 Budget based on the levels set by the Paris Agreement

7 CO₂e is for the Felix carbon equivalents currency



FIG. 55 - Felix, The climate store, 2021

3.5 CONCLUSIONS

In the first part sustainability and therefore biodiversity, the issues, have been introduced. Then it has been speak of the entity that is globally recognized to preserve nature, IUCN, and specifically National Parks. National Parks are seen as living laboratories whose joining point with the visitor is the visitor center: a portal that decode the local environment and connects people with nature. **In this section people thoughts and response to climate crisis have been analyzed.**

detachment

In 2007 for the first time in human history, the people that lived in urban areas surpassed the ones living in rural areas. This, together with other factors has helped **people detachment from the natural environment.**

As Eva Horn notices, the world is like an immense field of identical air cocoon that shelter and in the end divide, humans from the local climate.

This loss of climate intelligence is shown in data collected. People are seriously worried for climate change, yet the previsions for the air-conditioner ari purifier markets, see the sales increasingly grow. This attitude however is aimed to **satisfy a very present need of comfort** eventhough there is the knoweledge that it pollutes even further the atmosphere.

*the present
above everything*

*disinformation,
passiveness*

Overall the general attitude is in fact, of a good awareness of the climate emergency, but there is a huge gap between the scientific alerts and people perception. **Consumers have no tools to discriminate between their daily choices based on their impact** and this creates both a fertile ground for disinformaton and manipulation (*green-washing*) and for a generalized passiveness. Once asked, people agreed that their behavior **can have a positive impact**, according to the IEA over 50% to reach net 0, and that we must act now, but in reality felt like their country was suffering the climate crisis more than causing it. Not only, according to the surveys, **people think governments followed by companies are the ones in charge for the sustainability goals.**

*the responsible:
governments &
comapnies*

joining attempt

This attitude has been displayed in *Don't Look Up*, a 2021 film from Adam McKay that with a metaphor denounces our **indifference to the climate change.**

It is necessary speak about it and make people realized their real potential and how much power lies in our hands to change the future. To *bridge the gap*, in recent time, especially after the Covid-19 pandemic beginning, a lot of initiatives have tried to join the scientific world and the society. From the most followed news in Italy that since summer 2020 dedicates every evening a space to sustainability, to CRA in Brera Botanic Garden and his **data visualization to make people aware** of the amount of CO₂ an average person produce and the one absorbed by the trees. A special mention goes to **The Climate Store**, one of the most innovative project. To each client is given a certain amount of CO₂e -the store carbon currency- weekly that can use to buy groceries. **The sore prices are in fact, settled according to the carbon emission of each product so to make consumers aware of the real price they pay.**

CONCEPT

04 . CONCEPT

«[...] In our room, in our home, in our workplace and in our neighborhood we use the environment to express our identity»

POPE FRANCIS, 2015

4.0 Concept

«The history of the [Italian] Park was born in Abruzzo, as the most significant events took place in this region »

LAURA QUIETI

As the direct result of the previous theoretical analysis, the project brief is developed so to create a **bridge between people and the "sustainability-world"**.

Sustainability and biodiversity are not a choice and National Parks first aim is to understand their complex relations and to protect it. Though, in order to do that is impossible not to consider the data diffused by IEA: **+50% of the efforts towards carbon neutrality have to be done by regular people, regular citizen.**

Identified in the **visitor center** the **portal** through which introduce people to nature, its relations and importance, this work focuses its attention on this dialogue. The thesis developed faces the need to bridge the perceptive gap between people and the real power that lies in their hands as consumers. To do that is necessary to take a step back from the IPCC reports and **translate them in an easier, more understandable format, making people know better the "sustainable world" and realizing the real impact of their choices.** The mass collaboration and behaviour choices are critics towards the carbon neutrality, this step is fundamental to let the sustainable culture permeate¹.

The project will therefore take the Maiella National Park and the Paolo Barrasso Visitor Center as case study: one of the hotspots of the Park that receives about 50.000 visitors each year. This place is currently an area with a huge potential not completely exploited that can be a resonance board, able to instaurate a new conscience on the environment and make regular people active protector of nature and its fragility.

¹ A necessity enlightened, an missed, also in the 20 Aichi target that sees the first two concentrated on the biodiversity. The first was to reach by 2020 a general awareness of the values of biodiversity and the steps people can take to conserve and use it sustainably. The second was the integration of it in national growth strategies. (see 2.1.2 Biodiversity)



FIG. 56 - Da Punta Aderci alla Maiella, © Alessandro Lanci

4.1 Abruzzo, the Europe green-lung

«The history of the [Italian] Park was born in Abruzzo, as the most significant events took place in this region »

LAURA QUIETI

Abruzzo is a region in the middle of the Italian peninsula.

Its main characteristic lies in its **natural capital**: over 1/3 of the region territory is in fact **under special protection**. The reason behind this biodiversity lies in a number of factors, but among them **position and geomorphology** have played a significant role. **Abruzzo is indeed a crossroad of species**, a land where the northern one have found their meridional habitat and coexist along with the Mediterranean and balcanic species. This uniqueness has always been under special protection so that even before the establishment of the Abruzzo, Lazio and Molise National Park in 1923, the second Italian National Park¹, it was the royal hunting reserve, where none except the Italian king could haunt.

Nowadays Abruzzo counts three National Parks (*Abruzzo, Lazio and Molise, Maiella and Gran Sasso*), one regional park (*Sirente-Velino*), an inter-regional park (*Matese*) and multiple protected spot all over the region, reason for which through the years **Abruzzo has been known as *the Europe green-lung***.

Abruzzo natural capital

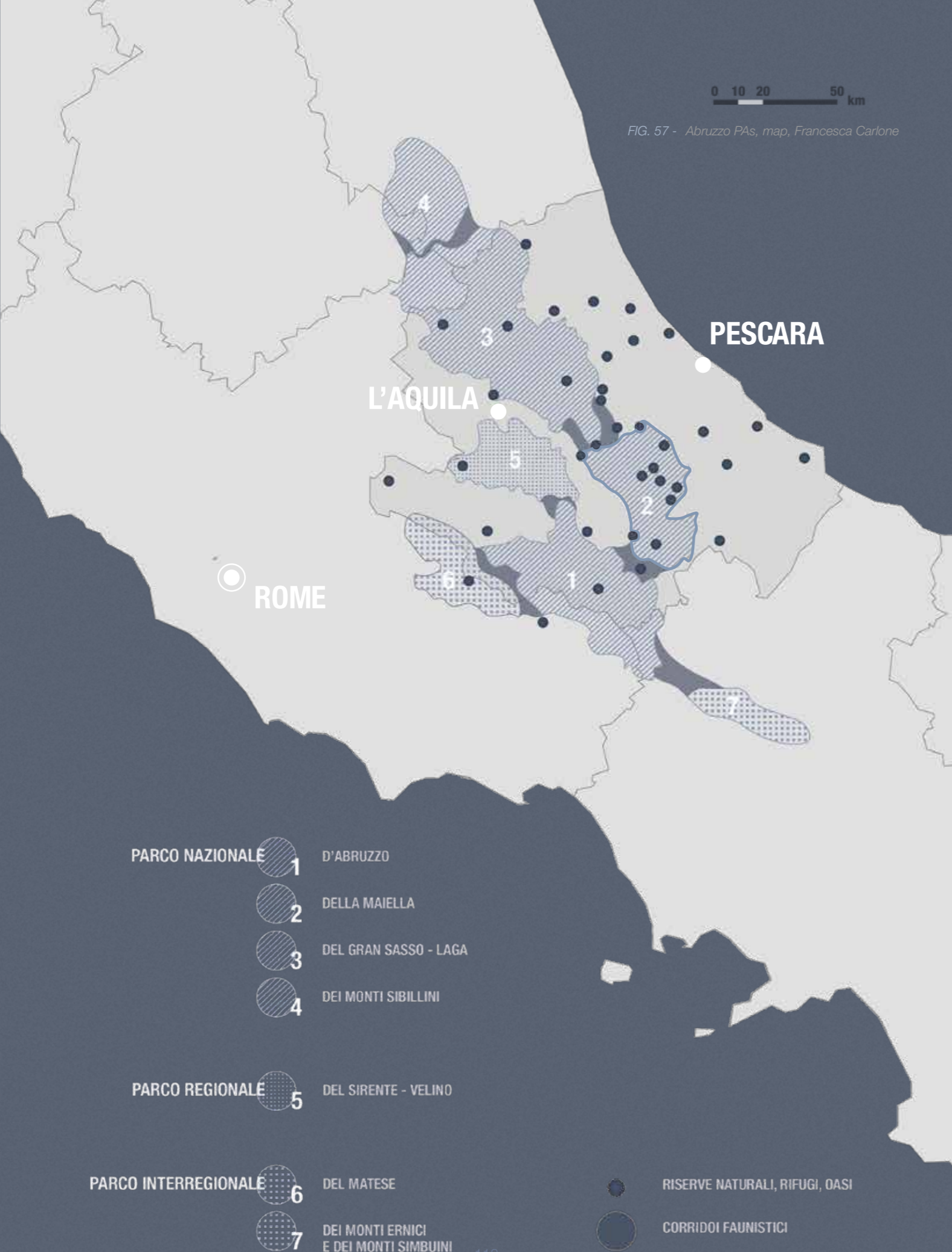
a crossroad of species

Europe green lung

¹ The first Italian National Park to be established was the Gran Paradiso on 3rd December 1922, while less than a month later, on 11th January 1923 the Abruzzo, Lazio and Molise National Park was founded

0 10 20 50 km

FIG. 57 - Abruzzo PAs, map, Francesca Carlone



4.2 Maiella National Park

«A mountain Park overlooking the sea»

MAIELLA NATIONAL PARK

The Maiella National Park (MNP) was established in 1991 as an extension, a glue, of a series of protected areas previously defined in the 1970s, among which the first is the Orfento Valley.

MNP and Orfento Valley

Summarizing in the 74.00 ha of the Park territory, the MNP collects a good part of Abruzzo natural heritage, summarizing in the 74.00 ha of the park territory, a good part of the regional biodiversity with more than 2100 different entities representing 1/3 of the Italian fauna and flora and about 17% of the European one.

*1/3 italian biodiversity
17% european biodiversitiy*

This incredible wealth comes from far away and like the sand in the sea, over time the various climatic and geological vicissitudes have settled. Some species have been able to adapt and resist resilient, while other have been lost. Is the case of the fossils present on the area.

The first traces of the Maiella dolomitic massif date back to about 100 million years ago, when limestones began to settle in the Caribbean sea, trapping part of the life that populated those seas within them, in fact fossilizing up to our days.

*first traces
100 mln of years ago*

About 5 million years ago, the orogeny of the massif that has some of the youngest mountains on the peninsula, began. The salient morphological characteristic of the Maiella, which clearly differentiates it from the other Apennines mountains, is however its almost horizontal development. The crushing effect is due to the presence of vast culminating plateaus, located above all in the central portion - which has the overall appearance of a *moon-landscape* - and by the high percentage of reliefs placed over 2000 meters.

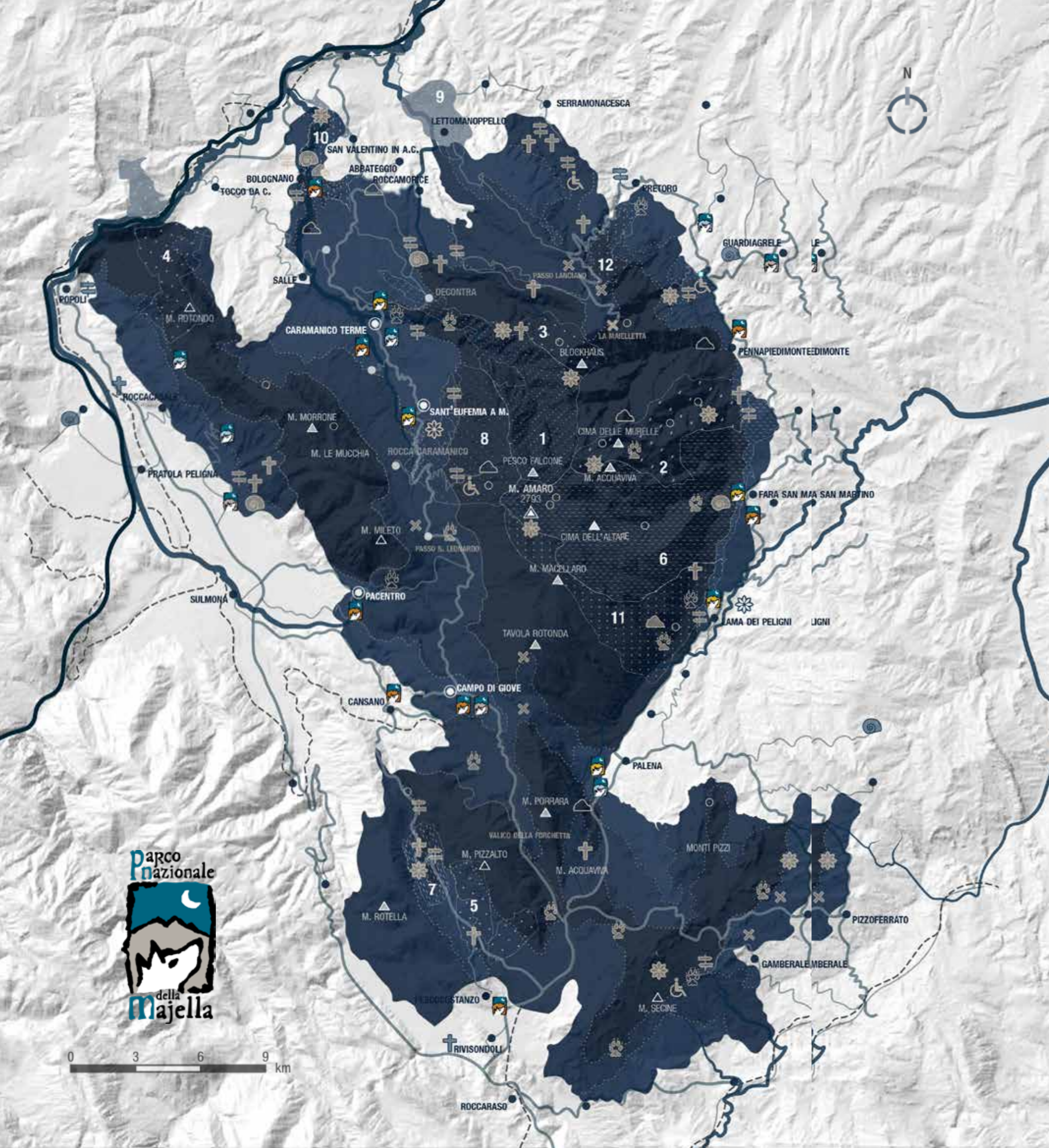
*orogeny
5 mln of years ago*

moon landscape

The evolution of environmental conditions, like the Quaternary ice age, combined with the considerable altitudinal extension of the massif - from 130 to 2793 meters above sea level, had led to the disappearance of many species, but at the same time has recorded the extraordinary permanence of others, 'relics' in limited areas. The isolation then laid the foundations for morphological and genetic differentiation, triggering the process of speciation that has produced an extraordinary amount of en-

*climatic conditions
+ altitudinal extension*

*hard environmental conditions
endemics*



FIRSTS PROTECTED AREAS

- 1971/2 **1** ORFENTO VALLEY
- 1981 **2** FEUDO UGNI
- 1982 **3** MONTE ROTONDO
- 4** PIANA GRANDE + MAIELLETTA
- 5** QUARTO S. CHIARA
- 1983 **6** FARA SAN MARTINO
- 1985 **7** S. ANTONIO FOREST
- 1987 **8** LAMA BIANCA
- 9** LAVINO PARK
- 1989 **10** ORTA VALLEY
- 1991 **11** EASTERN MAIELLA
- 12** FORO VALLEY

VILLAGES AND MNP

- VILLAGES OUTSIDE MNP
- ⊙ VILLAGES INSIDE MNP
- PLACES INSIDE MNP
- REFUGE/BIVOUAC

MOUNT AND PEAKS

- ▲ MOUNT AMARO
- ▲ PEAK + 2000 M
- △ PEAK - 2000 M

ACTIVITIES

- ≡ TRAIL
- ♿ TRAIL ACCESSIBLE
- ✕ SKI STATION
- ✿ BOTANIC GARDEN
- 🐾 FAUNISTIC AREA
- ⚡ OPEN CAVE
- ✝ HERMITAGE

AREA OF INTEREST

- ✿ FLORISTIC
- 🐾 FAUNAL
- ⚡ GEOLOGICAL
- 🏺 ARCHEOLOGICAL

MNP STRUCTURES

- 🏠 MNP HEADQUARTERS
- 🏠 VISITOR CENTER
- 🏠 INFORMATION CENTER
- 🏠 REFRESHMENT STAND

VIABILITY AND RIVERS

- 🛣️ HIGHWAY
- 🛣️ PRIMARY STREET
- 🛣️ SECONDARY STREET
- 🚆 TRAIN
- 🌊 RIVERS

- ZONA A
- ZONA B
- ZONA C
- RISERVE FUORI DAL PNM

FIG. 58 - Maiella National Park, logo
 FIG. 59 - Maiella National Park, map

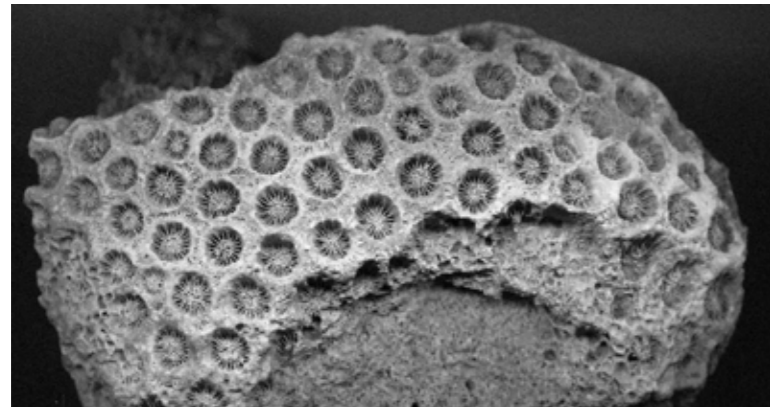


FIG. 60 - *Canis Lupus Italicus*, © Maiella National Park
 FIG. 61 - Coral fossils, picture, © Maiella National Park
 FIG. 62 - St. Bartholomew hermitage, © Abruzzoturismo

demics², that is, species exclusive to a territory. So that the botanical explorations by Michele Tenore, Edmond Boisser and other passionate and qualified experts, had already highlighted the extraordinary richness of the flora and vegetation of the Maiella in the nineteenth century, consecrating it as the «Sacred Mountain» of European flora.

UNESCO Geo-park

The primary component of the great biodiversity of the Maiella is geodiversity, since the range of geological, geomorphological, hydrological and pedological characteristics of a given area is crucial for the different species living in these territories.

geodiversity

A geosite can be defined as «locality, area or territory in which it is possible to identify a geological or geomorphological interest for conservation» (Wimbledon et al., 1996) and 95 have been identified in the MNP to date, of which 22 with international relevance. For these reasons Maiella National Park on April 2021 has entered in the list of UNESCO Global Geo-parks Networks.

UNESCO site

4.2.1 Made by nature, shaped by humans

It is in the combination of nature/culture, typically Apennine and Mediterranean, that the Maiella expresses its peculiarity and particular added value: a Human Park as well as a Wilderness reservoir. Contrary to what a person might think, all the parks and the Apennine PAs hardly report conditions of pure wilderness, on the contrary they are often real coexistence laboratories where the link between humm and nature has been inseparable for centuries.

human and nature coexistence

For centuries, as Ignazio Silone pointedly observed, the life of the Abruzzese people was conditioned «by the most stable and elementary of factors, nature», and in particular by the mountains. In fact, these are anthropic parks where the settlement of man has been millennial and continuous characterized precisely by the constant and difficult search for a balance with an environment.

