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Framework to Understand the Sustainable Development Goals through the Design Lens

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WDO WORLD DESIGN ORGANIZATION

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Abstract

Abstract

Development and study of a framework for the World Design Organization (WDO) that shows the importance of design for global sustainability and specifically in the achievement of the 17 Sustainable Development Goals (SDGs). This thesis aims to show the key correlations between design and the 17 SDGs, translating it into a tool that can empower and activate designers and non-designers to achieve these goals. The methodology followed an analysis of design, its definition, and its components to understand its positive and negative impacts within the four areas of sustainability (Economical, Environmental, Cultural, and Social). The WDO is currently working on the development of an interactive platform that will curate existing sustainable tools, collect and publish resources to encourage and facilitate the adoption of sustainable practices. The expected result is an interactive tool that combined with the resources can become a meeting point for designers and the WDO community for finding new ways to meet the UN agenda for 2030.

Keywords

Systemic Design, Sustainability, Framework, Sustainable Development Goals, Design Process. Design Community, Agenda 2030, United Nations.

Introduction

This degree project addresses sustainable development issues, its design, and its relationship with the Sustainable Development Goals proposed by the United Nations to meet the 2030 deadline.

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This thesis is a meeting point for different perspectives, such as the design profession and its relationship over the years with sustainability, which shows the different needs not only of users but also of designers themselves to evolve and adapt to the problems that the world is currently facing, thus focusing design from an environmental perspective.

With the collaboration of the World Design Organization (WDO)[1] in Canada, this degree project aims to develop a framework that works as a tool not only for designers but also for companies and teams of different professions, to achieve through design comply with the Sustainable Development Goals proposed in the 2030 Agenda[2].

The research question with which the project took off was to understand the direct or indirect relationship that currently exists in design with sustainability, defining elements and critical points such as methodologies based on sustainability and solutions currently being presented from the area of design, projects, and sustainable approaches, among others that will be evidenced throughout the development of the thesis. Thus, from its elementary phase to the its implementation, the entire project encompasses different disciplines and design variations.

Firstly we give an overview and general analysis of the brief given by the WDO, to understand the general objectives, the structure of the project, and the role given to us. This allowed us to comprehend how important it was to contextualize the different matters that the whole project will lead us to, like the main definition of design and how it differentiates from other disciplines, the current vision of sustainability and its pillars, our role as

1. World Design Organization (2020). Retrieved August 17, 2021, from https://wdo.org/

2. The 2030 Agenda for Sustainable Development. Retrieved August 17, 2021, from https://unric.org/it/agenda-2030/

systemic designers and finally everything that relates to the Sustainable Development Goals.

In that way, a research process was carried out focusing firstly on the WDO as an organization, this helped us to understand the multiple points of view in which they approached the project and led us to better communicate our research and our proposals, then we look into everything that was related to the Sustainable Development Goals (SDGs)[3] including its history and the reasoning behind it, to contextualize ourselves and the organization about the matter in hand and finally we took a look into Systemic Design which helped us to present and expose the lens in which we were going to approach look the project.

Secondly, our main job was to analyze the concepts of design, sustainability, and the SDGs, and the relationships between them, to identify the main characteristics and components that make design such a strong tool to approach different problems including sustainability. This led us to a clear structure of the design process and its impact on society, which combined with a deep look into the pillars of sustainability (Environmental, Economic, Cultural and social) and the detailed microcategorization of its aspects in the circles of sustainability framework, gave us the tools to approach again the SDGs with a more critical view of its current state of interpretation and analysis.

The results of that analysis bring us to the main problem of the SDGs, its generic and superficial approach, which often results in solutions that do not tackle the different aspects of sustainability that enclose every SDG and therefore do not generate a meaningful impact.

This pushed us to focus our project to the development of a framework that would help designers to reinterpret every SDG in a way that allows them to understand and tackle the particularities and aspects of every one of them and structure projects that can either improve existing methodologies or create new ones.

After the analysis and development of the proposal for the World Design Organization, the project focused on connecting the framework with the digital platform planned by the WDO team, that will record all the information collected, the resources generated, and the elements to be shared with the entire design community throughout the world to enhance the environmental perspective in design.

The result is a series of elements that, through a guide, allow to show the infinite possibilities that designers and different professions, companies, universities, and others have in approaching a project mainly focused on sustainability and to expand the limits of the current Sustainable Development goals which are framed until 2030, to the ones that will come in the future.

The final step was an evaluation that reflects the different opportunities created by this project as well as the identification of the weaknesses and limits of its implementations.

3. The 17 United Nations Sustainable Development Goals to Transform our World. Retrieved August 17, 2021, from https://www.un.org/sustainabledevelopment/

Project Brief

Description of the project

As part of a project given by the Canadian government with the aim of seeing the value that design has a key tool to achieve the 17 SDGs proposed by the ONU within 2030, the WDO decided to start the development of an interactive platform that allocates and will curate existing resources, sustainability tools, testimonials, case studies and projects created from the global design community to show the direct impact of the discipline and how important it can be to help in global objective to turn commercial and industrial activities into more sustainable practices. Intending to encourage and facilitate the adoption of sustainable practices in [industrial] design, the project aims to empower and activate the role of design(ers) in the realization of the SDGs.
The project was entirely structured by the team at the WDO which can be seen in a brief given to every actor inside the team that was designated to work on it.