A clear example is shown in the second chapter of this work, where is presented the case study of the *Canis Lupus Italicus*, saved from extinction right in these mountains thanks to a measured intervention of wildlife management. This and other prudent interventions have allowed the maintenance or recovery of a large part of the most representative fauna species, many of which are considered a priority on a Eu-

*a case of
wildlife management:
canis lupus italicus*

² *Endemic vs autochthonous. Autochthonous is an organism belonging to a certain area. It can have found a favorable habitat also in other areas of the planet. Endemic is an organism that has found the proper conditions to live uniquely in a determinated area and therefore cannot be found elsewhere on the planet*

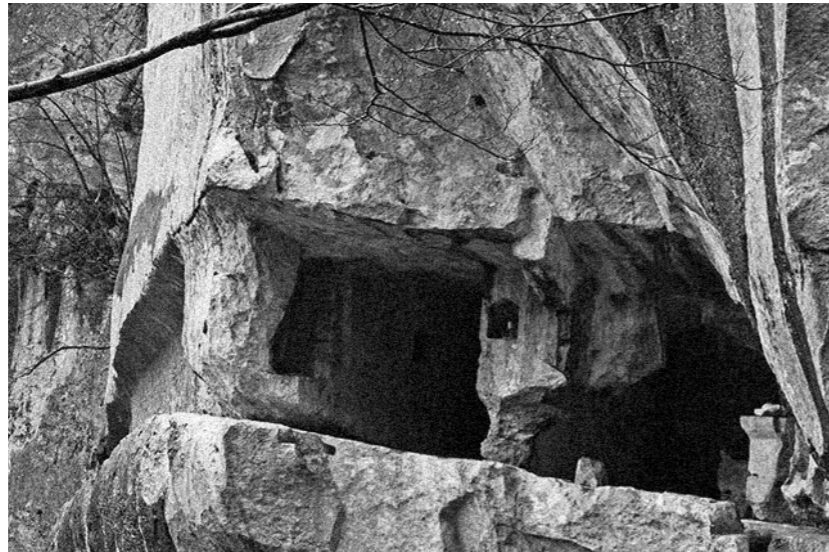


FIG. 63 - St. John hermitage, © Majambiente

ropean scale.

In this beautiful but hard territory, in fact, a daring but possible alliance between man and the environment was experimented, certainly marked by daily fatigue, but which guaranteed the survival of the communities, at the same time not stripping the integrity of the context, indeed enriching it with new semi-anthropic habitats derived from agro-forestry-pastoral activities.

agro-forestry-pastoral habits

Transforming the pervasive and multifaceted presence of stone from a problem to a resource was the great challenge.

*from the stone,
with the stone*

«The stone was a chair, it was a tub, it was a wall, it was a table, it was a shelter, it was a well, it was a work tool»

MAIELLA NATIONAL PARK, 2019

The tenacious and cyclopean work of stone removal of the funds to be cultivated and grazed in the medium mountains, has modeled a fascinating landscape of slopes with terraced fields, huts and dry stone fences, stazzi, milkers, borders of the paths of the mountain, activating a spontaneous and virtuous circular economy process. The reclamation of the crops from the stones and the need to occupy as little space as possible not to be taken away from the crops, has left little inert material on the field (stone removal, piles of small material and therefore not useful for reuse, which shore up the fields) it is instead the raw material with which these resilient mountain communities have satisfied all the daily needs.

circular economy approach

The dense dialogue between man and the environment, the harmonious organization of natural resources according to anthropogenic needs and the extraordinary material culture that resulted from it, have found recent and prestigious recognition in the inclusion of the 'Art of dry stone walls' in the List of the Intangible Cultural Heritage of UNESCO, which unites Italy to seven other countries of the Mediterranean area.

*UNESCO heritage
the art of dry stone walls*

Form the stone and with the stone, inextricably linked to the landscape, the extraordinary religious civilization has flourished that has supported the Maiella with abbeys, hermitages and popular places of worship. From the extraordinary thirteenth-century hermitages of Pietro da Morrone (Pope Celestino V), set in the rocky walls of the innermost valleys of the massif, to the rural sanctuaries of the popular faith (only recently abandoned) while it builds, the stone sacralises the territory, inscribing it in a dimension that elevates it from everyday life.

identity elements,
resources for local community

This incredible biodiversity represents the elements of identity of the MNP territory, its distinctive and inimitable specificity that makes it unique and different. An enormous cultural value functional precisely to the strategic objectives of protected areas, because it is simultaneously an asset to be protected and a strategic resource for the well-being of local communities.

4.3 Paolo Barrasso Visitor Center

4.3.1 Area analysis

The MNP in its territory has different visitor centers, of which the most significant for the flow of visitors is the Paolo Barrasso Visitor Center (see case study "Covid-19 nature deprivation: the Orfento Valley, 2.2.1). Located in Caramanico Terme, in the heart of the MNP, is positioned at the main entrance of paths that explores the Orfento Valley, its main focus.

I Environmental context -

The Orfento Valley

The Valley has always had a very strong attraction due to two main factors: the perennial presence of water (the only case of the Maiella) and the considerable altitude development from about 400 MASL to over 2500 MASL. This last condition in particular has almost led to a mirroring of the park itself, but on an even smaller scale. And so inside the valley marked by micro-climates also in strong contrast to each other, an incredible amount of different, sometimes unique, plant and animal forms has been able to thrive.

summit plateaus
(alpine range)

Starting from the top opens the amphitheater consisting of the three peaks that originate the Valley: the top of Mount Pesco Falcone (2028 MASL), that of the Tre Portoni (2547 MASL) and that of Pomilio (2462 MASL).

Here the landscape is lunar, karst, cut by rock and sky. Where nature impose the hardest conditions, life experiments the rarest forms to survive. On the summit plateaus the climate is extremely rigid and for this reason natural selection allowed mainly endemisms to endure. Among the rarest flora are the Apennine Edelweiss, the Viola Magellensis and the Crepis Magellensis³, while some of the rarest animals are the Snow Vole, the Chaffinch Alpine, the Sordone and the Apennine chamois reintroduced

³ A testimony of Maiella incredible biodiversity is the deisnence Magellensis proper to different species. When a researcher discovers a new form of life, it is given a latin name, in this case with a reference to the place where they were first found: the Maiella massif.

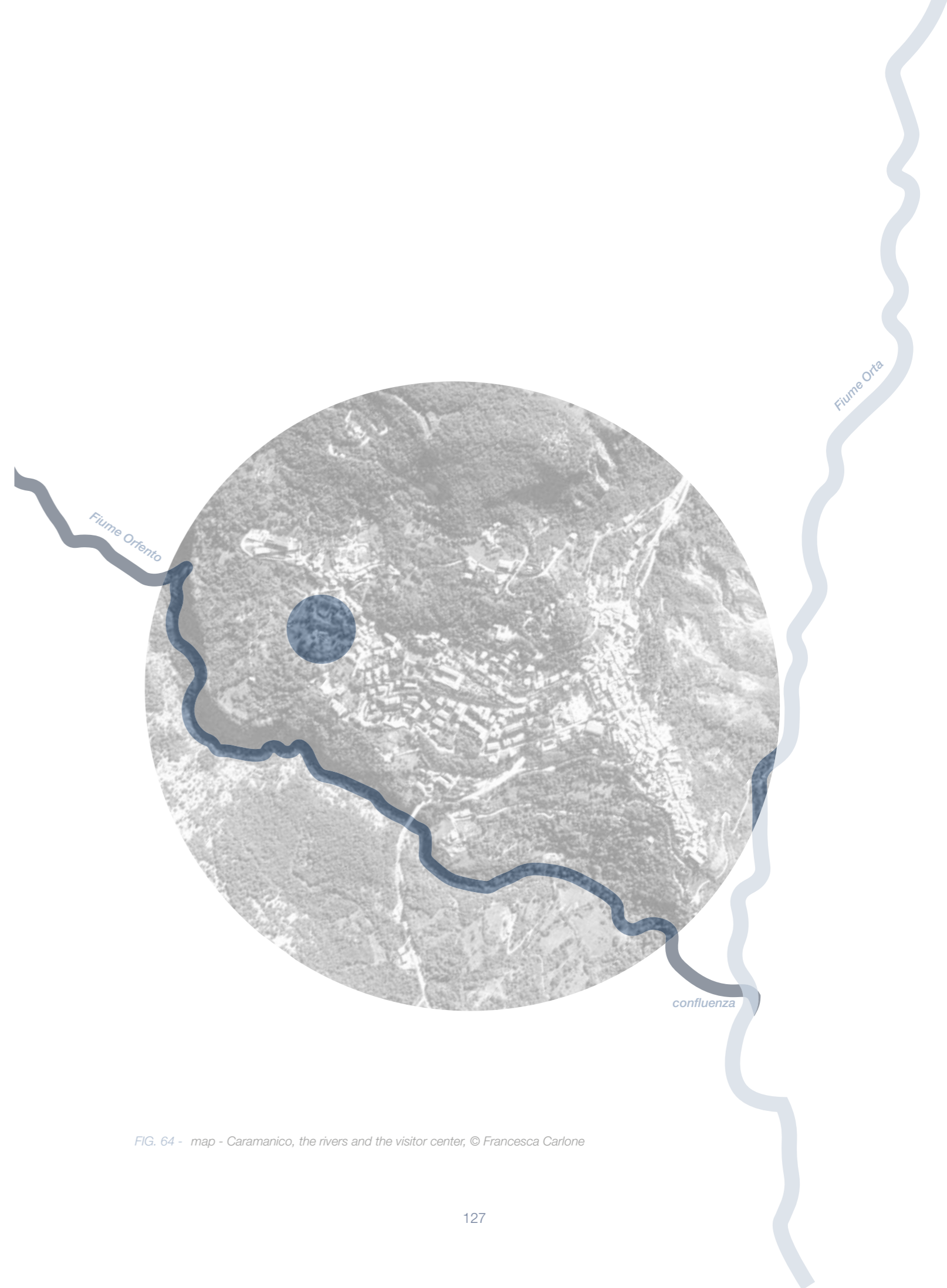


FIG. 64 - map - Caramanico, the rivers and the visitor center, © Francesca Carlone

30 years ago.

*climate change
and the disruption
of the alpine belt*

This delicate balance between harsh conditions and rare form of life is profoundly fragile and it is the first to be threatened by the climate change. The estimated effects on the Maiella massif with + 1.5 C° see the rise of the lower belts compressing the extension of the alpine range from 300 m to just 50 m and with just + 1 C° 75% of its vegetation is lost (Stanisci et al., 2006).

*the mountain pine
(alpine-subalpine belt)*

Going down towards the valley, it settles between the rocks, strips of prairies and the mountain pine, a relict species of the Quaternary glaciers, which has survived until today and which in this place meets its southernmost extension.

Therefore, starting from 1800-1900 meters above sea level, down to a thousand meters, the forest of the great king of these mountains extends: the beech. Absolutely the predominant wood on the Maiella massif, also in this case the beech forest occupies most of the extension of the valley accompanying the Orfento along its course.

*the beech
(subalpine-mountain belt)*

Here the Marsican brown bear and the wolf find refuge, living undisturbed in the wildest areas. Alongside the large predators live their prey, the Red Deer and the Roe Deer. Other smaller predators also live here such as the Marten and the Wild Cat or, among the birds, the Golden Eagle, the Alpine Chough or the Coral Chough. The undergrowth is then populated by Cyclamen, Violets, Buttercups, Pinguicola (a rare carnivorous plant) on the rocks and Lilies. The rich presence of water also guarantees the thriving of countless reptiles.

In the lower part of the Reserve we find an oak grove dominated by the Roverella. Hawthorns, brooms, wild roses are accompanied by brightly colored herbaceous species: primroses, bluebells, orchids, anemones and carnations. Among the animal species you can meet mammals, wild boars, badgers, foxes, beech martens, roe deer and majestic deer or birds such as the melodious golden oriole, the green woodpecker and the acrobatic sparrow hawk as well as a great variety of invertebrates.

the oak, Roverella

Carmanico Terme

Carmanico Terme is a town that defines itself as a sedentary settlement starting from 800 AC and became a *fortified castrum* of the upper Valle dell'Orta in 1000 AC.

II Urban context

As often happens, here more than ever, the use and enhancement of local resources are intrinsically linked to the growth of the village itself. A bond so visceral that historical events follow rural ones, where the harmonious prosperity of this relationship has determined the wealth of the place.

It is in fact from between 1400 and 1600, in the middle of the Renaissance, that Carmanico became one of the major silk production centers of the Two Sicilies Kingdom thanks to the breeding of silkworms. In this historical moment of economy growth, artists and artisans came from all parts of Europe. Here they found the Maiella stone, particularly soft and therefore suited for being sculpted. Reminiscence of that

the silk the stone



FIG. 65 - Carmanico Terme map, © Francesca Carlone

period can be found in the portals that decorated the old-town streets or in the decorations that adorn the churches.

In the late 1800s, the Silk Road was in crisis, but another era was about to begin: **thermalism**. It is in fact at the turn of the two centuries that the spas were born which can count on two different types of water, the **sulphurous water**, curative, and the **pisciarello water**, diuretic.

Throughout the 1900s they will characterize the economic development of the Country which after the Second World War experienced an economic boom such as to lead to the construction of the entire transversal axis, effectively moving the center of gravity of the village to the southern part.

the water

Tourism, stimulated by the thriving economic development of the second half of the twentieth century, brought great advantages to the local economy. It should be noted that in favor of an easy income, the average thermalist stayed for at least two consecutive weeks to complete the thermal cycle, local entrepreneurs almost forgotten **Caramanico primary vocation: a village immersed in a natural context of rare value**. The flattening of the offer has led mountain tourism to be considered by few. However, the unfortunate recent thermal crisis in conjunction with the lockdown imposed following Covid-19 are changing the situation. The ecotourism is increasing and as pointed out also in the previous chapters, a new sensibility towards nature is beginning to rise.

Visitor Center area

*III surrounding context
multifunctional area*

The area of the Paolo Barrasso Visitor Center is located in at the edge of Caramanico urban area in a neighborhood named Santa Corce. It is a **multifunctional area** in which multiple subjects are involved. By applying the scheme presented in section 2.4.2, the Caramanico visitor center stands as a **widespread visitor center, whose functions are highly specialized and located in space**. The area, of the visitor center is, therefore, extremely articulated made up of multiple independent structures and levels of accessibility.

bar/diner

Outside the main entrance is the **bar/diner**, the former school of the district converted and managed by a local entrepreneur. Access and timetables are completely independent from the rest of the site.

*fauna in difficulty fence
MNP scientific HQ
free hosting for researcher
CdB
library*

Inside the first gate is the space open to the public which includes a **green area** tangent to the roe deer enclosure, one of the areas intended for the **fauna in difficulty recovery**, the entrance of the **MNP Scientific Head Quarter** with a small **auditorium** and "**Casa del lupo**" a structure in which rooms are offered for free to researcher and students. There are Carabinieri della Biodiversità (CdB)⁴ buildings with their own access. In the main visitor center area there is a **library** currently not used and the the

⁴ In Italy there is not a single police but there are different. One of them is Carabinieri della Biodiversità, whose focus is on environment and biodiversity preservation.

- ① Entrance
- ② Bar/Diner
- ③ Library
- ④ Visitor Center
- ⑤ Employees parking area
- ⑥ Scientific HQ + Casa del lupo
- ⑦ Otter area
- ⑧ Biodiversity Police
- ⑨ Wounded animals areas
- ⑩ Rest area
- P Parking area

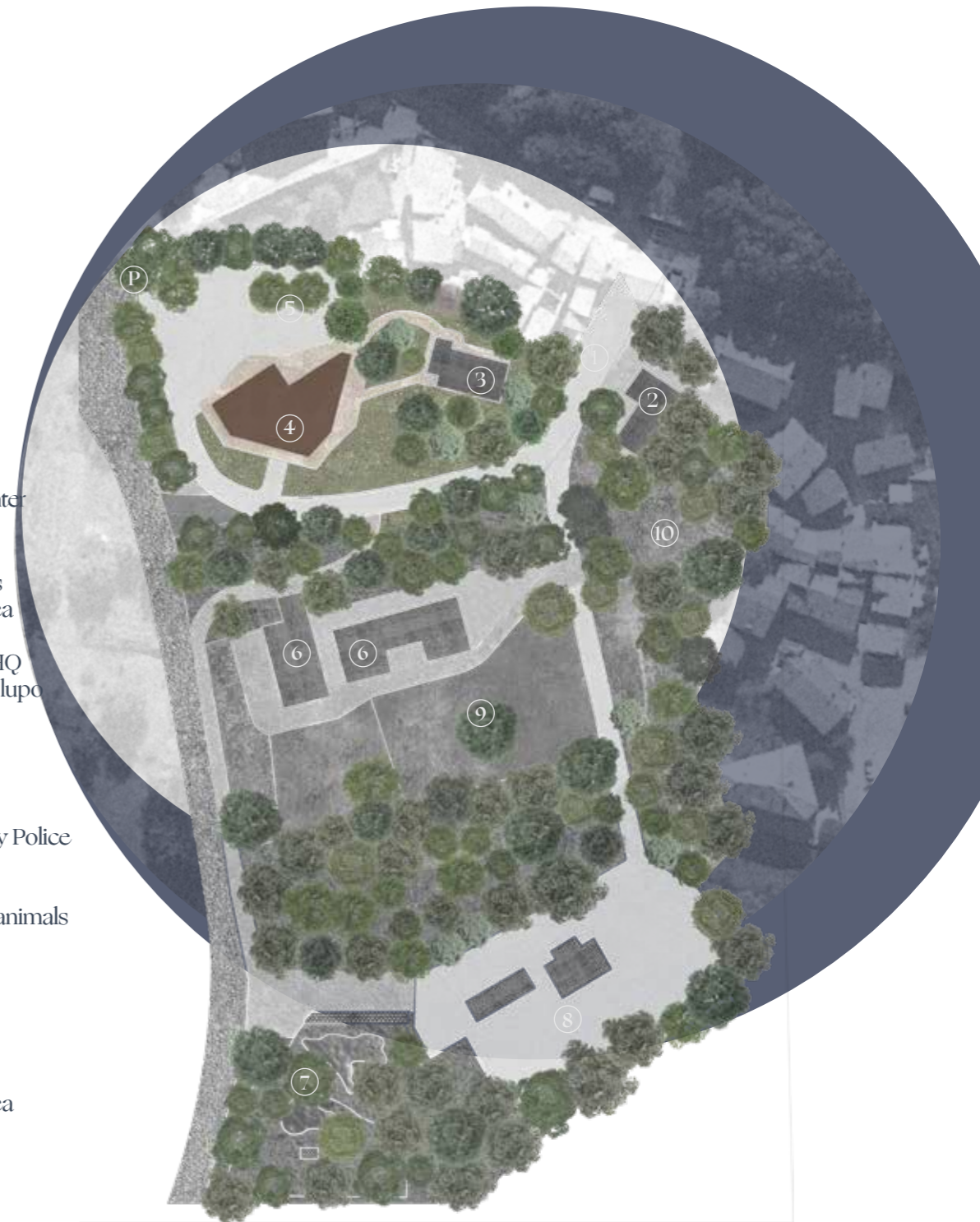


FIG. 66 - Paolo Barrasso Visitor Center area masterplan, © Francesca Carlone

THE THREE LEVELS OF VISITOR CENTER FUNCTIONS

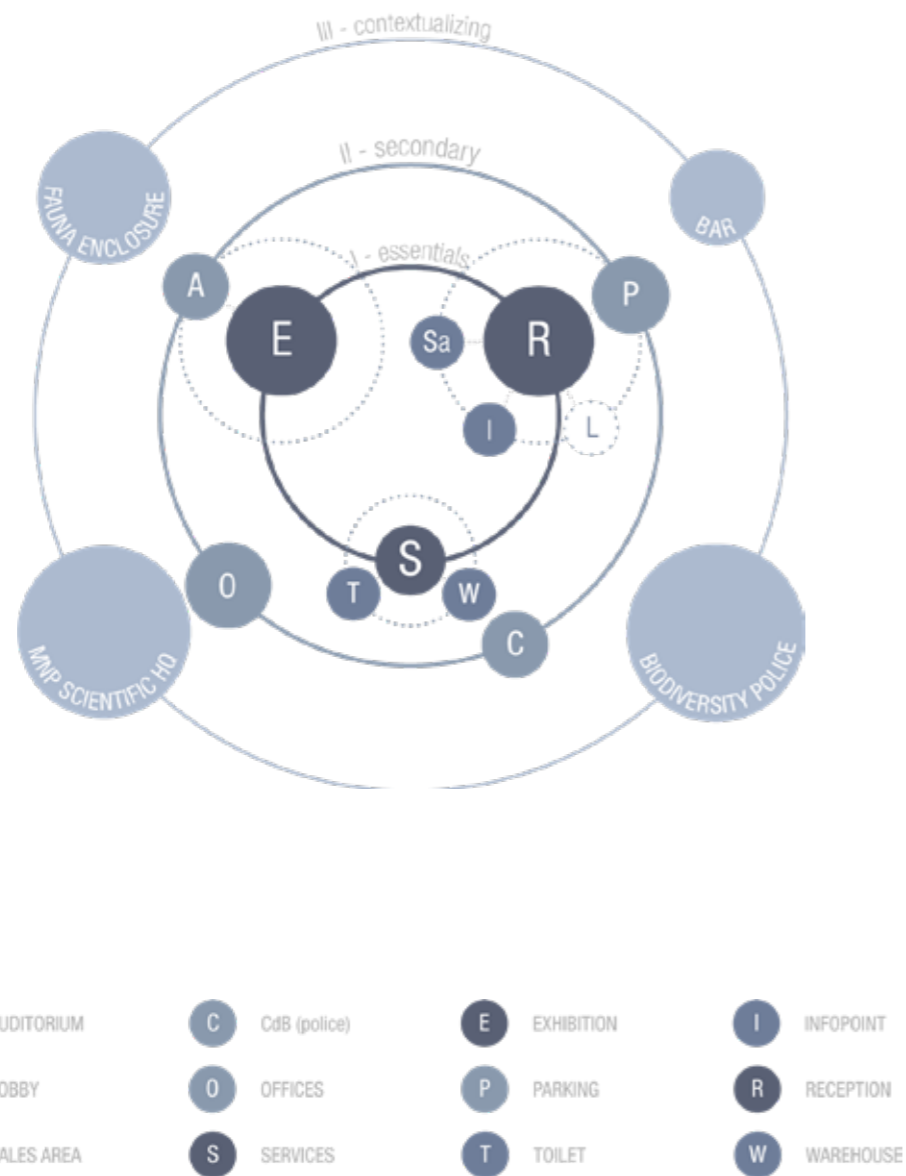


FIG. 67 - Visitor center: the three levels, © Francesca Carlone

visitor center itself with the services where Majambiente⁵ operates and the CdB. To connect everything there is a big parking lot, nowadays perceived as a dead space, partially used for employees.