This initiative aims to explore the advancement of the UN SDGs through a design lens, a first for any UN-affiliated international organization. The intention is to explore all 17 SDGs, however, some may be more achievable by design and may be prioritized over others.

As part of the document presented above, we as a team from the Politecnico di Torino were chosen to carry out the framework development alongside professor Pier Paolo Peruccio, the organization then drafted a document that defined more specifically the objectives and timing of our work which will later work as the starting point of the project for our team and the key element to guide our process.

Here are the main elements that were inside that document.

Proposal topic

Sustainable Design Goals: Exploration of design as the foundational framework to achieving the 17 UN SDGs.

Overview

Recognizing the pivotal role of design in building a better world, the World Design Organization (WDO)® hopes that this framework and accompanying reasoning/justification will act as a lasting resource for the international design community, empowering and activating designers and non-designers alike towards the realization of the SDGs by 2030.

Taking inspiration from the SDG framework developed by the Stockholm Resilience Centre, this study is an opportunity to move away from the typically fragmented ordering of the SDGs and to instead begin to understand and organize them as one whole structure. The goal is to make a sound case for recognizing design as an embedded part of all economies and societies and a key pathway to contributing to multiple development targets as outlined in the 17 SDGs.

The framework itself represents an important component of a larger project led by WDO tentatively called the Sustainability x Design Resource Centre. With the goal of encouraging and facilitating the adoption of sustainable practices in design, this initiative will see the creation of an interactive platform that will curate existing sustainability tools, collect and publish testimonials and other resources as well host original content in the form of media cards and videos.

The framework developed through this study will be digitally accessible and shareable via WDO's interactive platform come February 2021. More information on the scope and targets of WDO's project can be found here.

The main question

How can we use design to bring new perspectives to achieving the 17 UN SDGs?

Timeline

- **September – November:** Research/Analysis Phase.
- **November – January:** Framework Development Phase.
- **February – March:** Development of the WDO Platform.
- **March – June:** Testing of the project with focus groups.
- **July:** Launch of the project and the platform.

Objectives

- The overall aims would include:
- Develop a broad appreciation for and understanding of the targets of each of the 17 UN SDGs.
- Research how design can be connected to each SDG, whether directly or indirectly.
- Explore the capacities in which design can act as a tool for advancing and ultimately achieving the SDGs.
- Understand the diverse roles and global practices of design disciplines in relation to global sustainability.
- Utilize collected research and analysis to produce an integrated SDG framework through a design lens.
- Develop accompanying reasoning or

justification as to why a certain framework organization and/or structure was ultimately chosen.

- Explore and delineate the barriers that may inhibit the success of the framework, specifically as it relates to local infrastructure, social norms, and economic realities.

Methodology

From this point a weekly meeting throughout the whole project was scheduled, the idea of those meetings was to bring updates of every step of the project, so in that way, there could be a discussion that could lead to a more integral and unified result.

- The methodology of the weekly meetings to be developed in collaboration with the students was:

- Review and analyze pertinent literature relating to design, sustainability, and the SDGs.

- Conduct interviews with sustainability experts, professors of design.

- Presenting and discussing pertinent information about the development of the project.

Roles

Given the varied expertise required to develop this project, WDO did look to outsource some aspects of the development process.

There was a team of supervisors for the development of the project, this from the internal team of the World Design Organization, who throughout the development was aware of the management and evolution of the project in order to meet the expectations and the objectives set. In the same way, there was the support of a specific team to review and select the resources that the platform would host concerning design, sustainability, and the 17 Sustainable Development Goals.

In the same way, a team of experts on issues related to the project was reached to functionally organize these resources, and will also lead the development of original content for the digital platform.

Project advisors

There was a group of external sustainability experts and design professionals selected by WDO, the Project Advisors held consultative status and were asked to provide feedback during key project phases. Project advisors also were given access to the working resource sheet and were invited to share any sustainability resources/information that they feel may be relevant for the project.

Digital UX development team

WDO Educational Member Algonquin College (Canada)

The Digital UX Development Team partakes in the development of the digital platform (part of the WDO domain). While WDO provided general guidelines for the platform's visual identity and organization, the team needed to prioritize usability, functionality, and interactivity. Ideally, the website will be developed in phases, with the first phase going live by the end of August 2020 to facilitate the collection of content submissions.

Framework development team

WDO Educational Member Politecnico di Torino (Italy)

Utilizing the SDG framework from the Stockholm Resilience Centre, the Framework Development/ Visual Identity Team worked to develop a similar framework but reframed through a design lens (i.e. rethink how the economic, social, and ecological aspects of the SDGs relate to/can be achieved through design). The framework proposal was planned to be accompanied by a brief justification as to why a specific structure was chosen, underscoring how design can be seen as the foundation for global sustainability. They were also asked to create some graphics and visuals to complement the framework that will be used both in the call for submissions and on the platform itself.

Process Methodology

Approach

Starting the research process, some doubts arose regarding the development of the framework, from the starting point to achieve the objectives, the communication of it, the critical lenses or perspective that we should take into account in order to reach the main user targets by the World Design Organization.

Based on the brief delivered by the World Design Organization, during the research phase, different concepts were taken into account that functioned as a starting point for the project, where it was sought to understand not only its origins and history but the evolution that each one of These has had over time, from the organization, the relationship with the 17 Sustainable Development Goals and the primary reference of the project being the Framework made by Stockholm Resilience Center.

The whole process was essential for the project when it came to understanding the evolution that has been generated thanks to the changes and the reasons why today we ask ourselves the question of: Why is it currently so important to take into account the sustainability component, And what are the difficulties that the design encounters when carrying out any project?

To understand the question posed, one must consider the main problems that design faces, concerning sustainability. Through the research, we find the critical points of design and projects focused on sustainability, which are mainly based on the difficulty of measuring both the benefits and the consequences of any design project. This is because, in other words, the variables of measure that can be granted from the sustainability aspects to quantify the impacts from the design.

Although, the problem of quantification cannot be reflected as the only one currently, the design takes into account the sustainability from the approach of different methodologies to impact this aspect directly, at the time of reflecting and communicating the solutions or proposals made, the focus or the main idea that allows us to understand the bridge that exists between design and sustainability is lost.

All this was taken into account for developing the framework that will be explained later in the following chapters.