4.4 Project area

The project area interest the visitor center Paolo Barrasso. It has been chosen because the selected visitor center is an hotspot for the MNP tourism, arriving to count almost 50.000 visits in 2020, but its full potential is not completely expressed.

Problems

Starting from the general area and from the fluxes analysis, its fluxes are not well addressed and often in summer long queues forms where visitors wait under the sun for the free-valley pass⁶.

The site was built around the visitor center, starting from the 80s and all the functions development that has naturally happened during the years had to find a way to fit. An example of this are the CdB offices that are located in a non-appropriate space⁷ where it is impossible to keep a military area separated from the tourist fluxes.

From its first design it has been left almost untouched. The final result is that the functions that requires employees to be there are sacrificed: except for the CdB offices, the rest of the space hosts mainly the exhibition, that is not visited except for schools trips and when the weather conditions don't allow outdoor activities. The reception, the sale area and Majambiente office, where obtained using little space as possible, with the consequence that *the activities for which the structure is effectively used and has people visiting it and working there, have less than 10% of the total available surface.*

fluxes
function disposition
and area
unattractive dated exhibition

⁵ cooperative of environmental guides, stakeholder

⁶ a trial necessary for two reasons: security and data collection. This passage allows people to be quickly checked by Majambiente guides that can see whether they are wearing the appropriate clothing - especially shoes. It is also done to know those that are inside the valley so to be able to better offer support in case of need and to keep track of the number of visitor.

⁷ after the suppression of Corpo Forestale dello Stato, another police corp (2015) and the inglobation of it in the CdB, by law all the structures in which they operate are considered military area and therefore the access is forbidden to regular people. Nowadays they are located in a promiscuous area where this separation is impossible.

STRENGTHS



- Proximity to the urban area
- Proximity to the trails
- MNP Scientific HQ
- Faunistic recovery areas
- Green areas
- Big parking area close to the vc
- Multiple accessible entrances
- Environmental guides/educator

WEAKNESSES

- The big parking area
- Implementation of touristic services
- Implementation of touristic experience
- Local sustainable entrepreneur support
- Visitor center as sounding board for good practice
- Function/space optimization



OPPORTUNITIES



- Lack of exploitation of the area (Use of) the big parking area
- Frequent multiline queues in high season
- Unattractive museum exposition
- Structure orientation (energy)
- Current main entrance unaccessible
- Unattractive local storytelling

THREATS

- Disconnection between the structures of the system
- Library kept close
- Different institutions rule the area
- Perception of the area as made of single entities
- Lack of investments



4.5 Personas

The design process includes finding the final users for which the project is meant. According to the previous analysis national parks are visited by 80% by proximity-visitors which happen to be also the most precious - unaware - allies towards Net 0. They make, in fact, the perfect target considering that are already clearly **interested in nature-related topic** since they are visiting a national park and they are indeed **consumers**.

But are they all the same? Inside of this macro-group there have been identified three different personas. **The Family** that comprehends adults with children, **The Explorer** that stays for young adult, with no family that likes to travel or are smartworkers that value the experience provided by the surrounding context⁸. The last category is **The Researcher** and represents all the researchers and students involved with the Scientific HQ or interested in nature and sustainability.



⁸ 53% of workers would accept (or have already accepted) a decrease in salary in exchange for the possibility of operating in an alternative location to their city home, OnePoll for Citrix, 11 sole 24 ore (2021)

«I value nature and I believe climate change is an important problem, though I think others have a major part in it. I would like to do something, but I think I'm powerless»



The Family

4.5.1 The Family

The Family represents *adults with children*. They often live in an **urban context** and are interested in/**value nature**, though often perceived as *useful*. On a daily basis they do activities not-nature related and they are sensible to climate change and interested in sustainability.

The key element is the **lack of information**. They usually limit their knowledge to what is offered to them mainly on tv or social network and **do not have a clear and complete picture about sustainability**. They have no tools to fill the gap between the melting glacier images on screens and understand the real environmental price of their daily choices. The climate change is so perceived near, but not enough to affect their consumptions.

- wants a contact with nature
- values nature
- is sensible to the climate crisis
- lack of knowledge on sustainability
- struggles to connect the climate crisis effects with his/her own lifestyle
- passive information
- skeptical towards "green" technologies/processes

«I value nature and I believe we have a major part in the climate change. I like to spend time outdoor and I'm very sensible on sustainability»



The Explorer

4.5.2 The Explorer

The Explorer key element is exploration. The *young adult* considered often live in a *urban context* and don't have children. They like to travel and live new adventures and among them there are smartworkers that can work entirely online and are interested to move in a more natural context. They perceive nature as important and, feeling the necessity to escape from the city, appreciate outdoor activities and sports.

They are aware of the necessity to change our behaviour to save the planet. Even though they know more about sustainability they often do not actively seek for more informations and struggle to be aware of the real impact of their actions. Compared to the Family there is more knowledge and awareness and definitely a more active attitude towards sustainability, but the full potential is still raw. The climate change is so perceived nearer, but still not enough to incisively affect their consumptions.

- wants to experience nature
- values nature
- is sensible to the climate crisis
- he/she has a partial knowledge on sustainability
- struggles to deeply understand the impact of his/her daily choices
- has a partial knowledge on good habits, but doesn't really understand their value knowledge of the impact

FIG. 69 - The Explorer, © Francesca Carlone

«I chose to study nature in order to understand better its processes. We all have to act urgently to preserve the environment»



The Researcher

4.5.3 The Researcher

The Researcher includes all the people that are actively involved in nature study and preservation. They value nature and seek contact with it. Compared to the previous categories the key element is research and exchange of knowledge. The *young adult* considered often have relations with the Scientific HQ and even though they study nature related topic, their perspective is very specific.

There is the necessity to share the knowledge so to have a better complete picture and discover new tips on daily-sustainable habits. Along the Explorer, there is also the enjoyment in *exploring new paths* and part of their flexibility in *working in different places*. Even though they have a deeper knowledge on nature preservation and their attitude is often to *pro-active*, they are often very focused on a certain topic and do not necessarily have a day-to-day best practices exhaustive knowledge. They are aware of the necessity to change our behaviour to save the planet but not always know which are the best choices.

- studies nature-related topics
- values nature
- is sensible to the climate crisis
- studies nature related topics
- he/she has a sectorialized
- high-level knowledge on sustainability
- passive information
- has a partial understanding

FIG. 70 - The Researcher, © Francesca Carlone

4.5.4 Relations

The family

Thus summarizing the salient features identified in the 3 personas, it can be concluded that **The Family** needs more informations on sustainability and therefore there is the necessity to reveal them, to dissipate the disinformation. This is extremely important considering the current society situation: nowadays there is a growing polarization of opinions not necessarily based on proven data and where disinformation and miscommunication are, negationism rise.

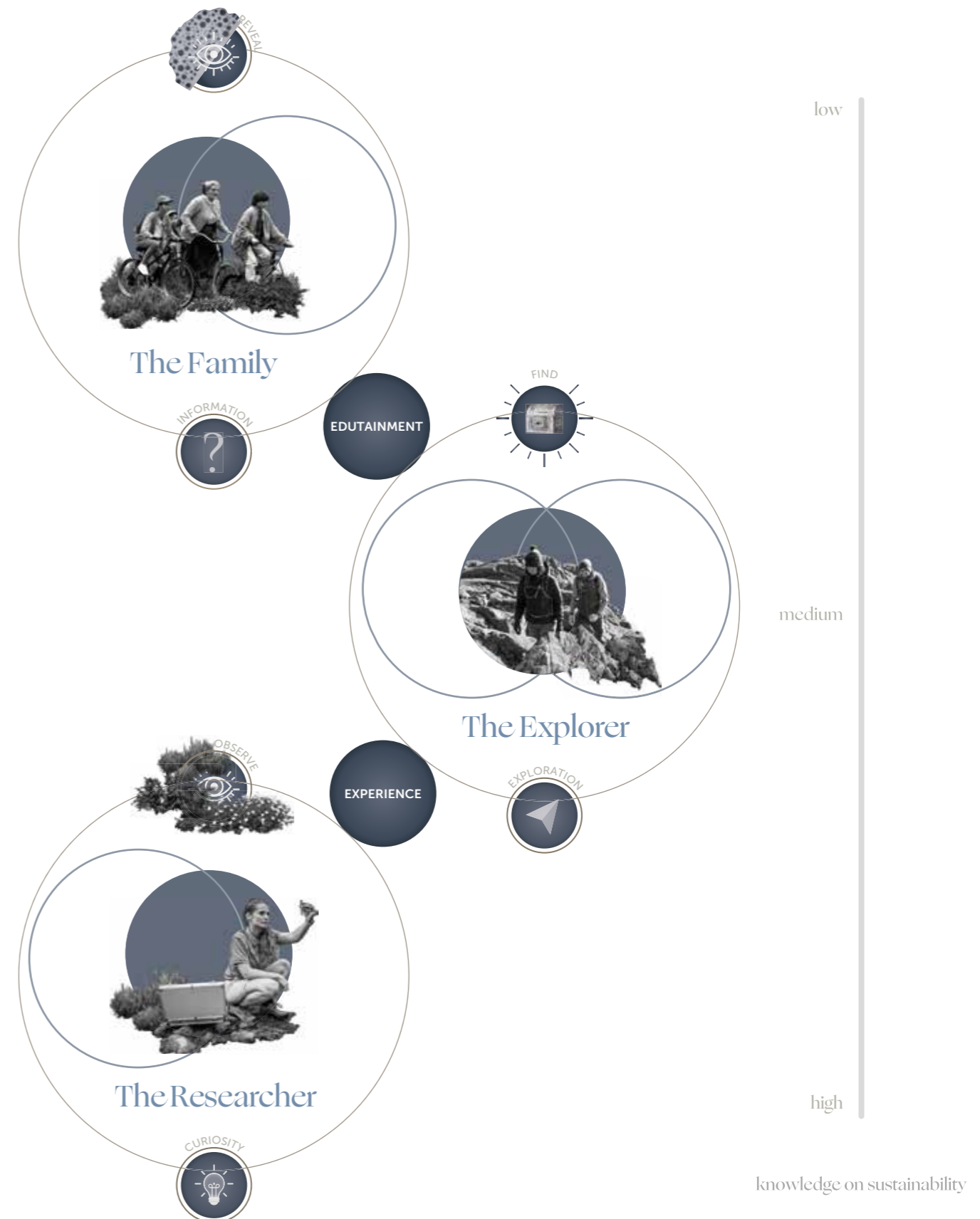
The explorer

Then there is **The Explorer** that seeks adventure and so the balance will be in narrating the territory, highlighting new paths and filling them with multilayered contents. This is not only engage the millennials-gen z user that seek content along with the experience, but will effectively deliver a better environment understanding.

The researcher

The Researcher is driven by curiosity so the goal is to create a place where observe better the surrounding environment from different perspectives and share knowledge. In the contact points in between the three personas lie the project necessities.

The needs highlighted are a place designed around the edutainment where a clear picture even of the most granted things is given and solutions that will grant a multilayered experience able to put in contact multiple perspectives



Vision

The vision that stand behind the project is that of a National Park that connects the city with the natural environment making people discover not only its peculiarities but also their own importance in its safeguard. Through the park they discover their potential and become aware of their real power, changing the city in the ideal city, a place fully integrated in the natural lifecycle system.



FIG. 71 - Vision, © Francesca Carlone

Key words



Concept



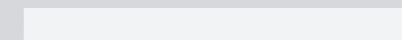
FIG. 72 - Concept, © Francesca Carlone

PROJECT

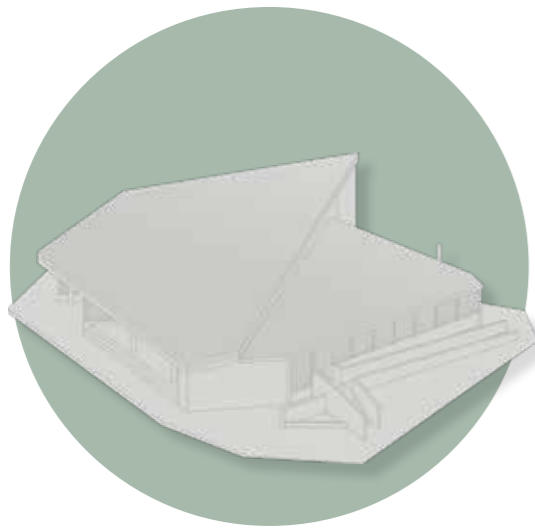
05 PROJECT

«The biggest threat for the planet,
is the conviction that someone else
will save it»

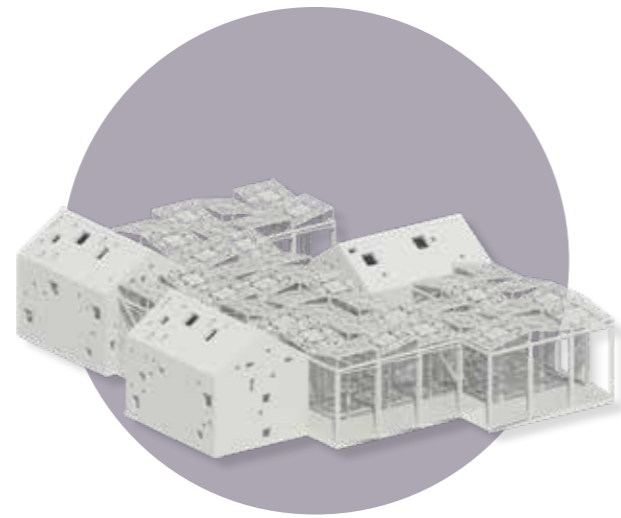
POPE FRANCIS, 2015



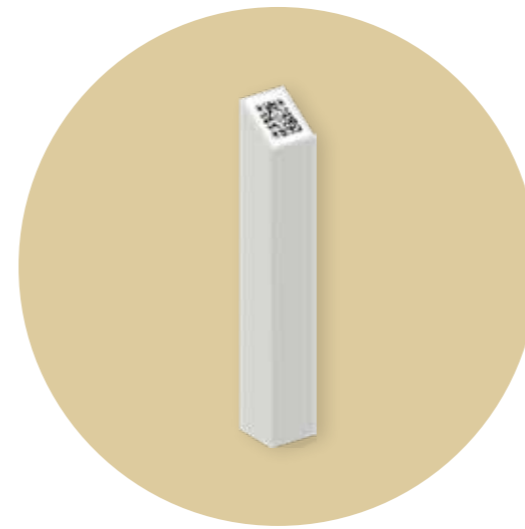
Project elements



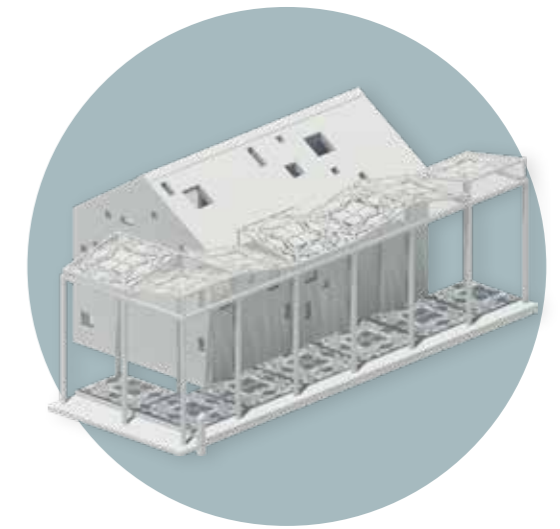
VISITOR CENTER
BASE | MAP OF THE TERRITORY



URBAN SUSTAINABILITY SPOT
SPOT | REST + EDUTAINMENT SPOT



GUIDE/TOOLS
MULTI-STRATEGY SYSTEM |
GUIDE TO THE PARK BIODIVERSITY



EXPERIENCE SPACE
CONTACT | A PLACE FOR ECO-SMARTWORKER

knowledge



experience

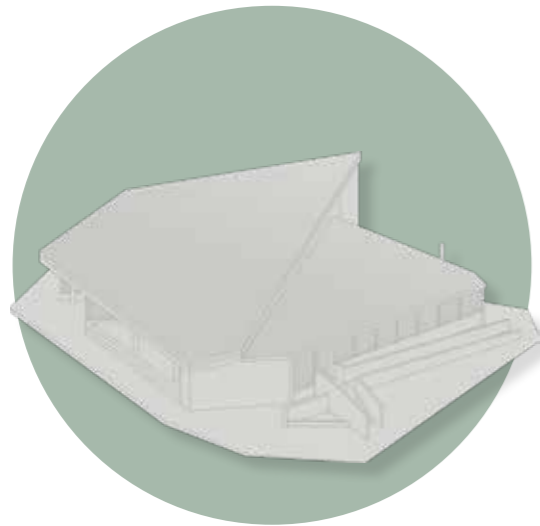
FIG. 56 - Vimeo, The Climate Store, Felix, 2021

Project elements

/

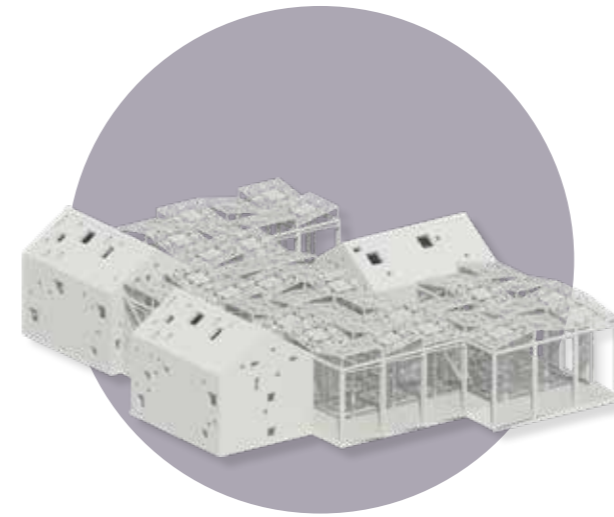
3.3 Project elements

The project will be articulated in 4 different phases. From knowing the local biodiversity to elements that involve more and more actively the final user.



BASE POINT

The system begins in the visitor center which spaces will be redefined as well as the exposition space. Here the visitor will discover more about the surrounding environment, but also the local culture traditions and relations with nature.

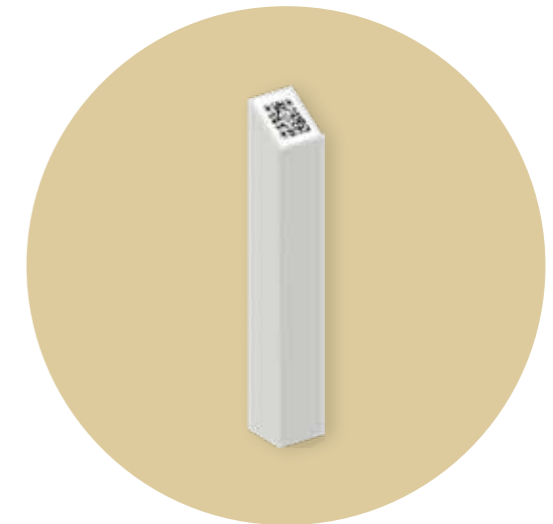


FIND THE HERO

Then there is the pavilion where there people involvement will grow: from spectator to active participants. It is a place where a common base of general knowledge on sustainability is created and the costs of daily choices affect a certain resource are revealed.