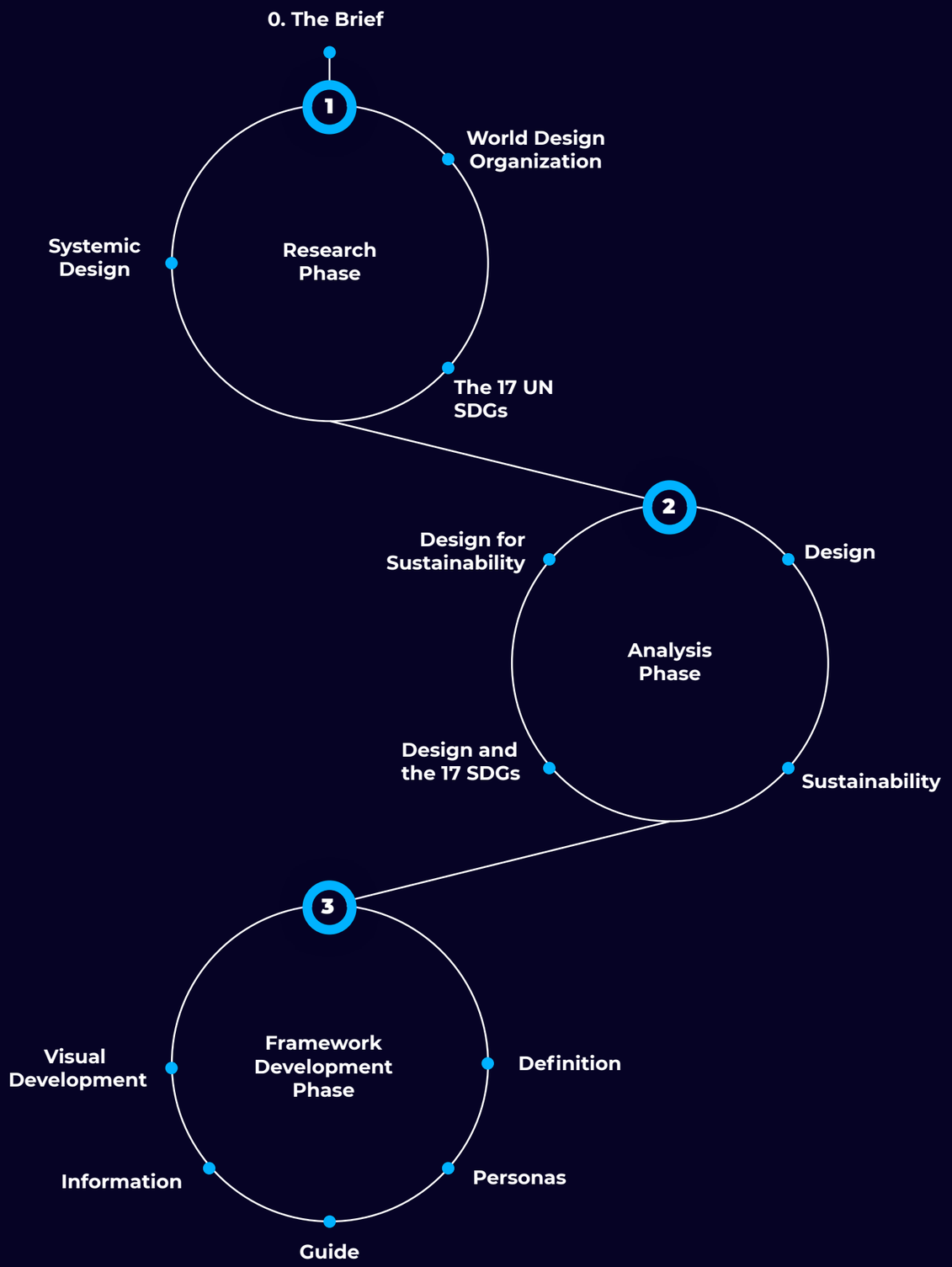


Figure 1:Structure of the process methodology

1. Research phase

The first phase will focus entirely on contextualizing ourselves through a literature review, starting with the WDO as an organization, its history, structure and current status, this will help us understand the reasoning behind the project and to better comunicate during the whole process. After that we will focus on gathering information regarding to the Sustainable Development Goals, their history, the reasoning behind its creation, its specific targets and indicators for each individual goal and finally a general overview in their implementation, which will later on be a key component to identify and formulate the question that the framework will later on try to respond.

It will also through us the first opportunities to approach the project with a critical eye, identifying the main factors that would be transform in opportunities to reach our objectives.

The final step of this specific research phase willd be to gather and present information to the team regarding systemic design, as for us, it is the main perspective in which we will analyze and focus our work and ultimately influence the final result.

Even though we conclude the research phase at this point, as we progress on the project it will become important to expand our findings into different topics, like the definition of design, sustainability and framework, this way we start to apply iterative processes, which are key in any sistemic driven project.

2. Analysis phase

As we finish the first step of our process we will proceed to analyze not only the information already gathered, but also to define the concepts of 2 components that cannot be given for granted and need to be clear before moving forward on the project.

The idea of this phase is to get a clear understanding of the definition and the components that make design the key discipline to approach the SDGs. One of the objectives presented by the WDO is to find and show the role that design has in society and therefore how it can be used to tackle the problems related to sustainability, for this we considered that it was important to define those aspects and lay its impacts.

At the same time we will start to do a similar procces with sustainability focusing on identyfing the main areas that define it, giving us the first relations with the SDGs and the importance that there is to bring out its complexity and the need of a new perspective in which they are analyzed.

Then we will move forward to find the relationships betwenn these two concepts and ultimately identnify the problem and the opportunity to use design as a way for reframing the SDGs where the differents actors with the power to reach the goals, can generate more impactful solutions.

3. Framework development phase

After getting our analysis done and having the main components to answer our question, we will start the development of our framework, which will be based on giving designers a tool that allows them to approach the SDGs with a broader and detailed view of how every one of them can be focused on the different areas of sustainability (Envirormental, Economic, Social and Cultural), avoiding solutions that can often be found as generic and not impactful.

For this we will identify the different actors that may used or find value in the project, focusing also in the comunnity around the WDO, expanding even more the reach and versatility of the framework.

Another step that will make a huge impact on the project, mainly on identifying the limits and weaknesses of the framework, will be to do a couple of testing on real resources submitted to the WDO and see the reach that it has.

Finally alongside the team we will identify the opportunities to how the framework can be implemented within the platform, which aside from this thesis will be the presentation and application of our work.

Literature Review

To understand the whole nature of the project, it is important to know every part involved and the relationships that exist between them, going through what they are, their history, and the factors that connect them. First, the literature review started with the WDO, understanding their history, how they came to be, how they have been working towards the design community, their objectives, how is the organization structured, and also who makes part of the organization, and finally their interest and relation with sustainability in particular with the SDGs. After this, the literature review was focused on the SDG's which are the core of the project. The research was based on their history, on how they were created and established, who made them possible and how they are being integrated into our current society.

All of this gave the project a first overview of the approach to take, and also to relate the brief with a more conscious mindset of the idea that the WDO wanted with the project.

World Design Organization (WDO)

The World Design Organization (WDO)®, also known as the International Council of Societies of Industrial Design (ICSID), is a non-profit organization that serves as a global voice for industrial design, and the ability to create better products, systems, services, and experiences; generate solutions for a better industry and commerce; ultimately improve the environment and society. The World Design Organization promotes Design for a Better World by supporting and sharing industrial design-driven innovation that improves people's economic, social, cultural, and environmental well-being [4].

Figure 2: World Design Organization logo. Retrieved from www.wdo.org on November 18, 2020.

Since the establishment of 12 professional design associations in 1957, WDO has grown to include more than 170 member organizations from more than 40 countries (representing approximately 150,000 designers) allowing them to participate in collaboration and providing them with opportunities to express their opinions internationally.

WDO and its member organizations around the world have considered the 17 United Nations Sustainable Development Goals (SDGs) as a framework for action, which can create positive social and environmental impacts, as well as financial returns and brand equity at the same time, within the solutions of the profession of Design.

They do this by involving the community in cooperative efforts and implementing international programs. These programs aim to promote cooperation among the global industrial design community, in order to identify challenges and opportunities from a design perspective, and address some of the world's most important economic, social and environmental challenges.

Nowadays, the WDO has a United Nations Special Consultative Status. It empowers them to make changes and commit to achieving the 17 United Nations Sustainable Development Goals to be achieved by 2030.