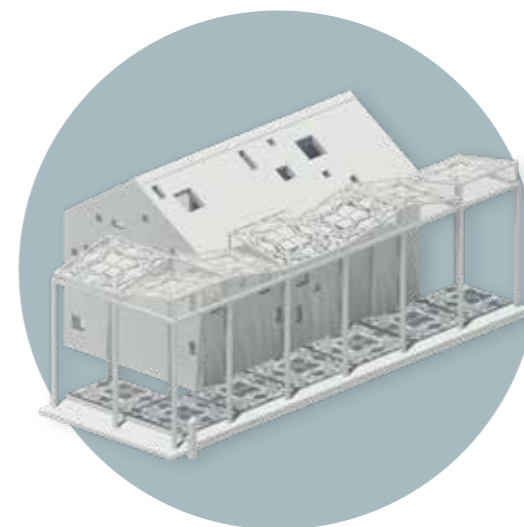
FINDERS KEEPERS

To increase further more the experiential value and to help people create a connection between data and the real world, the idea is place QR Code totems along selected path that will grant a more complex and layered visit. An example could be narrated path or tools to know the surrounding flora.



VIEWPORT

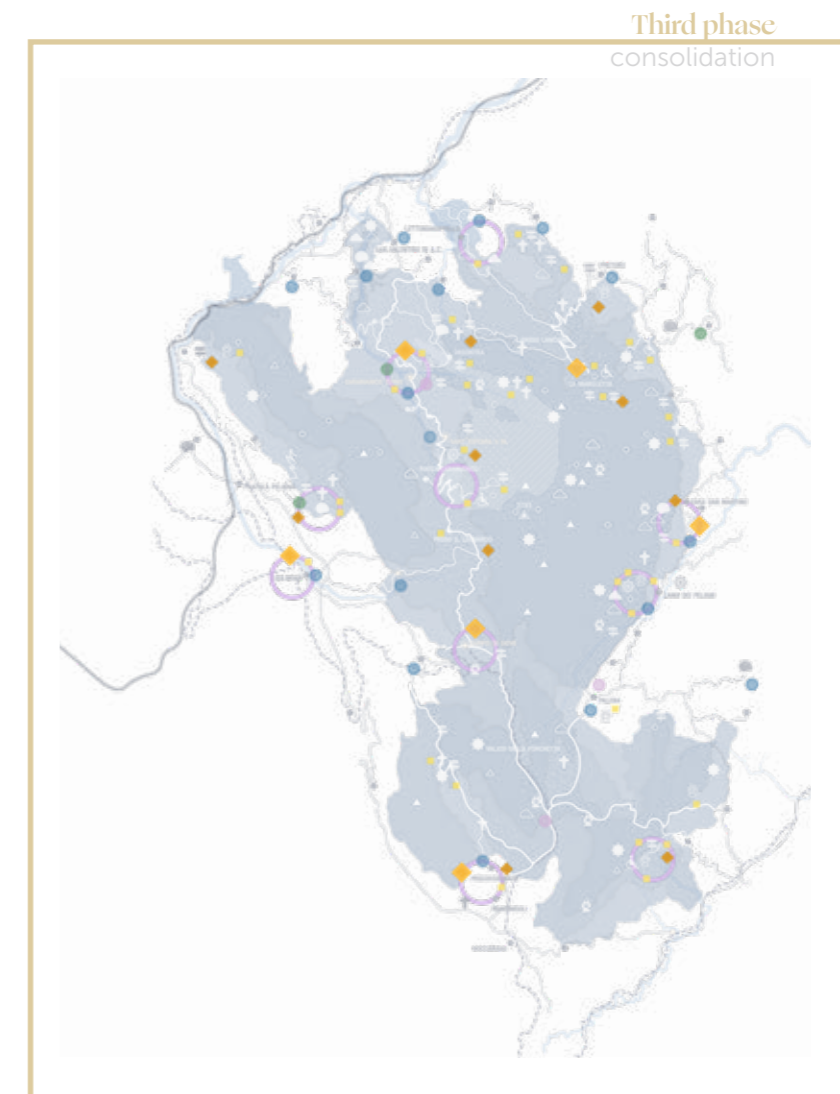
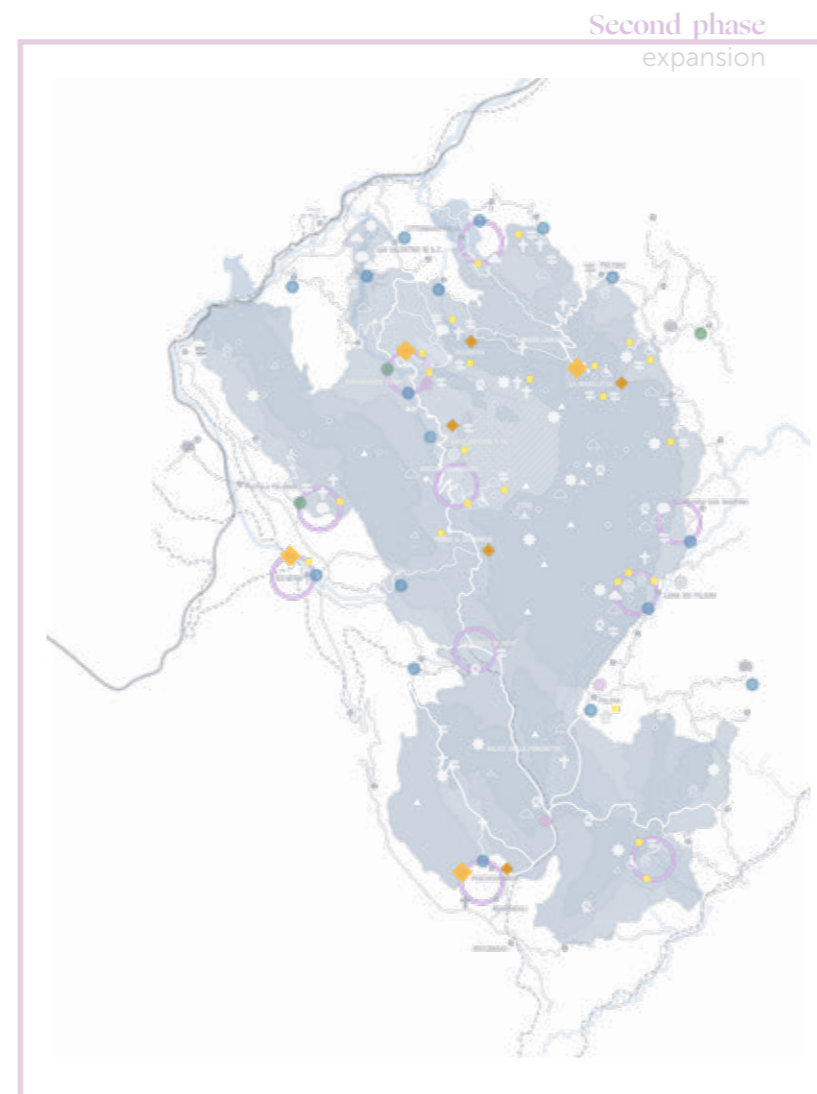
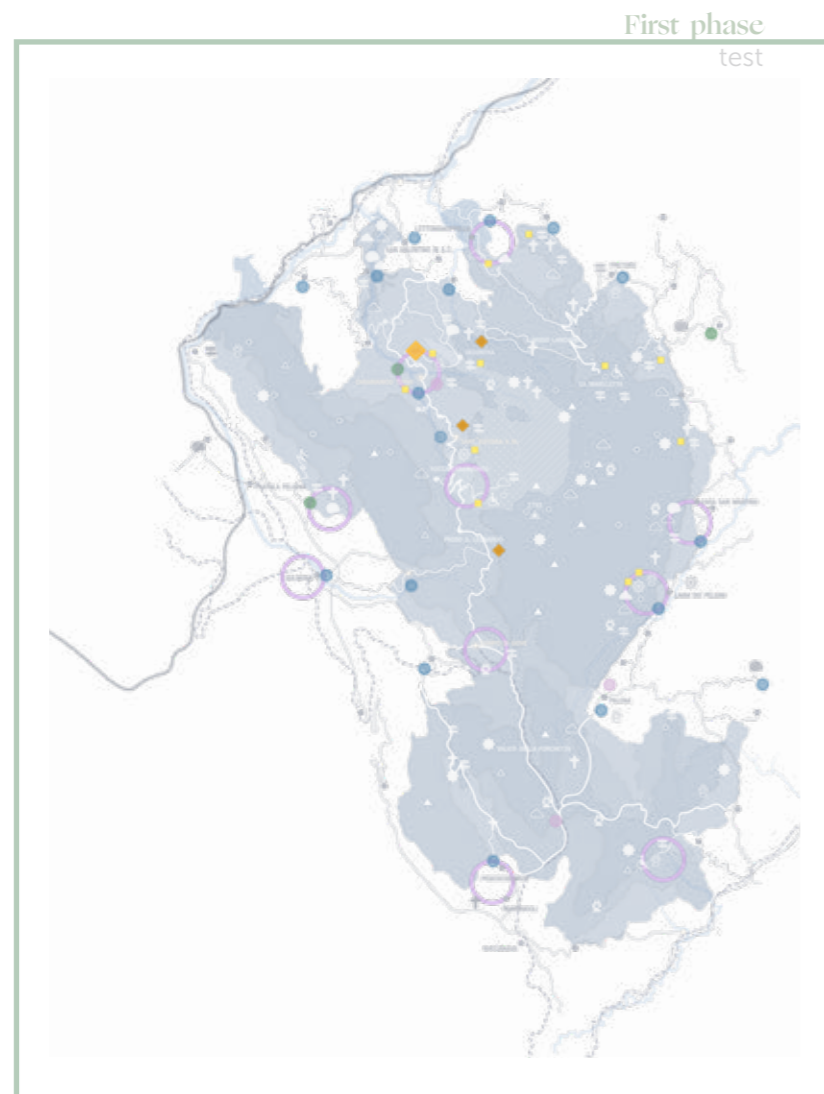
The last element of the system, the one imprinted on the direct experience, is taken from the pavilion where a the module composition originates a peculiar shelter from which experience not only the national park wilderness, but also spend time with a minimum impact on the planet.



Masterplan



Project time development in MNP



area of interest



pavilion



viewport



guide



MNP
visitor center



MNP
head quarters



MNP
restoration point

Mood board

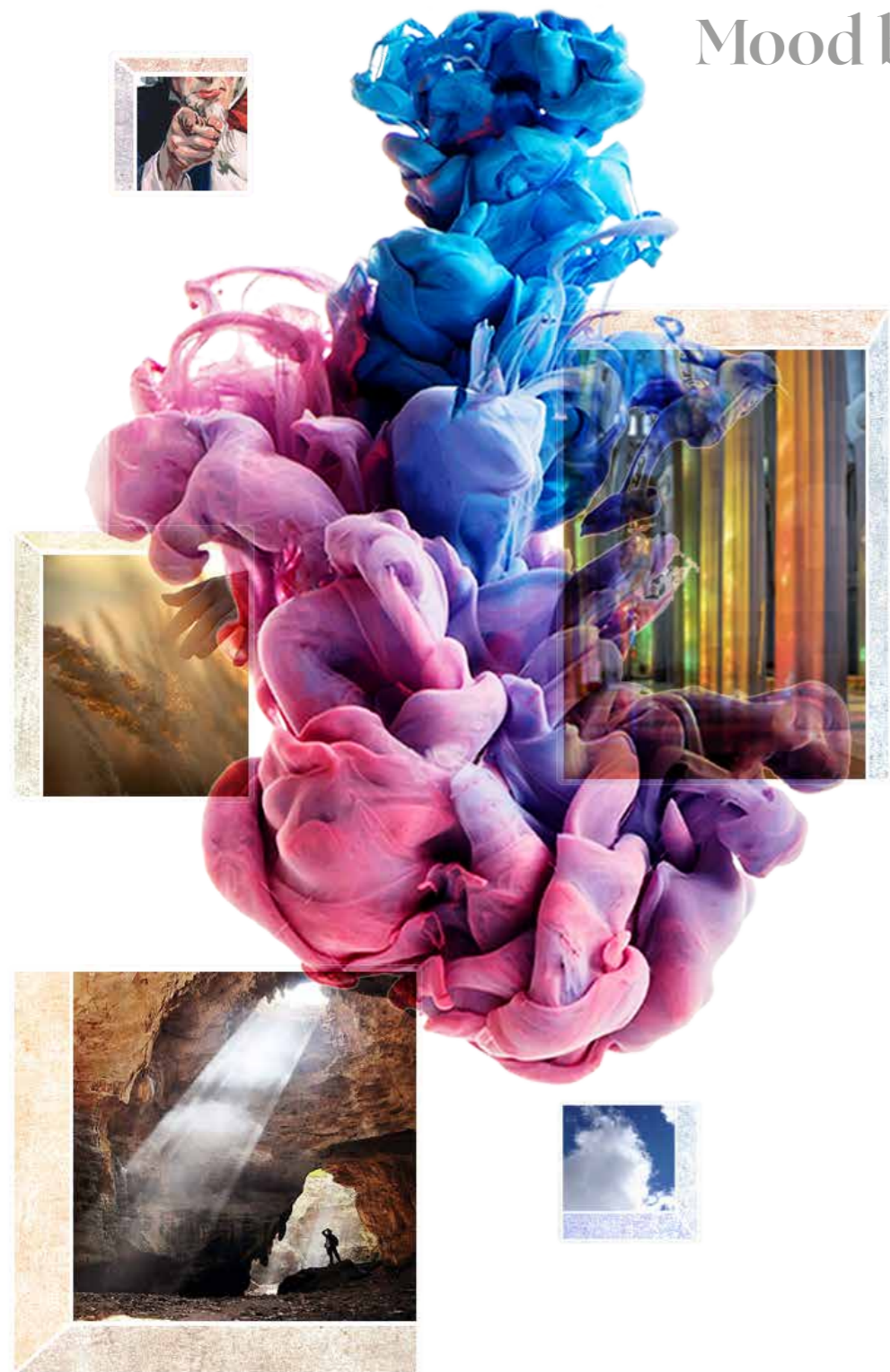


FIG. 57 - Mood board, © Francesca Carlone

Material board



FIG. 58 - Material board, © Francesca Carlone

Mycelium



SUSTAINABLE



BIODEGRADABLE



SOUNDPROOF



FIREPROOF



Mushrooms are an essential part in the planet ecosystems. They are responsible for the decomposition of organic material as well as the redistribution of nutrients through the environment, thus supporting animal and plant life. The presence of colonies of fungi and their symbiotic activities make it possible to restore those habitats lacking in nutrients, rich in pollutants or toxic waste.

The mycelium is the vegetative apparatus of the fungi and is formed by a tangle of filaments called hyphae, the part that connects the life underground creating a web in which informations and nutritive substances are exchanged. This web is extremely extended and runs through miles and miles, connecting entire areas.

The wide-ranging experiments on this type of material started some time ago, mainly conducted by Paul Stamets who went to investigate the possibility of using mycelia as a means to restore ecosystems.

On a project level though, Philip Ross has been the one to test more its boundaries. In his experiments he realized that mycelium can



FIG. 60 - Mycelium panels, © Mogu
 FIG. 59 - Mycelium, © Google images

be a building material with very interesting properties, the most important being a self made material with a non-exitant environmental impact based on acircular process.

Philiph Ross has developed long studied this material in architecture and design. The process for having a mycelium sample is quite easy, though the result sensibly changes according to the substrate and the type of mycelium selected.

The key here lies in the possibility of creating a material (or much more than one) through processes with a very low environmental impact, using waste raw materials and mycelium as an aggregate.

The mycelium is grown in a humid substrate composed of wood dust, straw or any other organic material containing lignin and cellulose, in a sterile environment, until it has filled all the possible space inside the container in which it is grown. At that point the compound is dried at relatively low temperatures (50/70 ° C) in order to evaporate all the moisture.

The mycelium growing acts as an aggregator and the original substrate, partially digested, acquires mechanical characteristics that were previously non-existent, becoming a solid and resistant compound.

The species of mushroom used, as well as the variety of raw materials on which to grow it, give rise to a range of very different possibilities and materials. What unites the various results is the sustainable character present and the very low environmental impact. The substrate can be composed of waste materials from other production processes (rice husk, sawdust, waste from paper processing), and the growth of the mycelium occurs without apparent expenditure of energy. The biodegradability of the final compound then allows safe disposal without releasing toxic substances into the environment.

Bifacial solar cell

Nowadays more than ever is indispensable the necessity to produce green energy. In itlay is clear that the solar energy is very important, even more if considered the future climate changes and how they will prolongue summers. In different cases is very hard to install solar panels, as for example on the visitor center. Here the roof is exposed on the north side and the whole parking lot which exposition is directed south is left empty.

Of the different types of solar panels, the monocrystalline are more efficient on energy production than the plicrystalline. However, there have been developed the bifacial solar modules. Bifacial mod-

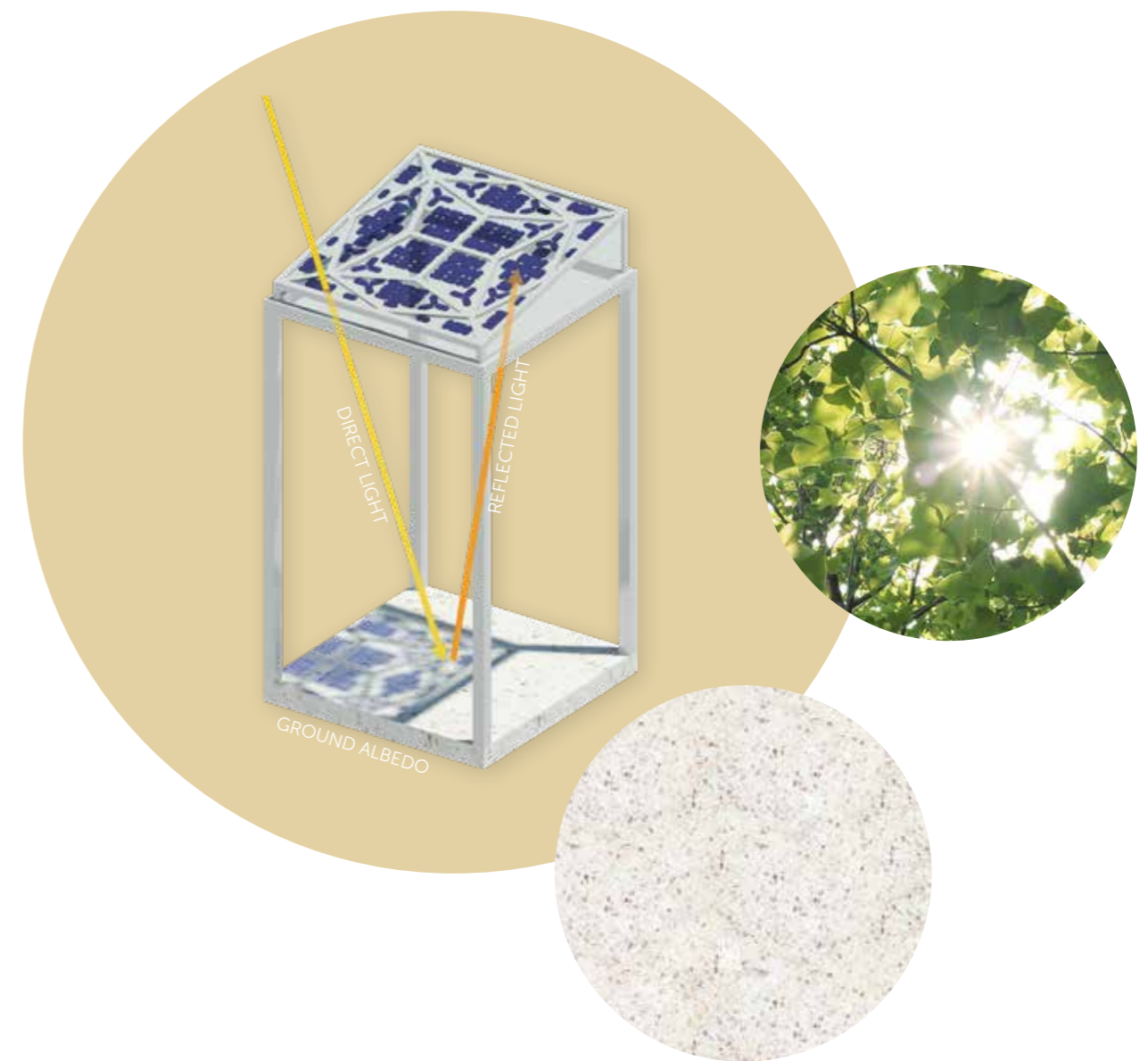
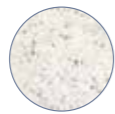


FIG. 61 - 2X2 module: bifacial solar scheme, © Francesca Carlone

ules in a solar plant have demonstrated efficiencies double compared to the **monocrystalline (15-20%)**, arriving to hit **27-31% of efficiency**, with standalone bifacial modules reaching an efficiency of approximately **34%**.