4. World Design Organization (2020). *About us*. Retrieved August 17, 2020, from https://wdo.org/about/

History

The history of the World Design Organization (WDO) starts in 1953 with the original idea of creating an international organization representing the interests of industrial designers, which was first proposed by Jacques Vienot at the International Conference of the Institut d'Esthetique Industrielle.

The International Council of Societies of Industrial Design (ICSID) was formally established at a special meeting in London on June 29[5].

Later on, it was established and founded in 1957. The organization was officially registered in Paris and the secretariat is located at Quai Voltaire 17, and it was composed of a group of international organizations dedicated to focusing on industrial design.

The Icsid name embodies the spirit of protecting the interests of practical designers and ensuring global design standards. Therefore, the first elected official of the Executive Board did not act out of personal conviction but represented the voice of members of society and the international design community.

Figure 3: Icsid's logo from the 1970s to the 1980s. Retrieved from https://wdo.org/about/history/ on November 3, 2020.

In 1959, the first Icsid Congress was held in Stockholm, Sweden, with the general assembly of the organization. This was an important moment for the history of the organization because it not only created the Icsid Constitution, but also the first definition of industrial design was officially adopted. The initial objective of it was to help the public raise awareness of industrial designers, improve design standards by setting standards for training and education, and foster cooperation between the design community around the world.

By then, the number of members increased to 23 members from 17 countries. The organization also continued to grow rapidly into a truly progressive and comprehensive organization that transcends political boundaries and, by the end of the '60s there were more than 40 members from more than 30 countries attending the conference.

By 1963, the organization was granted special consultative status by UNESCO, with whom it later worked with the development of many projects to use design in order to improve and generate a better human condition.

There were also organized four seminars between the years of 1964 and 1968, those seminars took place in Belgium, Germany, the United States, and Argentina, the main objective of them was to study issues related to the academic standards of the emerging industrial design profession, in order to make recommendations and standards of it.

In the '70s, with the relation of the growth of humanitarian interest, the Icsid decided to create and hold new ideas of conferences, the main objective of those seminars was to bring together industrial designers from the worldwide community, at the host country

5. World Design Organization (2020). *About us. History.* Retrieved August 24, 2020, from https://wdo.org/about/history/

in order to study issues of regional and international importance.
These types of seminars specifically resulted in a group of many workshops that consolidated the Icsid's recognition as a force for international cooperation. These seminars provide mid-career designers with opportunities for professional development and allow them to focus on solving problems of international concern.

The first Interdesign workshop took place in Minsk, in the former Soviet Union (USSR) in 1971.

The Icsid continued to consolidate its role as a bridge-builder between worlds, with the conference organized by the Japan Industrial Designers Association that took place in Kyoto in 1973, and it attracted 2,000 delegates. It was a revolutionary event for the organization because it brought together Wester and Asian design perspectives for the first time.

In 1974, the ICSID secretariat moved from Paris, France to Brussels, Belgium, at 34 Avenue Legrand. In the same year, they received special consultative status from the United Nations Economic and Social Council (ECOSOC).
Starting from the next ten years, in the 1980s, as the transformation of organizational integration, collaboration became more important.

In 1981, the first joint between the International Federation of Interior Architects and Designers (IFI) and the International Council of Graphic Design Associations (Icograda) was held in Helsinki, the main goal of the meeting was to lead all participants unanimously approved a directive to investigate options for closer working relationships in the next years to come, and also to direct suggestions from Icsid members to explore closer ties with other global design organizations.

The Icsid Secretariat moved to Helsinki at 1D Kluuvikatu in 1985. These organizations then worked with UNESCO in that same year to bring together doctors, industrial and graphic designers, and assistants to develop basic furniture, packaging, transportation, refrigeration, and vaccination for rural health centers, as well as design data collection of basic medical equipment for developing countries and rural areas.

Figure 4: 1961-1963 Icsid Executive Board at the 1961 Congress in Venice (Italy). From left to right: Count Sigvard Bernadotte, President, Sir Misha Black, Past President, Ms. Mia Seeger, Secretary Treasurer, Mr. Jay Doblin, Vice President, Mr. Alberto Rosselli, Vice President, Mr. Pierre Vago, Board Member. Retrieved from https://wdo.org/about/history/ on November 3, 2020.

Figure 5: The Icsid logo was revised in the 1980s. Note that the curved ends of "C" and "S" are now lined up. Retrieved from https://wdo.org/about/history/ on November 3, 2020.

With a changing world during the 90s decade, the Icsid continues to play its role on the international stage, hosting different conferences and interdesigns around the world.

The value of design in business, environmental sustainability, and intellectual property rights was a main target of attention for the board of directors and members.

The Icsid also focused on the topic of intellectual property and held the first conference at the World Congress in Ljubljana in 1992, putting on the table of discussion the protection of design and designers.

Three years later, in 1995, the education and corporate pillars were established in the constitution, highlighting the continuing focus of Icsid education and corporate memberships and relations.

The expansion of the program started to happen in the new Millenium, specifically in 2003 with the formation of the International Design Alliance (IDA) with the team-up during their respective conferences between Icsid and Icograda and the aim of creating a multidisciplinary, strategic, and international organization that represents design.