To maximize energy production though, there have to be taken in consideration a series of parameters: the albedo effect and the reflection. This means that the surface beneath the cells has to be light colored so to maximize the light reflection and has to be distant from the solar cell (ie. a light colored floor has a good distance from the cells to allow the proper reflection; a white metal plane 30 cm beneath the solar cells is too close to properly exploit the potential power).

Terrazzo veneziano



The selected floor therefore has been terrazzo veneziano. It can be made from waste materials, is resistant and easily cleaned and is highly customizable. In his case the same chosen is light so to maximize the energy production. The last feature, is that its fragmented composition mirrors the play of light and shadows given by the solar cells, mimicking the beech wood forest where the leaves on the trees filters the sun light, while the ones on the ground texturize the world beneath the beech canopy.

Bamboo Strand Woven



Bamboo is notoriously sustainable: it is infesting, easily adaptable to different climates, it takes 5 years to reach the lignin maturity and while grows doesn't need a lot of resources. Strand woven bamboo (also called pressed bamboo) the rods are pressed between lotus by special machinery. If visually the effect is to make the classic bamboo knots disappear and to make it very similar to the more classic essences, on a mechanical level there is a strengthening that brings the resistance to (9.5 kg / mm) making it specially suited for spaces subjected to intense stimulations.



FIG. 62 - Sagrada Família, Antony Gaudi



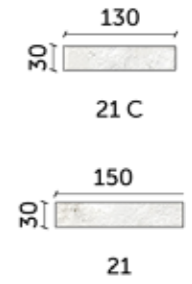
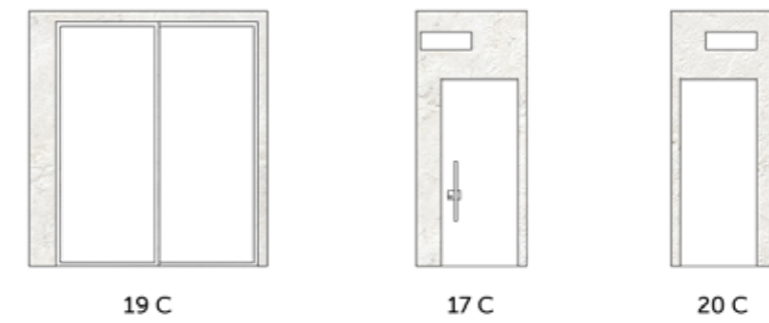
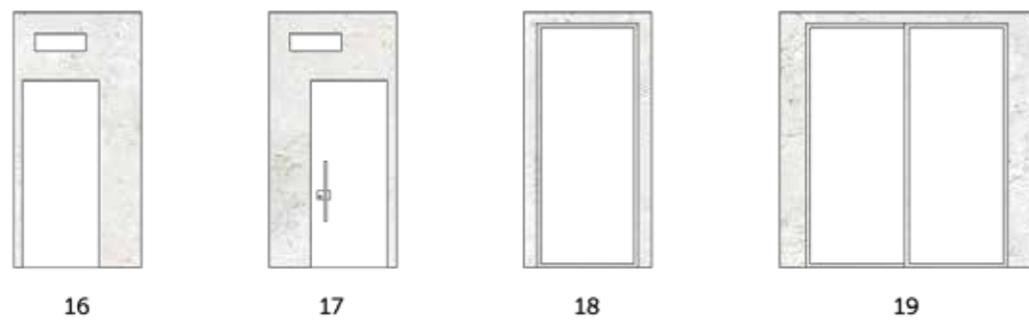
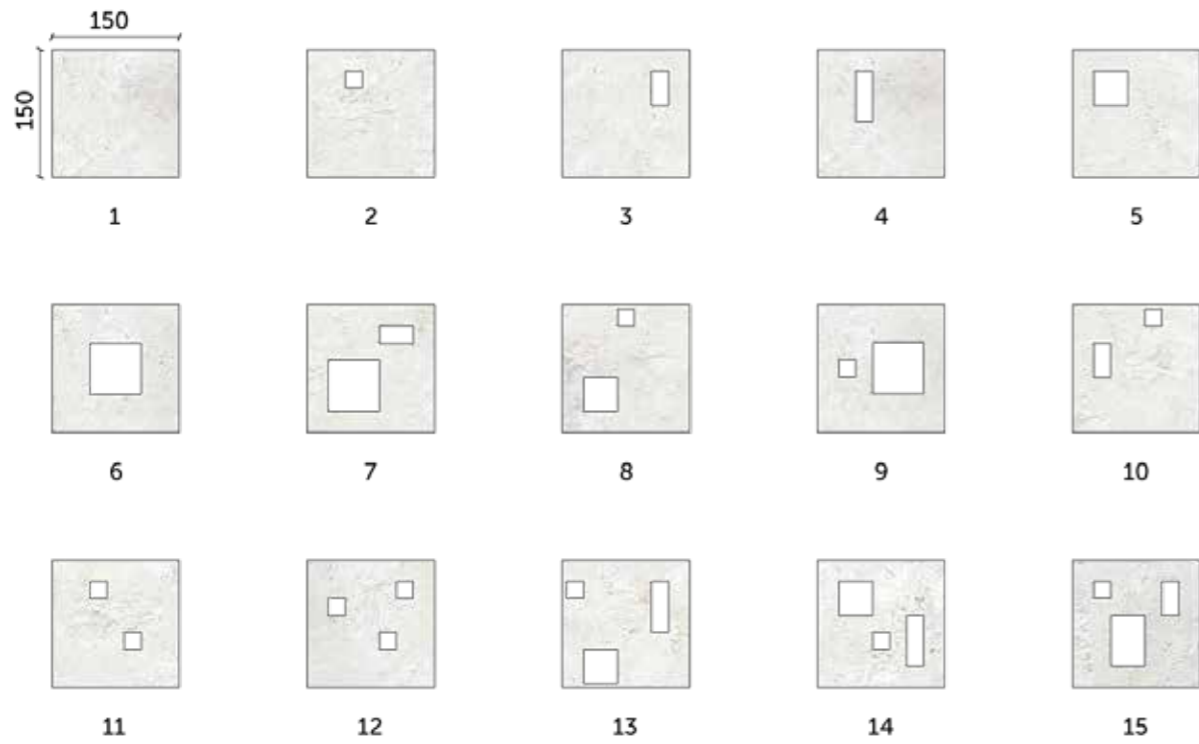
FIG. 63 - Chapelle du Ronchamp, Le Corbusier

Colored glass



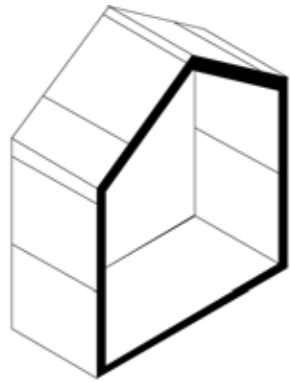
In this case colored glass is used as metaphors to represent the multitudes of biodiversity. The concept is to create an abstract space in which crystals are slot in. From the outside the perceived feeling is of something precious while on the inside the effect is almost color-field like, as Rothko with his colorfield paintings. A clear reference is to Le Corbusier with Ronchamp, Kengo Kuma architecture and Gaudi with La Sagrada Família where a white sacred-like space is colored and shaped with and by light.

Abaco - panels

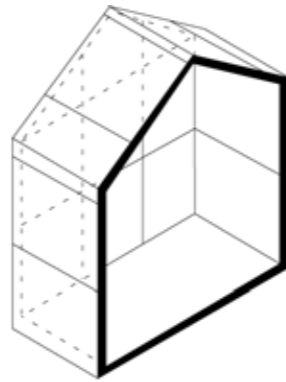


1:100

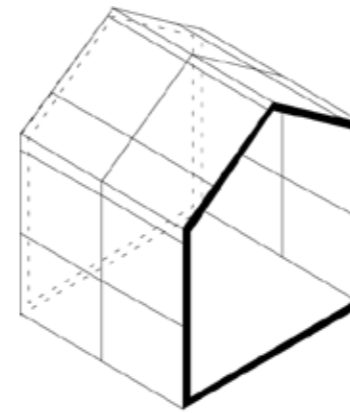
Abaco - modules



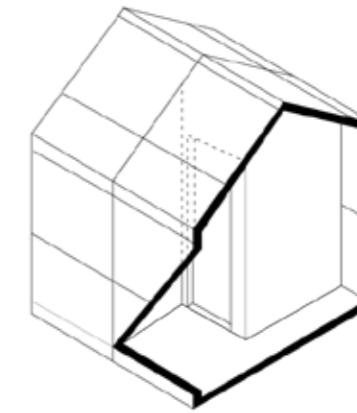
A module
single open on both sides



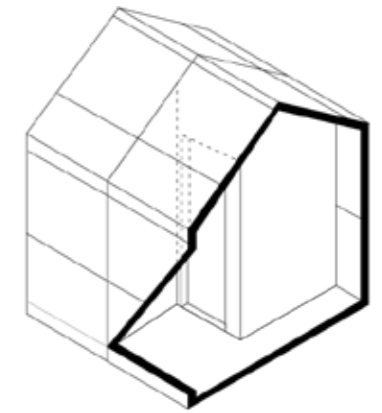
B module
single closed on one side



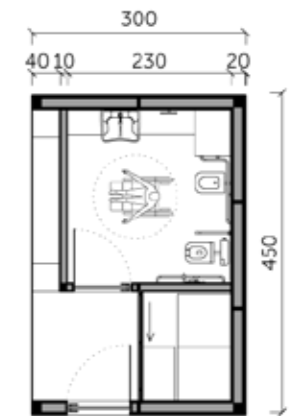
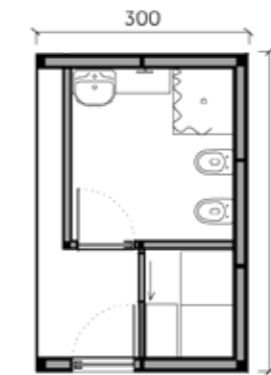
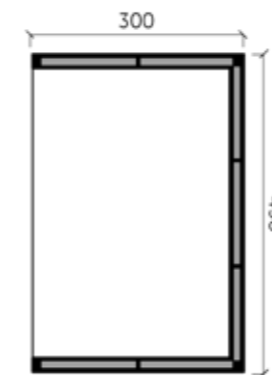
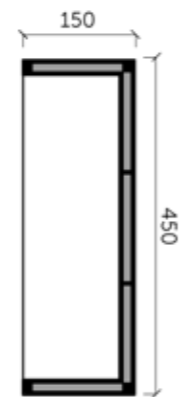
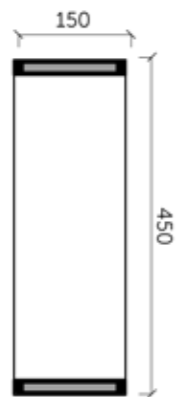
C module
double closed on one side



D1 module
double closed on one side
with bathroom and water collection



D2 module
double closed on one side
with disabled bathroom
and water collection



1:100

Visitor Center

masterplan and functional areas



VISITOR CENTER



PAVILION



EMPLOYEES
PARKING

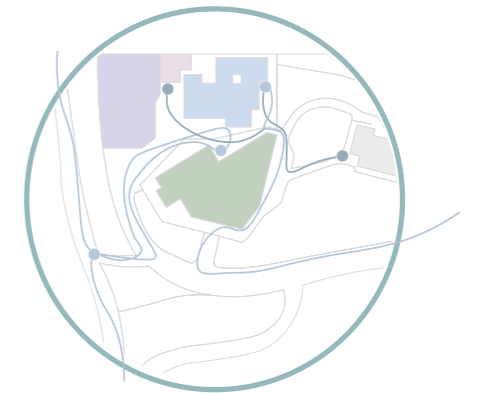


TOILETS

fluxes



THE FAMILY



THE EXPORER



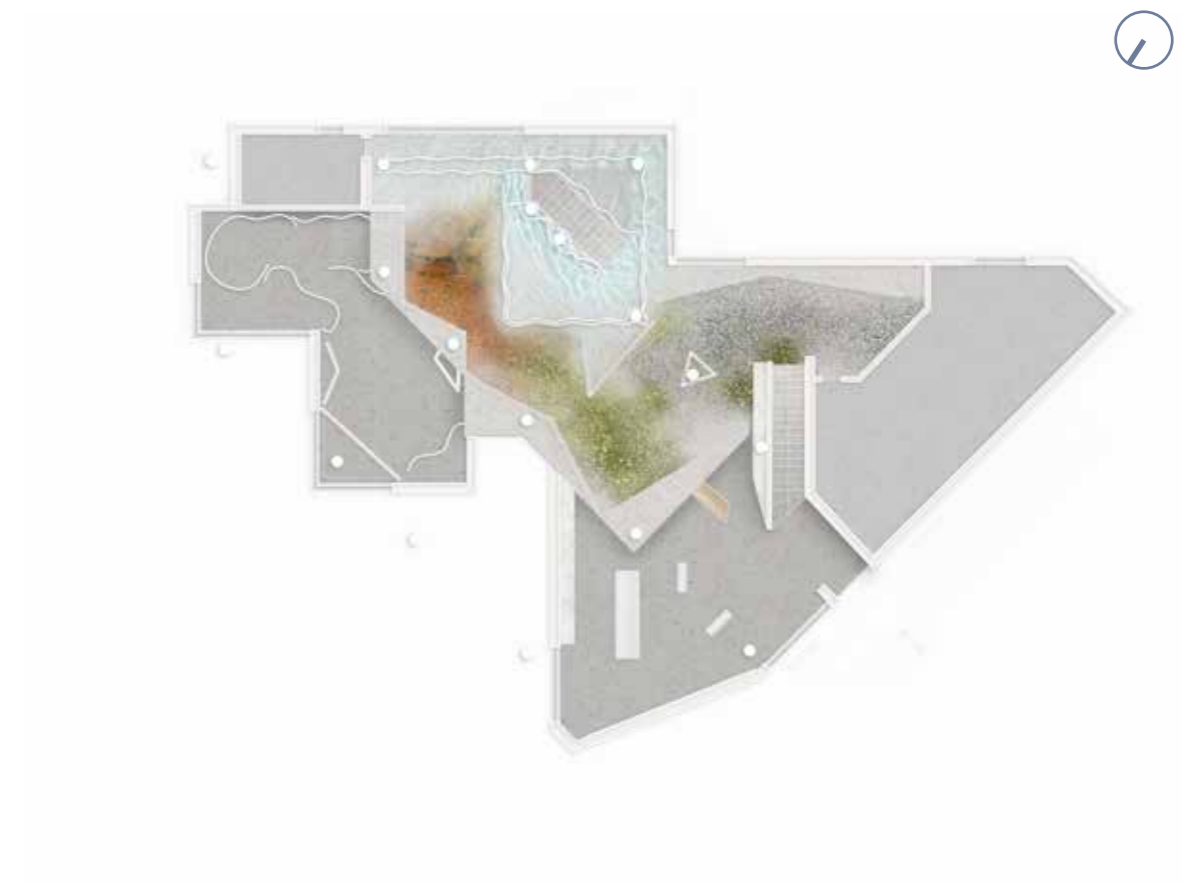
THE RESEARCHER

Visitor Center

floorplan _ first floor



floorplan _ second floor

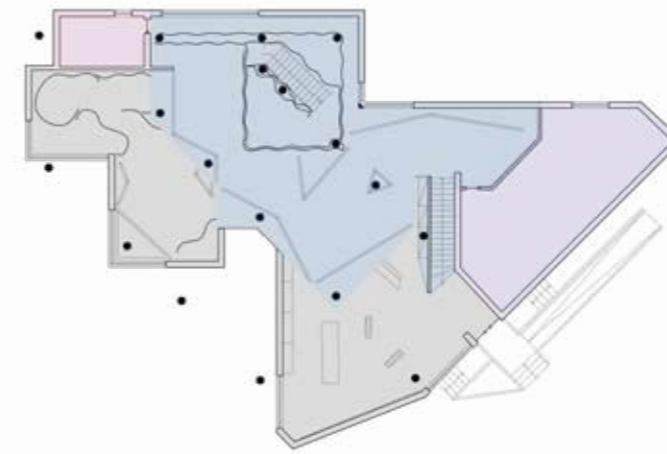


Visitor Center

floorplan _ first floor functions



floorplan _ second floor functions



- reception + lobby
- store (local products)
- store (experiences)
- backpack deposit / shoe rent
- exhibition
- MNP model + overlook
- Majambiente offices
- warehouse
- services (employees)
- ground floor



façade east

2145

172



façade south

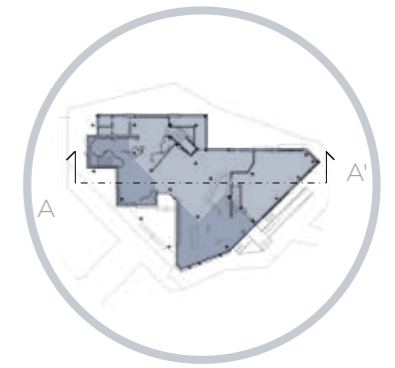
3200

173

0 1 3 5

Visitor Center

section A-A'



3200

1:100

PAVILION

where sustainability is
discovered

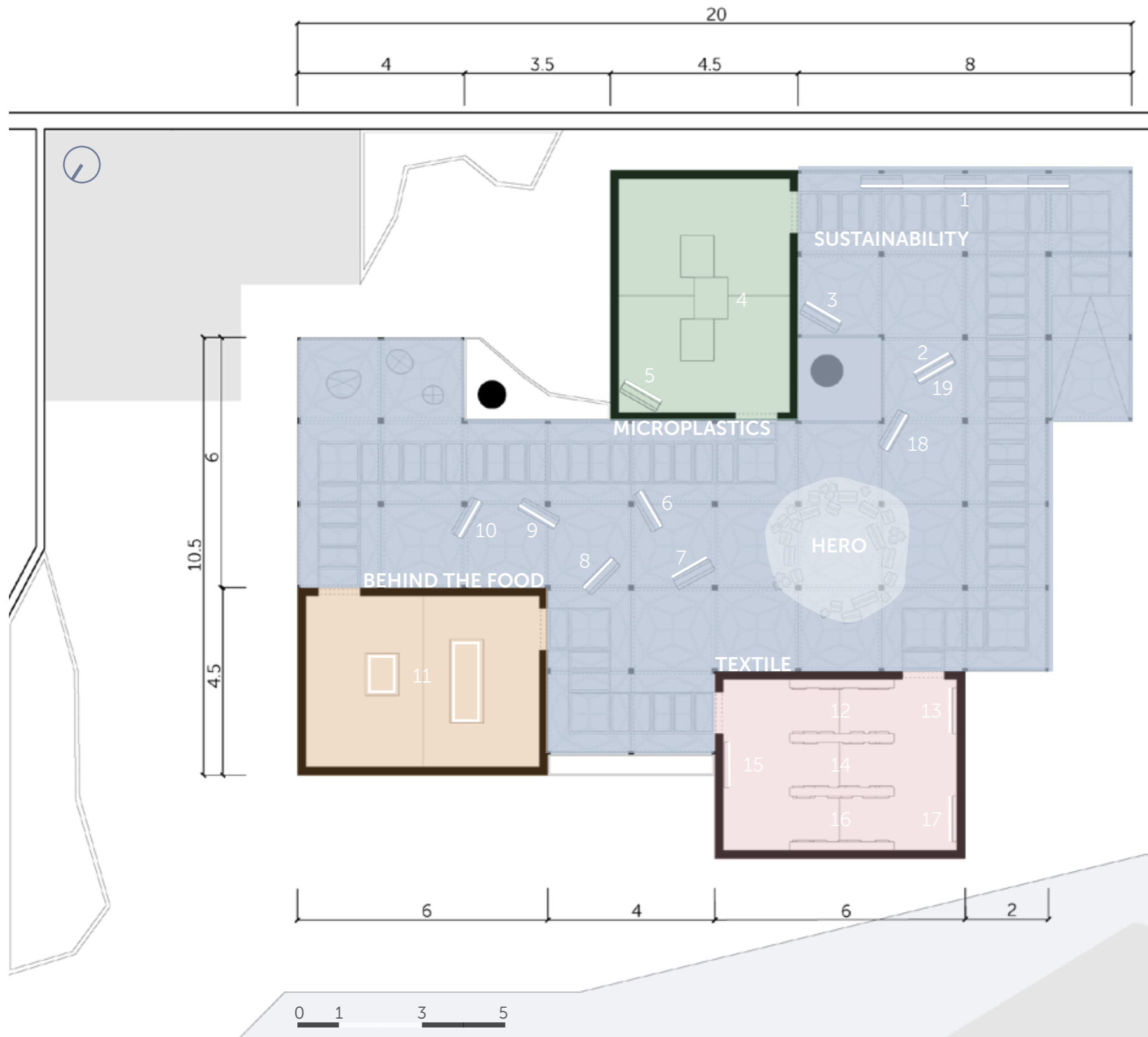


PAVILION

plan

-  COLORED GLASS
-  MYCELIUM
-  TERRAZZO VENEZIANO
-  BAMBOO
-  BIFACIAL SOLAR CELLS
-  WHITE LAMINATE





- 1. which are our energy resources and which ones are sustainable
- 2. pavilion map, materials and energetic system
- 3. mycelium
- 4. microplastics
- 5. greenwashing
- 6. climate change in Italy
- 7. drought
- 8. biodiversity
- 9. ecosystem services
- 10. the beech forest
- 11. behind the food
- 12. recycled fiber
- 13. tools to catch microplastics
- 14. natural fiber
- 15. fashion sustainable certifications
- 16. artificial fiber
- 17. new fibers
- 18. how much people choices are impact on Net 0
- 19. "The greatest threat to our planet is the belief that someone else will save it." Robert Swan

PAVILION

façade



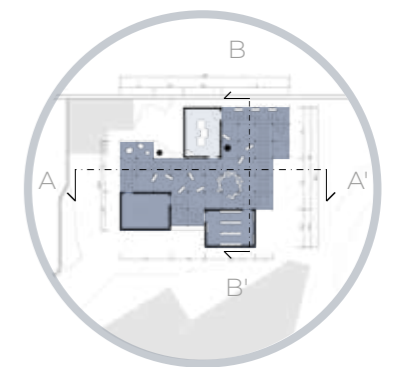
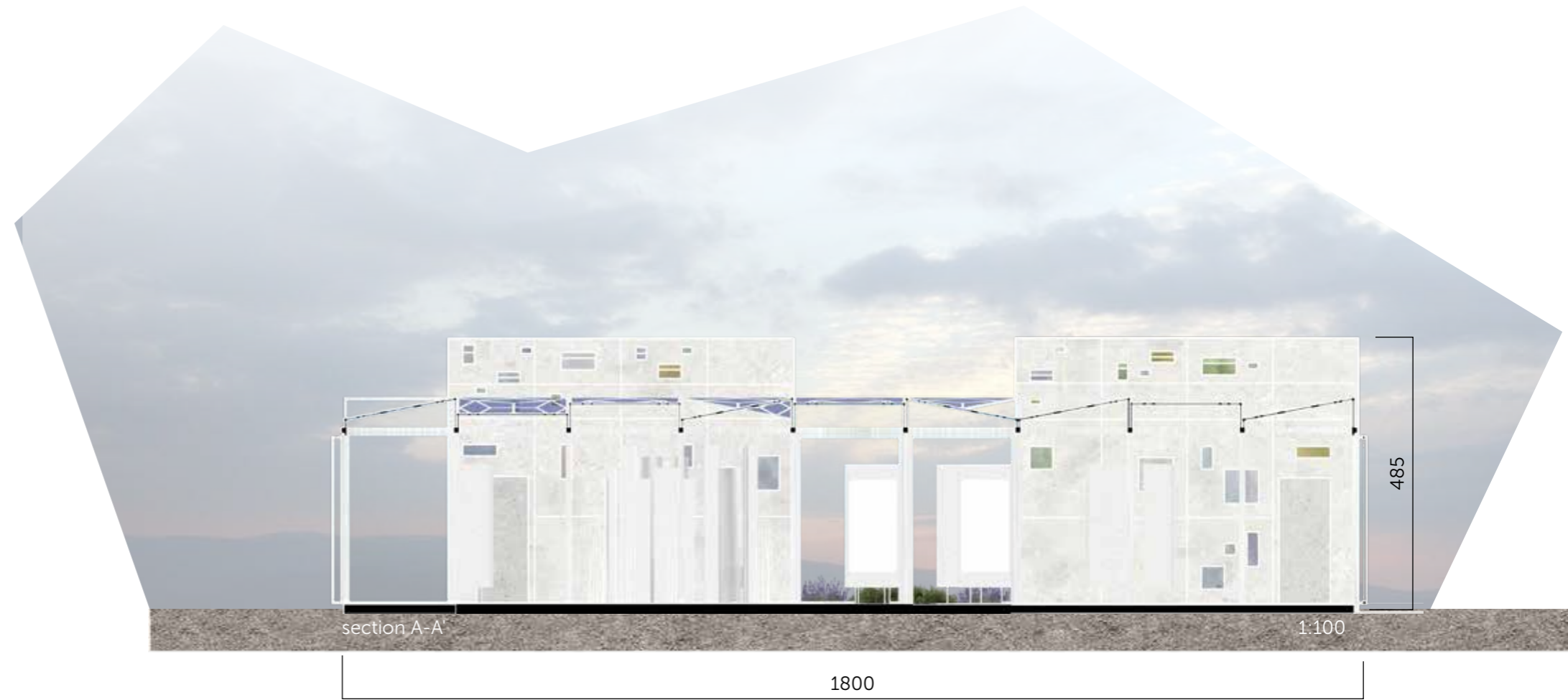
PAVILION

façade



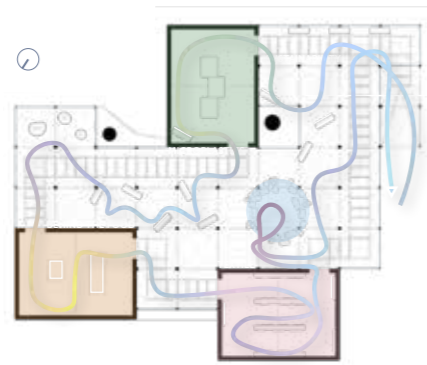
PAVILION

sections

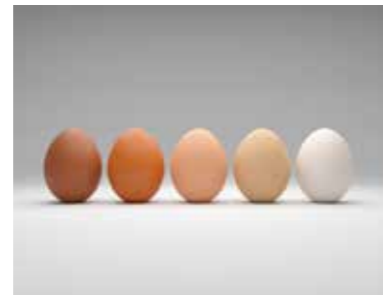


Pavilion

MODULES



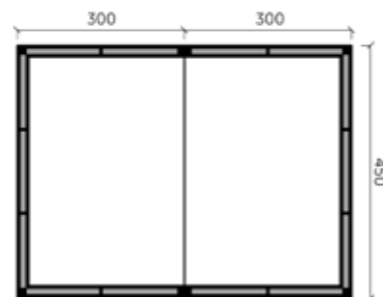
MICROPLASTICS



BEHIND THE FOOD



TEXTILE

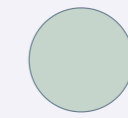


C + C
modules



SUSTAINABILITY

This is the function that occupies the majority of the space and connects everything. In this space *sustainability is revealed* in all its facets and the user can discover more about different topics that relates to sustainability and climate change. Possibly on a local scale so to indeed *bridge the gap*.



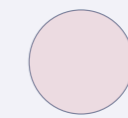
MICROPLASTICS

In this first pavilion an interactive table will display through projectors contents and infographics related to *microplastics*. In this pavilion is also present an interactive display where more about *green washing* is explained.



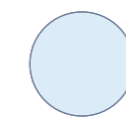
BEHIND THE
FOOD

The second pavilion is dedicated to the food. Food production emits about 40% of the total emissions and a good part of it in industrialized countries is wasted. The aim is to reveal how much energy, water, soil and emissions are behind some foods so to create a better awareness regarding our daily choices



TEXTILE

In this last pavilion all about textile is explained, from the difference between organic labelled textile and non to the differences between recycled, artificial and natural textile. There are also shown info on how to take care of our clothing reducing the impact on the planet.



HERO

This is the last part of the pavilion, almost hidden. The idea is that after gaining awareness and collecting all the tools, all the powers that we have to change, the last step is up to us. To be the hero, the user has to find it, has to take that step further and go over the regular path. Once inside the user will find the hero: inside a very small space of mirrors and lights, the user will see his/her reflection.

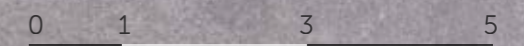
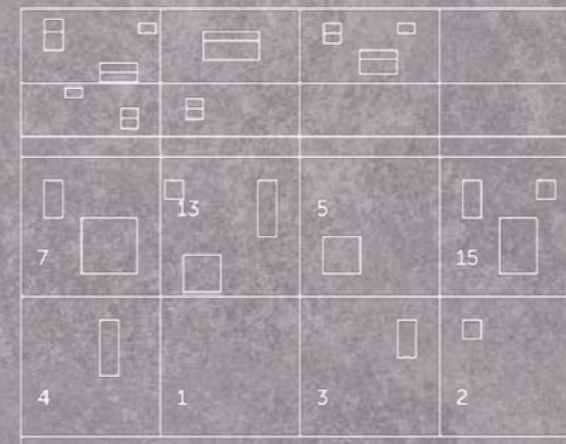
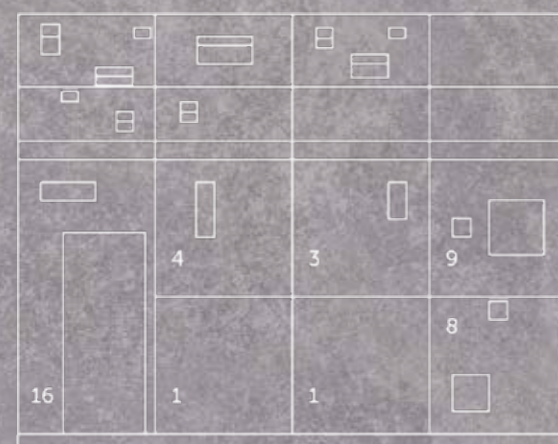
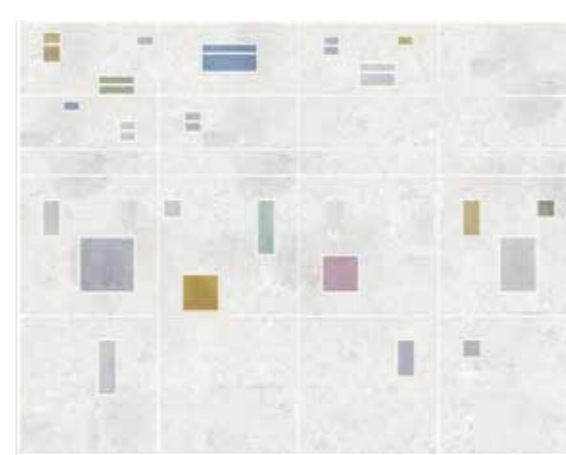
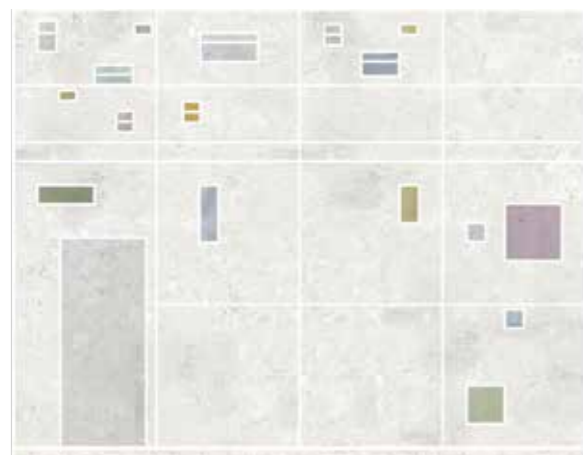
PAVILION modules

MICROPLASTICS



PAVILION modules

MICROPLASTICS



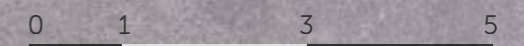
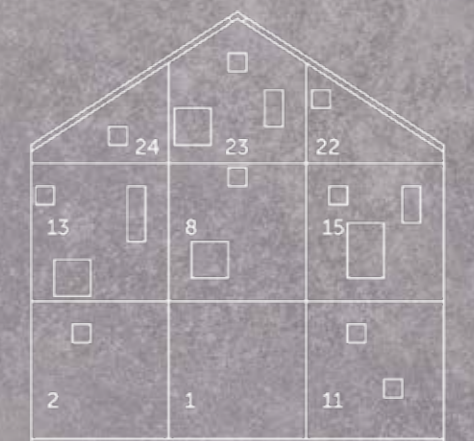
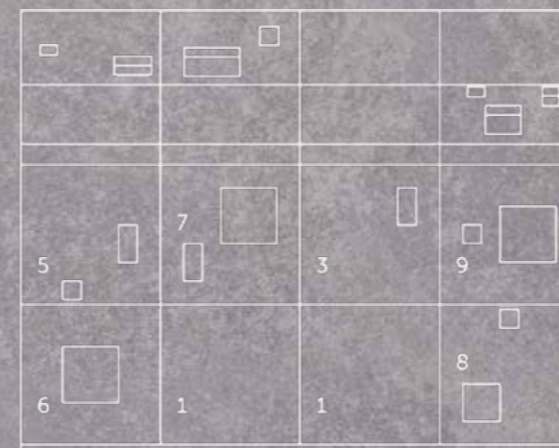
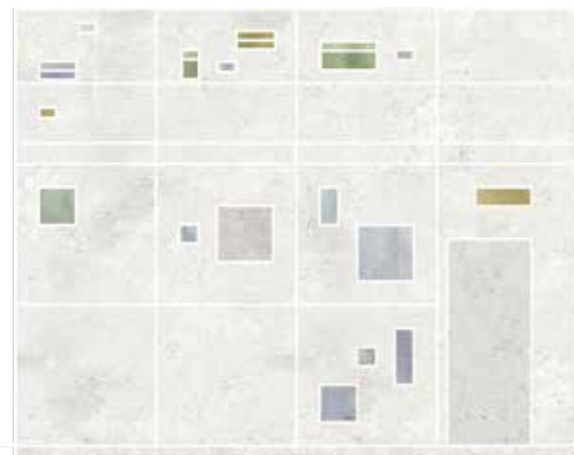
PAVILION modules

BEHIND THE FOOD



PAVILION modules

BEHIND THE FOOD



PAVILION modules

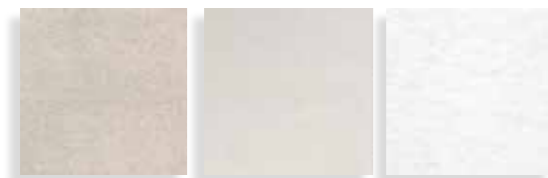
TEXTILE



PAVILION modules

TEXTILE

ARTIFICIAL



MODAL

ORANGE

VISCOSE



VEGEA®

LYOCELL

TENCELL

BAMBOO

NATURAL



RUBBER

TIROLWOOL®

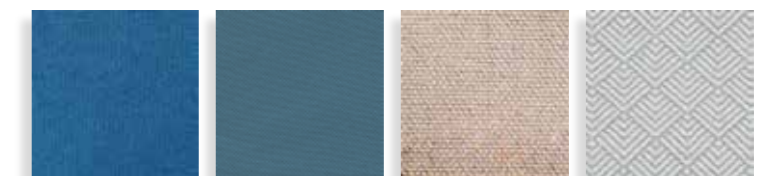
WOOL

NETTLE

RAMIE

SILK

RECYCLED



NEW LIFE®

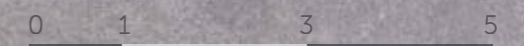
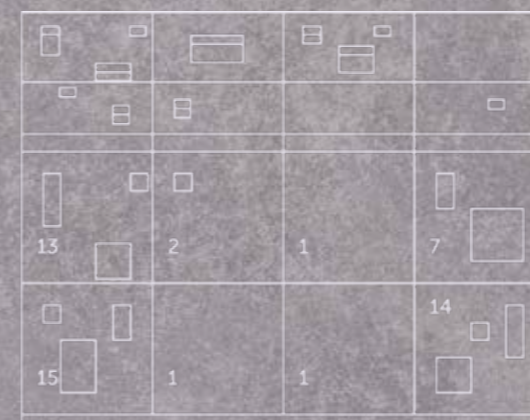
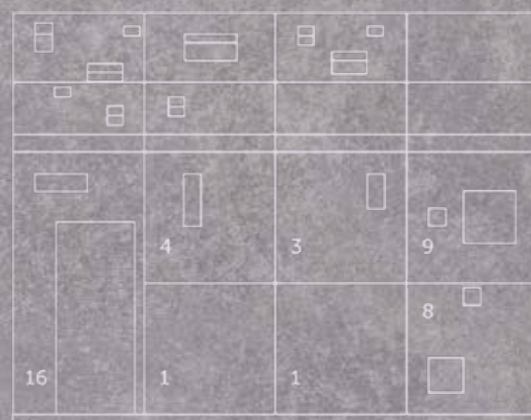
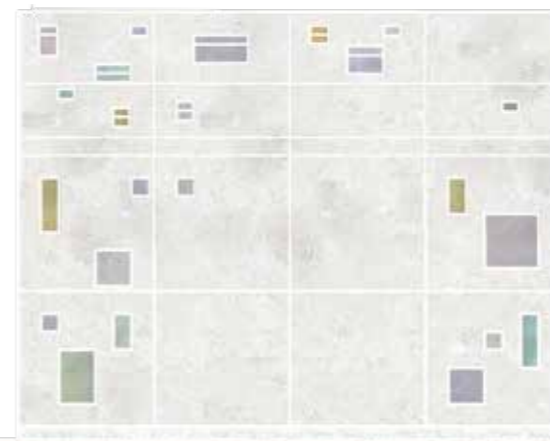
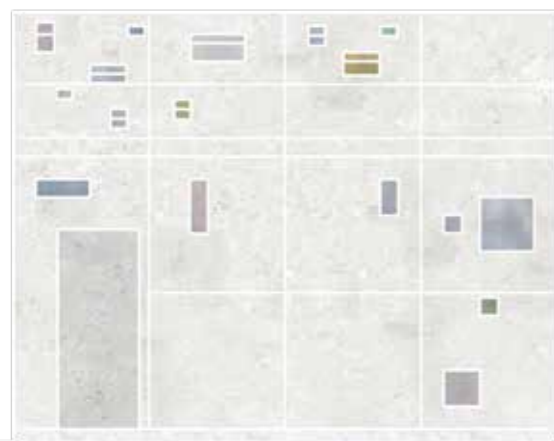
RECYCLED