In 2005, the Secretariat settled in Montreal, Quebec, Canada, located at 455 St-Antoine Street West (where it currently resides), after an extensive bidding process involving 34 applications from cities around the world.

Therefore, in 2007, the World Industrial Design Day was established on the 50th anniversary of Icsid, with the objective of highlighting the impact of industrial design on economic, social, cultural, and environmental development. Since then, it is celebrated all over the world every June 29th.

In 2008, the World Design Capital ® was born in Turin, Italy. The first one-year plan was planned to celebrate the achievements of cities that used design as a tool to reshape themselves and improve the quality of life of their citizens.

Figure 6: Icsid updated its identity when it formed the International Design Alliance with Icograda (now Ico-D) in 2003. Retrieved from https://wdo.org/about/history/ on November 3, 2020.

In 2008, the International Design Alliance (IDA), welcomed their third member, the International Federation of Interior Architects/ Designers (IFI)[6].

Moreover, the first decade of the new Millennium was characterized as a renewed sense of mission and purpose for the Icsid.

In 2011, the IDA historic conference was held in Taipei, Taiwan, with the three partners.

6. The International Design Alliance (IDA) Archived 2011-11-30 at the Wayback Machine. ICSID (2008-09-13). Retrieved on June 8, 2021.

Figure 7: The 2003-2005 Board inaugurated the opening of their new head office in Montreal (Canada) in 2005. From left to right: Mr. Luigi Ferrara, Canada, President, Prof. Dr. Peter Zec, Germany, President-Elect, Mr. Gianfranco Zaccai, USA, Treasurer, Dr. Mark Breitenberg, USA, Board Member, Mr. Robin Edman, Sweden, Board Member, Prof. Carlos Hinrichsen, Chile, Board Member, Mr. Giuliano Molineri, Italy, Board Member, Mr. George Teodorescu, Mr. Michael Thomson, United Kingdom, Board Member, Ms. Adrienne Viljoen, South Africa, Board Member. Retrieved from https://wdo.org/about/history/ on November 3, 2020.

The following 2012 Community Cooker was awarded the world's first design agent. This award was created by Icsid to promote the expansion of the field of industrial design and the industry's ability to influence and impact the quality of life.

Later on, in 2013, the International Design Alliance (IDA) was dissolved. As a consequence of it, the Icsid decided to focus his limited financial resources on the development of innovative international cooperation models in organizations closely related to the industry and mainly in industrial design.

2015, was an important year because it marked the renewal of Icsid's long-term commitment to designing a better world, specifically with the conference in Gwangju, South Korea. The main results of that conference were the approval of the new vision and mission, also the adoption of changing their name to the World Design Organization, and an updated charter to become an organization easier to get open to the general design community.

The next year, 2016, marked the beginning of the Global Design Seminars, whose aim was to address globally relevant local challenges from a design (or industrial design) perspective, such as urbanization, climate change, and migration.

Finally, on January 1st of 2017, the Icsid officially became the World Design Organization (WDO)[4].

7. World Design Organization (2020). *About us. History.* Retrieved August 24, 2020, from https://wdo.org/about/history/

Mision and vision

The World Design Organization (WDO) is a global association dedicated to promoting better design on a global scale. The main goal of the organization is to promote the discipline of industrial design internationally.

The vision of the WDO is to strive and create a world designed to improve and enhance the quality of economic, social, cultural, and environmental aspects of life.

Industrial design has been an important aspect of the contributions for the economy, but also the voice of designers around the world emphasizing the solutions that industrial design can generate.

As a global organization for industrial design, the WDO supports the role of design as a catalyst for positive change, a viable business method that puts human needs above consumer needs. Some of these new directions, and the key role of design in the solution economy according to the World Design Organization (WDO), were presented at the 29th conference in Gwangju, South Korea, where it briefly explained how Industrial design has completely changed consumer products and has become a symbol of modern progress.

In the past, our world was in a different place, with different problems and challenges, therefore, the post-industrial world has brought social and economic progress, and urbanization has changed consumption patterns and promoted market globalization.

Fast forward the next few years, the world was facing a series of new challenges, and it also empathizes how excessive consumption has led us to problems such as pollution, traffic congestion, depletion of natural resources, climate change, shortage of food, and water resources, and poor medical conditions.

After all, from a design perspective, it is possible to release trillions of dollars in potential in terms of business performance, social benefits, and environmental efficiency. This is about the transition from problem to possibility.

If everyone in the global design community believes in this common ambitious vision, then it is possible to design a better world, through cooperation, leading, and designing it.

The vision of the World Design Organization laid on the foundation through their international initiatives, such as, The World Design Capital, The World Design Influential Award, Interdesign, The World Industrial Design Day, and the Global Design Partner Program that are already underway to demonstrate the potential by adjusting the advantages of solving design problems.

The future of industrial design is bright, by envisioning a new era in the industry, making design globally relevant and effective, and giving it the ability to change lives through the lens of design. The vision of the World Design Organization is to raise human needs above consumer needs and promote design as a catalyst for positive change. Taking industrial design to a new level and designing a better world.

On another hand, the mission of the World Design Organization is to be an international voice for industrial design, in order to advocate, promote and share innovative knowledge-driven by industrial design, which can be capable of creating a better world.

The WDO nowadays does this by involving their communities in collaboration and running their international projects, such as World Design Capital®, World Design Lectures, World Design Impact Awards™, World Industrial Design Day, and Interdesign®.

In addition to the vision and mission of the World Design Organization, there are three core values that clarify who they are and where they stand as an organization. Those values also guide their strategy and also influence their actions[8].

The first value is inspire, and it is based on three more aspects, the first one is the commitment by supporting the power of industrial design and improving lives, the World Design Organization is committed to take action and stand on specific issues and policies in line with their vision and mission and sharing them also to a broad audience.

The second one is diversity, by accepting the use and implementation of different points of view, and also the diversity of their members, communities, and employees.

The last one is sustainability, by supporting and promoting sustainable consumption and production and striving to reduce the negative impact on the environment.

The second value is mobilization, and it is based on two aspects, the first one is collaboration, by fostering a spirit of open cooperation across disciplines and continents with the aim of promoting common interest and design-based innovative solutions.

The second one is inclusivity, by being tolerant and enthusiastic, they strive and facilitate the acquisition of information and share information through multiple communication channels. The third and last value is activate, this one is also based on two main aspects, the first one is human-centered by putting human needs and interactions above material needs, and embraces empathic and holistic problem-solving methods.

The second aspect is forward-thinking, by pursuing creative and entrepreneurial ideas that have the potential to change and make an impact on the world.

Members

The World Design Organization supports a global network of more than 170 members and their representatives of industrial designers[9]. The members of the WDO are professional associations, promotional associations, educational institutions, government agencies, companies and institutions, with the aim of contributing to the development of the profession of industrial design, and design in general. These associations cooperate to establish an international platform through which design agencies around the world can keep in touch, share common interests and new experiences, and be heard as a powerful voice.

Africa

In the continent of Africa, the **WDO** is presented in three countries, in Botswana with the **University of Botswana.** In morocco, with the **Art'Com Sup** (Design School), the **1852&Co International Design Agency** by Hicham Lahlou Designer, and the **Université Privée de Fès - ECOLE SUPÉRIEUR DES MÉTIERS DE L'ARCHITECTURE ET DU BÂTIMENT.** And also in South Africa with the **Open Design Afrika Festival.**

8. *WDO | Vision and Mission | Core Values*. Wdo.org. (2020). Retrieved 31 August 2020, from https://wdo.org/about/vision-mission/core-values/

9. *WDO | Community | Members*. Wdo.org. (2020). Retrieved 31 August 2020, from https://wdo.org/community/members/

Asia

In the continent of Asia, the presence of the WDO is bigger with members in eleven countries. In **China**, with the **ARTOP Design Group**, the **Beijing Industrial Design Center**, the **Canton Fair Product Design & Trade Promotion**, the **China Industrial Design Association**, the **Executive Committee Office of Chengdu Creativity & Design Week** (ECOCCDW), the **HeFei Industrial Design Association** (HFIDA), the **Hebei Industrial Design Innovation Center** (HIDC), the **CRRC Qingdao Sifang**, the **Industrial Design Society of Shunde** (IDSS), the **Zhejiang Modern Intelligence and Manufacturing Promotion Center**, the **Quanzhou Industrial Design Association**, the **Shenzhen Industrial Design Profession Association**, the **Sheng-Hung Lee Design**, the **Shanghai University of Engineering Science**, the **Tongji University**, the **Xiongan Future Industrial Design Institute**, and the **Xi'an Jiaotong University.**

In Hong Kong, with the **Hong Kong Designers Association**, the **Hong Kong Design Centre**, and the **Hong Kong Design Institute.**

In India, with the **Anant National University** (School of Architecture and Design), the **ARCH College of Design & Business**, also **Avantika University,** the **Centre for Applied Research and Education** (CARE) Group of Institutions, the **Confederation of Indian Industry** (CII), the **DJ Academy of Design**, the **Indian Institute of Technology** (IIT Bombay), the **Indian Institute of Technology Guwahati**, the **Indian Institute of Technology Hyderabad**, the **Indus Design School**, the **Indian School of Design & Innovation** (ISDI), the **United world Institute of Design**, the **MIT Institute of Design**, A constituent of **MIT Art Design** and **Technology University**, the **National Institute of Creative Communication**, the **National Institute of Design**, the **Pearl Academy** (School of Design), the **Rishihood University - School of Creativity**, the **Srishti School of Art, Design & Technology, the Titan Company Limited, the UDLAB d.School** (Institute of Disruptive Design & Media Lab), **Nirma University, the University of Petroleum and Energy Studies**, and **the Welingkar Institute of Management.**

In Japan, with **Chiba University**, the **International Design Center NAGOYA,** the J**apan Industrial Designers' Association**, the **Japan Institute of Design Promotion**, the **Musashino Art University**, and the **Tama Art University**.
In Malaysia they have members in the **Universiti Teknologi Mara**.