RECYCLED
COTTON

ECONYL

PAVILION modules

TEXTILE



PAVILION modules

view from the entrance



PAVILION modules

render



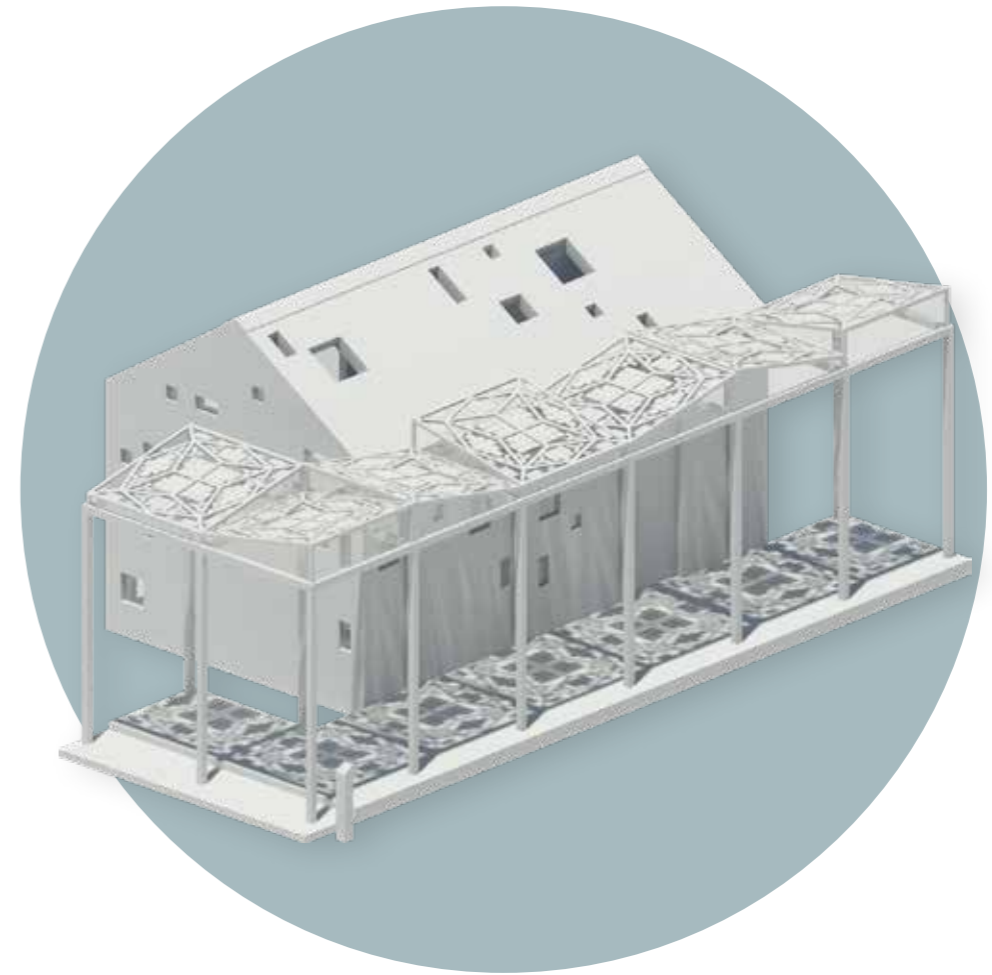
PAVILION

render



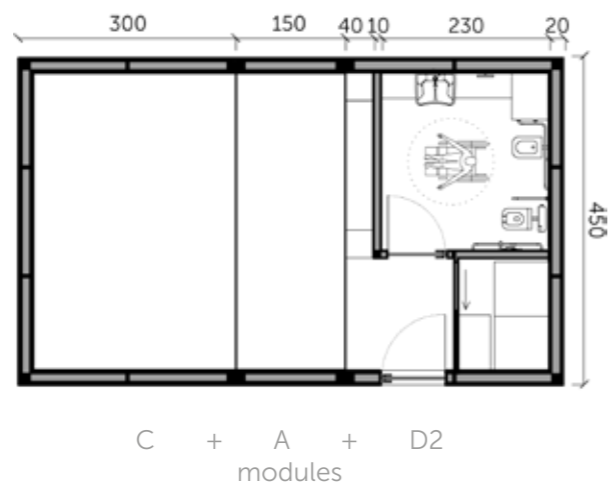
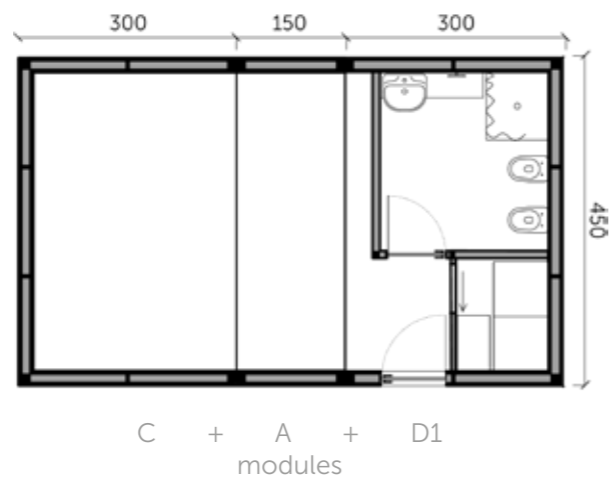
VIEWPORT

where sustainability is
experienced



VIEWPORT

floor plan



MYCELIUM



BAMBOO



TERRAZZO
VENEZIANO



WHITE
LAMINATE



COLORED GLASS



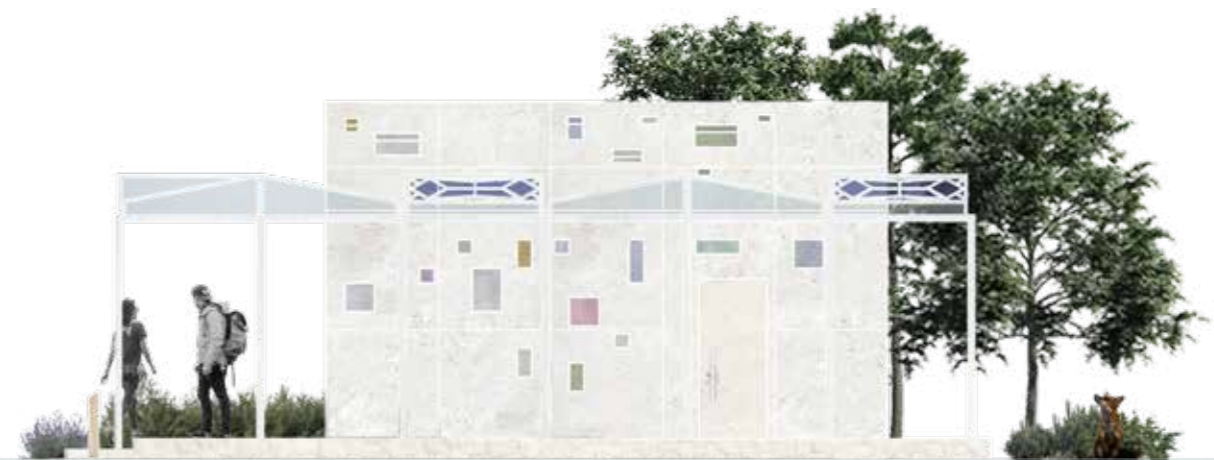
VIEWPORT

façade a



214

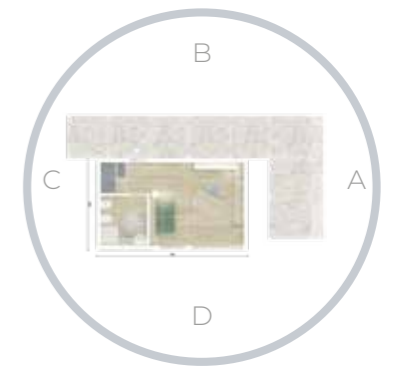
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1:100



215



VIEWPORT

façade c



216

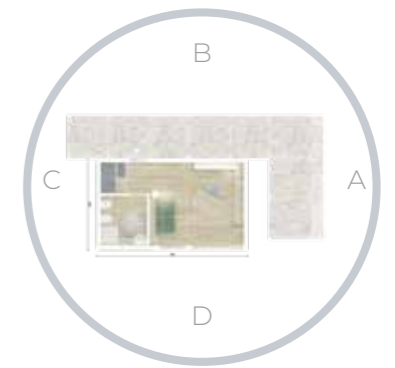
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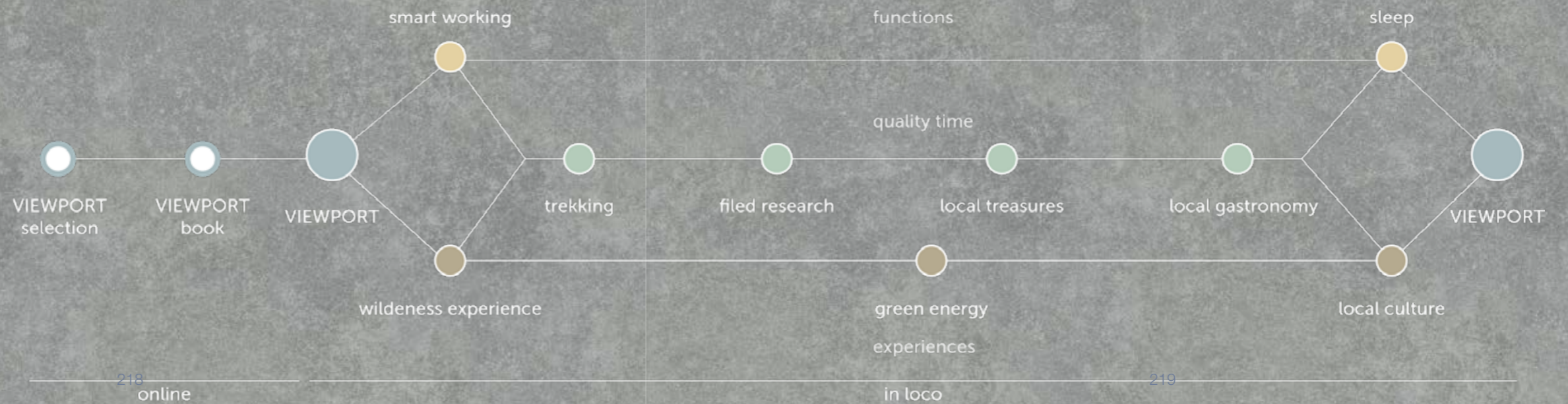
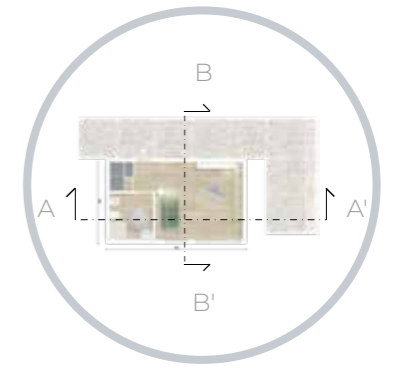
217



VIEWPORT

section A-A'

section B-B'



VIEWPORT

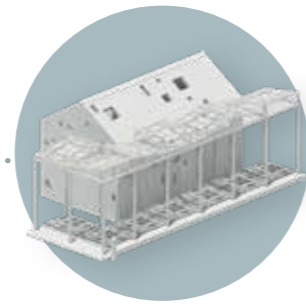
section A-A'



select the area
you would like to explore



book viewport



unlock viewport
with the QR code



discover the local culture
and the local gastronomy



explore the MNP paths



enjoy a place where work



sleep under the night sky



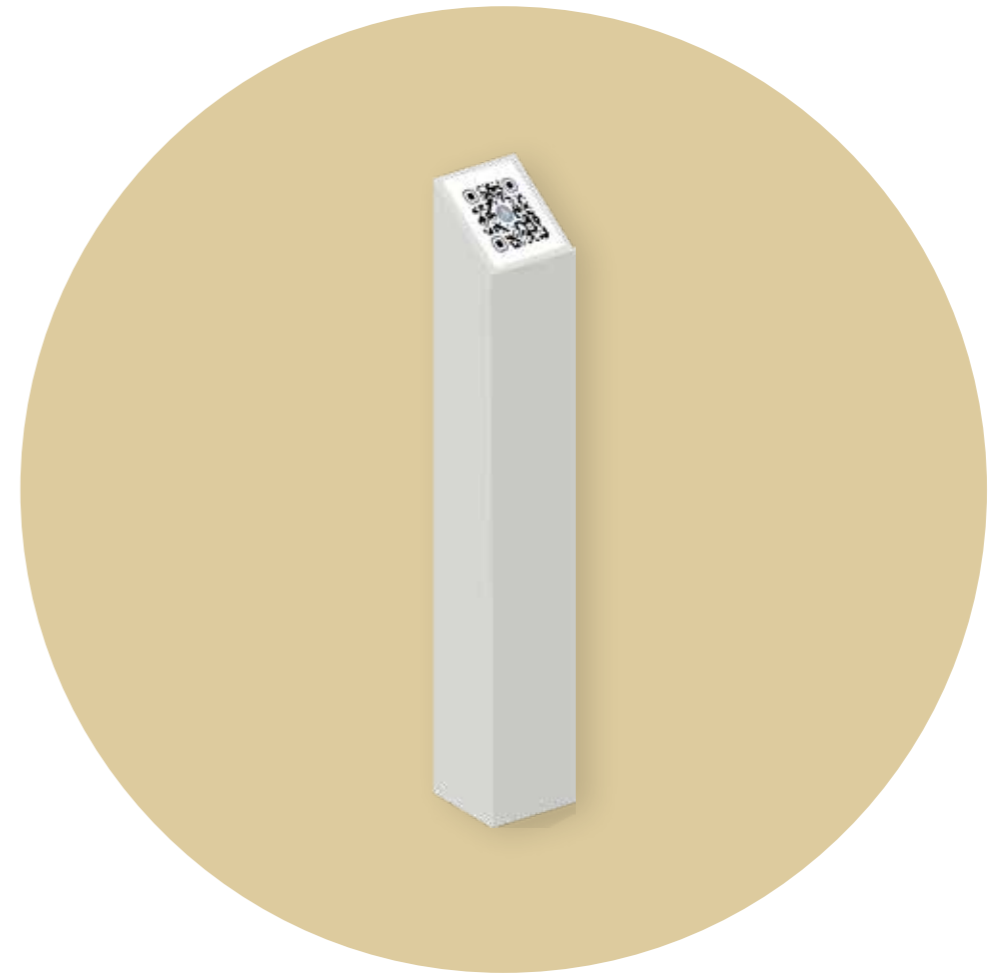
...until the end of your journey



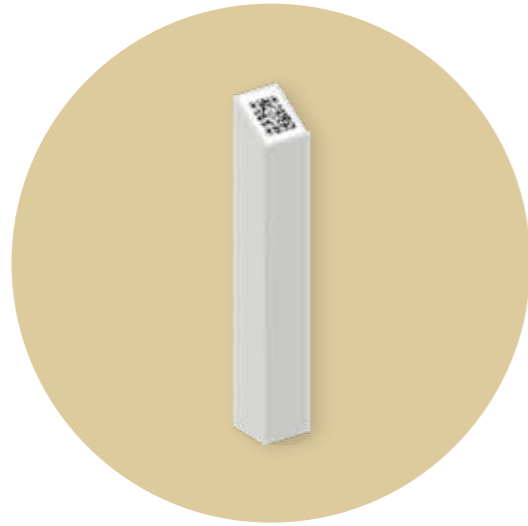


GUIDE

where sustainability is
bluit



GUIDE



EXPANSIONS



BOTANIC



SUSTAINABILITY



NARRATED PATH



ENERGY

GUIDE

storyboard



iNaturalist

This tool linked to the app iNaturalist, allows the user to have a deeper knowledge on the natural context they are in. More specifically require a direct involvement for which the user by using the app and taking pictures of the flora not only has access on an international scientific database, but its picture completes and ad-journes the database itself.



Narrated path

This "expansion" is designed to enhance accessibility paths. Where the NP has already in function path for disabled people, this tool will increase the experience: more specifically for people that have sight problem, this tool will start a narrative experience that will help describe and see the surrounding forest.



Energy

This "expansion" explains the functioning of the energetic system of both pavilion and viewpoint. It reveals the data behind green energy.



Sustainability

This "expansion" is designed to show sustainable examples. It comprises processes involving local nature, but also local craftsmanship and culture, indeed revealing how sustainability is a border field not just limited to the natural sphere.

COCLUSIONS

This journey has started with the will to contribute as much as I personally can to sustainability. The first question that has been raised was indeed knowing what really is sustainability. So in the first part of this work the research is focused on making the concept of sustainability clear and build a common base from which develop the project.

Sustainability is about relations. It implies the willingly interaction between two or more parts. This means acknowledgment by both parts and here is the first not granted thing: sustainability is not solely about the environment, it implies also the social and economic sphere, but even more, the cultural sphere. Without it, nothing can be seriously achieved.

In the second part of the research national parks and visitor center have been introduced. The first with the scope of study and preserve nature, while the second with the final aim to introduce people to nature. Its importance has been consecrated with the Mission 66 where the archetype of the visitor center has been formalized as well as its importance as buffering-behaviour zone between the urbanized environment and a national park.

Even if at this point a good part of the equation was set, there is still a piece missing: mankind. What people think about climate change has been the focus of the third chapter. The astonishing data is that even though people have a massive impact towards Net 0, the awareness of this "power" is close to zero. The climate change, appears to be an emergency, but an emergency in which people feel powerless, considering accountable mainly governments and companies.

This gap is understandable and due to multiple reasons, from lack of a "sustainable culture" to a psychological rejection (sustainability is indeed on taking responsibilities for prohibitive lifestyles and for our own choices), to a difficulty in understanding reports from the scientific community.

This work starts so from the assumption that we all need to be aware of the impact of our choices and start to have a real impact on the climate change. Following this line, if national parks as well as the other IUCN PAs, have the duty to protect the environment, right now one of the most impellent necessities is to openly deliberately speak about sustainability. The idea is to create a common background thanks to which people can have a full picture on sustainability, fill the gap or the misconception on the topic and understand how a simple choice can mean a lot.

Knowledge is essential to create an emotional bond and make people care about something. So the concept is to display informations and make people experience wilderness in order to enhance the perception of the climate change and stimulate them to take action. The project is developed on four elements on a polar axis: the visitor center, the pavilion, the guide and viewport. At the pole of the axis there are knowledge and experience.

The visitor center is identified as the place of pure knowledge. According with its archetype, the visitor center aim is to show the surrounding context, provide information and services aimed to explore the territory. The interior design focuses on the lobby where the reception has the main role followed by the store where a selection of local

products made inside the national park are exposed. The store has also a virtual section where is possible book experiences where is shown how the local products are made according with the secular traditions and know-how that nowadays survive.

The exhibition is thought to be as immersive as possible: video installation will guide the visitor in the discovery of the different habitats.

Following there is the pavilion where knowledge starts to blend with passive and direct experience. The pavilion main lines are three: build a general knowledge on sustainability through infographics as geographically close as possible so to enhance the involvement and make feel climate change closer. Then there are the mini-pavilions where three themes are analyzed: microplastics, beyond the food and textile. The idea here is to provide cultural tool to understand the differences in terms of impact between the products we all choose. By doing that awareness is raised and more conscious, less harmful choices can be done. Once acquired the power to actively being able to discriminate, the user arrives to the last area: the hero. At the end of the pavilion there is a secluded mirrored space where the user will realize that the true hero, the one that can save the planet is itself.

From the modules that composes the pavilion is possible to assemble viewport.

Viewport is a single seasonal pavilion which aim is to allow smartworkers and researcher to work from a special spot completely immersed in nature, energetic self-sufficient and close to paths or site of interest. This structure is not thought to be completely autonomous, therefore is located close to the urban areas where the user will find local restaurants and experience the gastronomy.

The idea is to offer a place where work in a more relaxed and stimulant context (as Kaplans theorized) and in a short amount of time being able to do activities outdoor or visit sites of interest. This element is at the very end of the axis and offers pure experience.

To contour the previous elements there is the Guide. The guide has different QR codes that offer the user more in depth experience explaining for example how the energy system works. It can be used for multiple purposes, one of which can be inclusivity. MNP has already a series of inclusive paths, for blind people and non an interesting function is the *narrated path*, where the experience is completed by an audio that describes the surrounding natural context. Another interesting function, lies in the link with iNaturalist an application where the user connects with the scientific communities and contributes to it. By taking a picture of a plant the user have access to its database and at the same time, signal its presence in a certain spot helping researcher collect data.

A special attention has been given to the modules design. The elements are designed so to be assembled in multiple ways so to respond to a number of functions and space requirements. The base is made by modules made by natural compostable materials, with an extensive use of mycelium making its emission close to zero. This allows not only to have a cradle to cradle system, but also to self-produce the panels at need.

Everything in this work, directly and indirectly speaks about sustainability and aims to make regular people experience it first hand.

This project is meant to cover the basics of sustainability and demonstrate that is more accessible than what people generally think. Building a proper culture and let sustainability permeate our daily life is essential to achieve Net 0 and is incredibly important that each one of us, according with our talent and sensibility, take a step forward and start the change.

CASE STUDIES

PineCube

pinecube
maiella national park

william santoleri
2013

This project was born from the idea of offering to people the possibility to experience the natural environment of the Maiella National Park from an exclusive point of view. The PineCube, in fact, is an installation that aims to offer a special observation spot. Completely integrated with the natural environment, is an elevated cube with large openings that allows the tourist to see the rich local wildlife in a very suggestive spot of the park, while it changes through the day and the seasons.

The experience is offered in multiple solutions: from the photographic safari, to an overnight experience enriched with a taste of the most traditional local product handmade by the farmers that live there.

In this project is not only proposed another way of experiencing the natural environment without overload the ecosystem, but it includes multiple aspects of the local culture, fully representing what is main feature of the National park: the coexistence of humans and nature. A relationship that has shaped both sides, designing the grasslands and defining the flavors.

FIG. 1 - PineCube, William Santoleri, 2013



FIG. 4 - PineCube, William Santoleri, 2013



FIG. 3 - PineCube, William Santoleri, 2013



FIG. 2 - PineCube, William Santoleri, 2013

Cabin 019

Cabin 019
žalvariai, lithuania

ŠA atelier
(Šarkauskaiarchitectureatelier)
2019
23 mq

The main request behind this building project was to create something that could be reproductive and be able to adapt to different contexts. The search for a solution led the architects to the design of a modular system. The system defines a structure as a set of individual elements consisting of columns, floors, walls, roofs, etc. In such a way the building can be transported in assembled or individual elements depending on the situation. The modular system allows the construction of different sizes and configurations of the building. At the base design stage, it is unknown where the building will appear.

The only known context is climate elements such as sun, wind, and water. As a result, the roof of the cabin looks like floating in the wind. It also protects the structure from the heat of the sun and has a shape that collects rainwater, pours it from one plane to another, and exhibits water flow. The building adapts to natural terrain by standing on slender legs of variable heights.

FIG. 5 - Cabin 109, ŠA atelier, 2019



FIG. 7 - Cabin 109, ŠA atelier, 2019



FIG. 6 - Cabin 109, ŠA atelier, 2019

FIG. 8 - Cabin 109, ŠA atelier, 2019



Prefabricated Pavilion Prototype

prefabricated pavilion prototype
madrid, spain

ayllón . parada . deandrés . arquitectos
2019

This prefabricated pavilion is made to be flexible and easily adaptable thanks to its modular system. Based on a standar module and few variations, it allows the use to dispose of multiple, almost infinite, configurations according to requirements of every different project, from a large museum hall to a small sales office, including different middle combinations.

One of the most interesting feature of this project is the thermal insulation. Due to its undetermined location, the pavilion must be able to be built in any plot regardless of its orientation, climate or topography. To do this, the pavilion is supported on the ground by an adjustable surface foundation system. Likewise, it is conceived from an isotropic condition of its envelope, allowing it to respond to the most unfavorable climatic situations within the country.



FIG. 10 - prefabricated pavilion prototype, insulation, a. p. d. arquitectos, 2019



FIG. 9 - prefabricated pavilion prototype, a. p. d. arquitectos, 2019

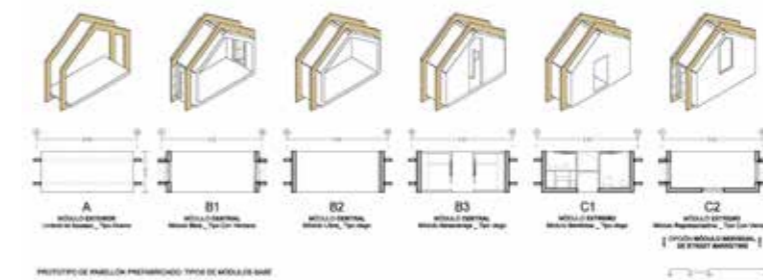


FIG. 11 - prefabricated pavilion prototype, modules, a. p. d. arquitectos, 2019



FIG. 12 - prefabricated pavilion prototype, a. p. d. arquitectos, 2019

Living garden

living garden
maiella national park

MAD architects
2021

Beijing-based MAD Architects recently completed its “home of the future” prototype, a net-zero energy pavilion that aims to blur the lines between indoor and outdoor living. Created in collaboration with Chinese renewable energy company Hanergy, the “Living Garden” features a curvaceous, latticed roof topped with Hanergy solar panels that are angled for optimal solar conditions and generate enough electricity to satisfy the daily needs of a household of three. The futuristic structure was installed as part of the 2018 China House Vision Exhibition located next to the Bird’s Nest Stadium inside Beijing’s Olympic Park

Conceived as an experimental model, “Living Garden” does not have much in common with a traditional house. Rather, the structure was built like an airy pavilion filled with lush green space and seating. The nature-inspired structure consists of three main parts: a series of angled solar panels, a latticed timber roof structure and columns and various living spaces and gardens on the ground level. The grid-like roof is inset with translucent, waterproof glass to provide shelter from the rain. Hard angles were eschewed in favor of organic curves, while the addition of feathery grasses and trees help soften the overall look.

FIG. 13 - Living garden, © MAD architects, 2021



FIG. 15 - Living garden, © MAD architects, 2021



FIG. 14 - Living garden, © MAD architects, 2021



FIG. 16 - Living garden, © MAD architects, 2021

Museo nazionale scienza e tecnologia Leonardo Da Vinci

expositions
milano

At Museo nazionale scienza e tecnologia Leonardo Da Vinci there is a massive use of technology in storytelling so that sometimes it actually shapes the room, using all the surfaces to deliver content in a immersive way.

various
2021

In the Leonardo Rooms there are two example of this peculiar narrative style. In the first, where all the maritime projects are displayed, to make the user experience more immersive a projection on the floor makes it look like a flowing river creating a matching between the content and the context.

In the second room dedicated to Leonardo, two curved wall create a micro-space where a series of projection show Leonardo's drawings.

The third example of use of projectors is in the sustaonability section. The space was very small and so the interior was very linear with plain simple surfaces where projection where displayed. By touching them a sensor reacts and opens dedicated contents that are shown on the table. This interaction involves the visitor both actively and passively by changing the colors and the images on the surrounding environment.

FIG. 17 - Sustainability, © MNSTLdV



FIG. 18 - Sala Leonardo, © MNSTLdV

FIG. 20 - Sustainability, © MNSTLdV



FIG. 19 - Sala Leonardo, © MNSTLdV



iNaturalist

pinecube
maiella national park

william santoleri
2013

This app is supported by the scientific community and is based on a user-web able to produce, use and share knowledga about plants and animals.

Everyone can with a phone either seek information about a certain species or upload a picture and the position of a particular plant or insect. By using this mechanism scientists were able to create a virtual library of almost realtime reports from all over the world. The amount of data collected not only serves the community but helps monitoring the envionment and discover new things about it.

The other important feature that has not to be underestimated is the invol- vement that has with the user, making him/her take action and actively helping the community, feeling as part of a system. This enhances consciouness in sustainability, helps spread scientific knowledg to regular peole and created a concrete connection between the nature and people.

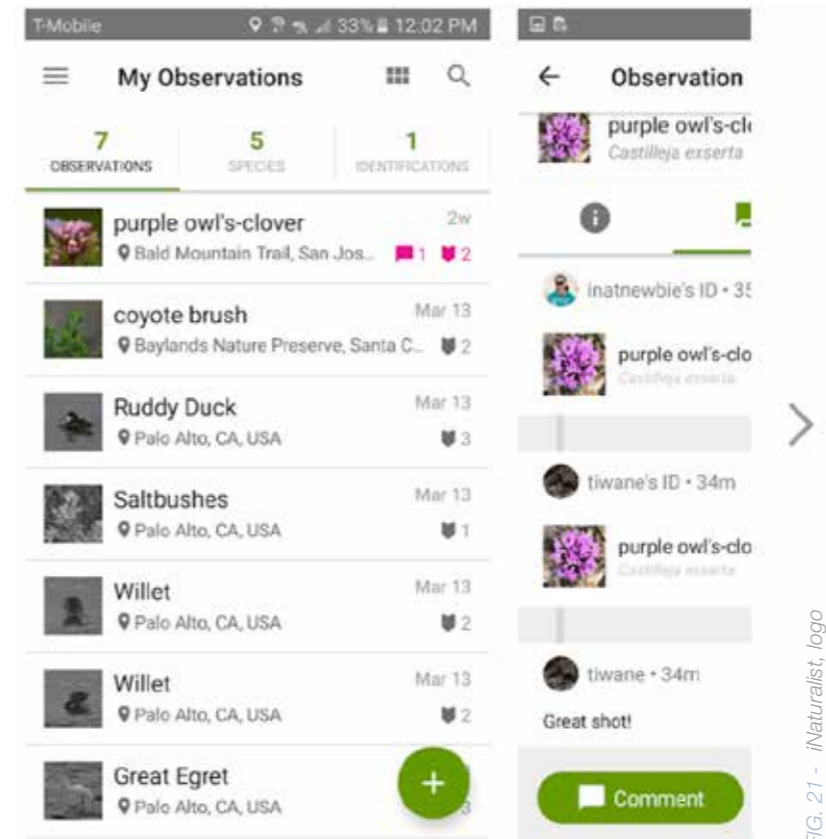
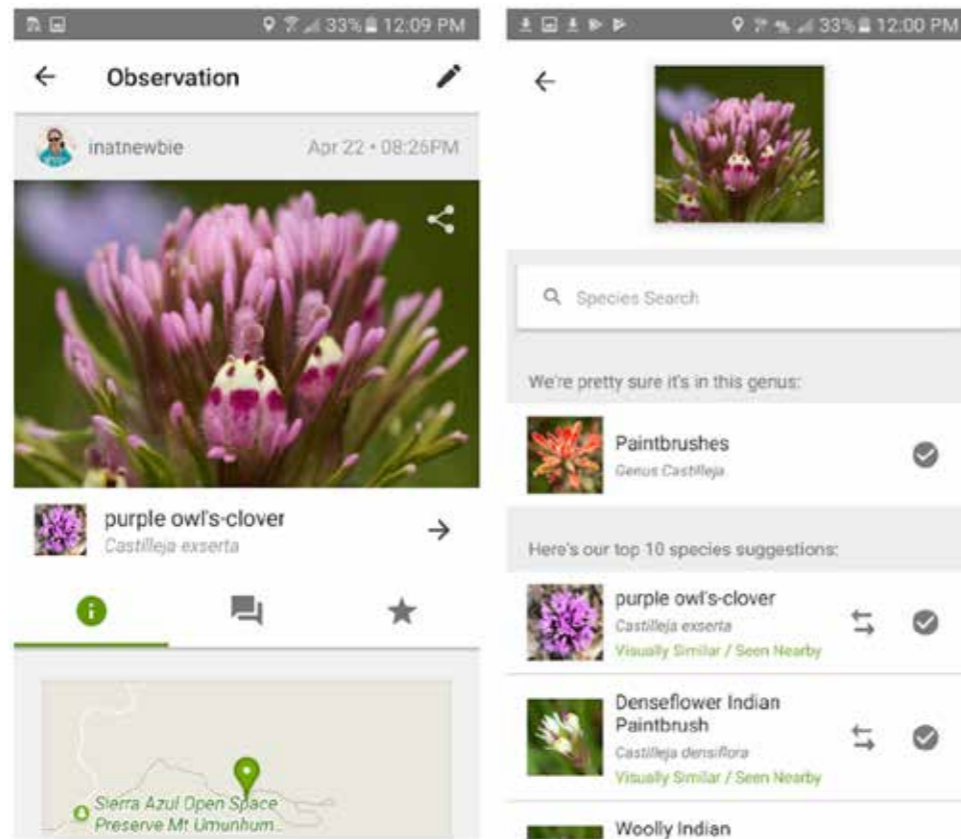


FIG. 22 - iNaturalist, logo



FIG. 21 - iNaturalist, logo

Mogu

mogu
acoustic panel

foresta
kite
wave
-

The panels developed by Mogu, offer a very interesting example of mycelium application. Mycelium is a natural material, specifically it is the vegetative stage of mushrooms. Once identified the proper strains of mycelium for the use needed, they are grown on pre-engineered substrates made of agro-industrial residues.

Among the properties of this material, beyond being circular and perfectly integrated in the natural lifecycle, one of the most interesting is that of taking the shape of the box in which is contained. This plasticity along with the possibility to control its colors, makes it suitable for interesting use in architecture.

It is modular, easy to fix, moisture proof, with a good fire rating and absorbs sound waves.

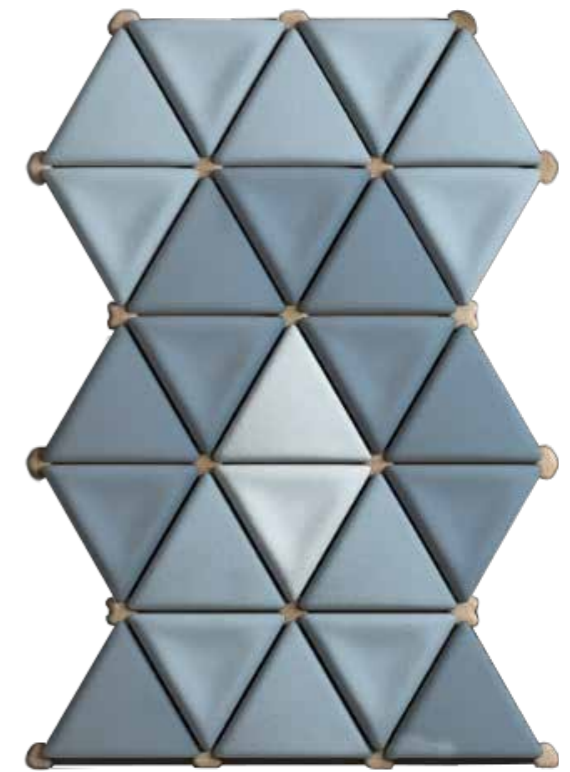
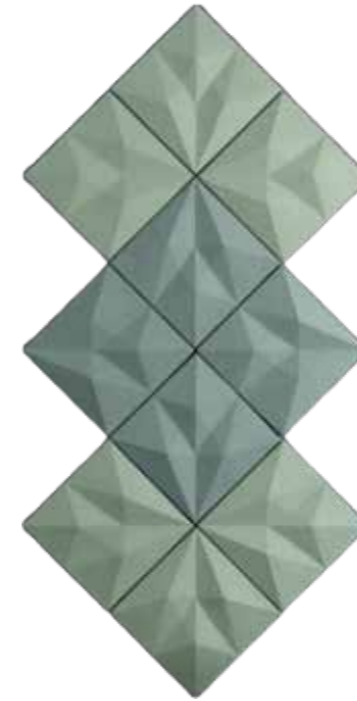


FIG. 23 - All the images from Domus web, Design Museum Dharavi, 2016

Hi-Fi Bricks

hi-fi bricks
MoMA, ny

In this installation for the Venice Biennale, Studio Ossidiana explores shapes and texture able to form an urban bubble in which humans and birds meet and interact.

david benjamin - the living
+ ecovative
2014

The interesting part is in the development of their research in building geometric shapes, able to define an urban environment settled to be cohabited by multiple species at the same time. The geometric shapes, in fact, play with solid surfaces, textures and sticks/totem, able to define different structures, all with a common narrative.

This approach has been previously tested for Horismos.

Horismos is an urban installation for an abstract kids playground. The main idea is based on theories of the philosopher and teacher Rob Withagen, according to which the playgrounds must be "open works", which do not dictate precise actions, but leave freedom of discovery.

The result is a series of organic, abstract geometric waves-like shapes, in different green hues, built mainly in concrete with terrazzo insertions. The purpose is to have kids exploring it, feel the different textures and use it according to their imagination.

The interesting part of the Studio Ossidiana works is the geometrical abstraction. Even though it is apparently just merely able to create cold environment, instead it defines a free canvas in which there is left plenty of space for interaction and in which people can feel free to explore.



FIG. 24 - Platform for humans and birds, Ossidiana studio, photo by R. De Vecchi, 2021



FIG. 25 - Platform for humans and birds, Ossidiana studio, photo by R. De Vecchi, 2021



The Growing Pavilion

the growing pavilion
acoustic panel

pascal leboucq
+ krown design
+ biobased creations
2019

The panels developed by Mogu, offer a very interesting example of mycelium application. Mycelium is a natural material, specifically it is the vegetative stage of mushrooms. Once identified the proper strains of mycelium for the use needed, they are grown on pre-engineered substrates made of agro-industrial residues.

Among the properties of this material, beyond being circular and perfectly integrated in the natural lifecycle, one of the most interesting is that of taking the shape of the box in which is contained. This plasticity along with the possibility to control its colors, makes it suitable for interesting use in architecture.

It is modular, easy to fix, moisture proof, with a good fire rating and absorbs sound waves.

FIG. 26 - All the images from Dornus web, Design Museum Dharavi, 2016



Circular Garden

circular garden
milan design week 2019

carlo ratti associati x eni
2019

Circular Garden is a project born which scope is to test a new material on an architectural scale, capable of solving one of the main architecture problem: building without polluting. The installation is so made of mushrooms grown from soil over six weeks, returned to the soil at the end of the Milan Design Week. It is composed of a series of arches, adding up to a record 1-kilometer-long mycelium, and experiments with sustainable structures that can grow organically and then return to nature in a fully circular way.



FIG. 27 - All the images from Domus web, Design Museum Dharavi, 2016



Natural Capital

natural capital
milan design week 2021

carlo rattti associati x eni
2021

The project by CRA-carlo rattti associati and eni shows how much CO₂ each individual tree species can capture and store, aiming to demonstrate the key role that trees play in producing oxygen. It promotes forestry protection instead of deforestation by illustrating how the same amount of CO₂ would be released in the atmosphere if the trees were removed.

Besides the almost dream-like space, especially at night where it seems to be in a magic garden, the message delivered is very powerful. At the entrance of the garden, there is a giant sphere that allows the visitor to visualize the amount of CO₂ emitted by a human body in a year. The inevitable comparison with the other spheres, much smaller, make the visitor suddenly realize how extended is the impact of humans.

This installation is a very interesting example on how it is necessary and possible reduce the gap between the scientific data and people perception of them. By visualizing data, in a captivating yet physical installation, CRA were able to make part of the sustainability context more approachable to a large number of people.



FIG. 28 - All the images from Domus web, Design Museum Dharavi, 2016



Design Museum Dharavi

design museum dharavi
biennale venezia

jorge mañes rubio +
amanda pinatith
2016

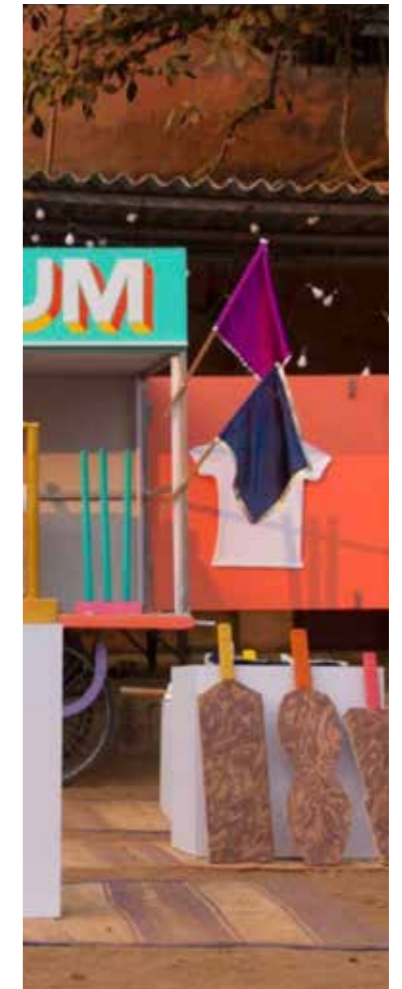
Spanish artist Jorge Mañes Rubio was deeply touched by the material culture of Dharavi, a Mumbai neighborhood. The local community is characterized by an ancient craftsmanship tradition handed down from generation to generation and nowadays kept alive by small artisan shops.

Along with the curator Amanda Pinatith, Jorge Mañes Rubio designed a wandering museum celebrating the local creative tradition. The exposition is temporary and changes according to the area the museum is in or a specific sub-topic. The museum is intended to give resonance to the cultural heritage and as a tool to establish a relation with the locals and promote a social change based on their creativity.

In this case study is interesting analyze how "the museum" instead of being kept in a sacral cathedral is diffused and meets people not only in their daily spaces but also in their present development, all through their cultural heritage.



FIG. 29 - All the images from Domus web, Design Museum Dharavi, 2016



Arctic seed vault visitor centre

*arctic seed vault
visitor centre
norway*

*snohetta
2019*

The visitor center, commissioned by Arctic Memory AS, is born as an archive for world memory and showcase content from the Svalbard Global Seed Vault – the world’s largest secure seed storage.

In collaboration with the Norwegian Natural History Museum, the visitor center provide its audience insights into how the Svalbard Archipelago’s unique geology has transformed over millions of years. The Arc will showcase both the Seed Vault and the Arctic World Archive – a vault that aims to preserve the world’s digital heritage - from the Vatican’s 1 500-year-old manuscripts, to film clips of the Brazilian football player Pelé and the largest collection of the World’s seeds.

To separate the entrance with the visitor functions, the exhibition area and the technical rooms, the architecture provided a division of the visitor center into two definite volumes in contrast each other in form, texture and color.

From the outside, the exhibition building appears as a robust monolith formed by the erosion of the site’s unique and often extreme weather conditions. Access to the exhibition building occurs across a glass access bridge, which is used to organize visitors into smaller groups. The contrasting volumes are designed to give visitors the experience of going from a familiar entrance into a real vault inside the permafrost of Svalbard.

At the core of the vertical vault of the exhibition building forms a powerful digital archive where both permanent and temporary exhibits are experienced first-hand through projections on the walls, managed by touch screens, VR experiences and other physical and digital exhibit elements, developed in collaboration with Tellart.

The Arc aims to educate visitors and inspire innovative preservation solutions for the world’s food and digital resources. It further emphasizes the value of the unique climatic and political stability one finds beyond the Arctic Circle, in the permafrost of Svalbard, serving as a reminder of how we should take care of the world’s resources for future generations to come.



FIG. 30 - all pictures are courtesy of Snohetta, archdaily 2020



“A structural frame of cross laminated timber in combination with stiffening wall discs in solid wood forms a rectangular building volume that rests on pile foundations in the bedrock. The building is suspended off the ground to prevent heating of permafrost and accumulation of snow. The entrance building is clad with burnt wood and dark glass panels, while the interiors consist of exposed wood elements. Roof areas are designed to accommodate solar panels for harvesting solar energy”

SNOHETTA



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FIGURE LIS

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ABBREVIATION

CFP - Carbon footprint

SDG - sustainable development goals

LCA - Life Cycle Assessment

NP - National Park

MNP - Maiella National Park

m.a.s. - meters above the sea level

LTS - local touristic system

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