In the Philippines, in the **Design Center of the Philippines** and **De La Salle-College of Saint Benilde**.
In Singapore with the **DesignSingapore Council and the Temasek Polytechnic**.

In South Korea, with members like the **Design Council Busan**, the **Korea Association of Industrial Designers**, the **Korea Institute of Design Promotion**, the **Korea RAILROAD Corp**. (Korail), **Samsung Electronics Co. Ltd** and the **Seoul Design Foundation**.

In Taiwan, with members as the **Asia University** (College of Creative Design), the **Chinese Industrial Designers Association**, the **Compal Electronics**, the **China Productivity Center**, the **Hsinchu City Government**, **NOVA Design, Shih-Chien University** and the **Taiwan Design Research Institute.**

In Thailand they have members from the **Thailand Creative & Design Center.**

In Turkey with the **Atilim University**, the **Cemer Playground Equipment**, the **Industrial Designers Society of Turkey,** the **International Design Fairs /Uluslarasi Fuarcilik**, the **Izmir University of Economics**, the **Middle East Technical University** (METU), the **Furniture Associations Federation** (MOSFED), the **Ozyegin University** (OzU) / **Istanbul Institute of Design**, the **TOBB University of Economics and Technology**, the **Vestel Electronics Company and also the Yasar University**.

Europe

On the other hand in the continent of Europe, they have members from seventeen countries like **Designaustria** from Austria. The **International Design Expeditions**, **AISBL** from Belgium. The **Estonian Association of Designers** from Estonia.

In Finland with the **Aalto University School of Arts**, Design and Architecture, the **Ceraheat Oy**, the **Design Forum Finland**, and the **Ornamo Art and Design Finland**.

In France with members like the **Agence pour la promotion de la création industrielle**, **Dassault Systèmes, the Électricité de France** (EDF), **L'École de design Nantes Atlantique**, the **Ecole nationale superieure des arts decoratifs**, **Les Ateliers-Ensci** (ecole nationale superieure de creation industrielle), the **Kedge Design School**, Le **FRENCH DESIGN by VIA**, **lille—design**, the **Orange Gardens, SODEXO**, the **Strate, School of Design**, The **Sustainable Design School and the Université Paris-Saclay - The Design Spot**.

In Germany they have members like the **Bayerische Motoren Werke AG** (BMW Group), **Braun GmbH**, the **Design Zentrum Nordrhein Westfalen**, the **Rat für Formgebung** / **German Design Council**, and the **iF International Forum Design GmbH**.

The **Hungarian Fashion and Design Agency** (HFDA) and the **Hungarian Design Council** from the country of Hungary.

In Ireland with the **City Architects Division**, **Dublin City Council.**

In Italy, with members like **Alessi**, the **Associazione Archivio Storico Olivetti**, the **Cittadellarte-Fondazione Pistoletto**, the **Federlegno Arredo Eventi Spa**, the **Ferretti Group**, the **Istituto d'Arte Applicata e Design Torino**, the **Istituto Europeo di Design**, **Italdesign, Pedrali spa, POLI.Design, and the University of Politecnico di Torino**.
In Latvia with the **Latvian Designers' Society**.

The **Delft University of Technology and the Technical University of Eindhoven** from the Netherlands.

In Norway they are also present with the **Oslo School of Architecture & Design**.

In the Russian Federation with the **National Center for Industrial Design and Innovation 2050.LAB**, the **Federal State Budget Educational Institution of Higher Education 'MIREA - Russian Technological University', and Smirnov Design**.

There is also the **Faculty of Design, Associated Member of University of Primorska** from Slovenia.

In Spain with **Andreu World**, the **Spanish Association of Furniture Manufacturers and Exporters** (ANIEME), the **Barcelona Design Centre**, the **BIDC - Bilbao Bizkaia Design Council**, **Point 1920**, the **Universitat Politècnica de València**.

In Switzerland with **House / IH Ideas**, **Richemont International**, and the **Swiss Design Center Group SA.**

In the United Kingdom and the **PDR**, **Planet Smart City and the University of Brighton**.

Oceania

The WDO also has members from Oceania, specifically the **Design Institute of Australia**, the **DesignThinkers Group Australia**, the **Good Design Australia**, the **Queensland University of Technology**, and the **Western Sydney University** from Australia.

And also in New Zealand with the **Designers Institute of New Zealand Inc.** and the **Victoria University Wellington New Zealand - Faculty of Architecture and Design.**

America

In the continent of America, the WDO is present in four countries in Latin America and also three countries in North America.

They have members like the **Association of Canadian Industrial Designers,** the **Association des Designers Industriels du Québec,** the **Algonquin College**, **Autodesk, Bombardier Recreational Products**, the **Carleton University**, the **George Brown College**, and the **Universite de Montreal in Canada**.

In the United States, they have members as, **Aether Global Learning**, the **ArtCenter College of Design**, **Authentic Design**, The **College for Creative Studies (CCS)**, **Design for Winning LLC**, **frog design**, the I**ndustrial Designers Society of America**, **Lumium Design**, Inc, the **Savannah College of Art and Design**, the **Tupperware Corporation**, the **University of California San Diego** (The Design Lab), the **University of Illinois at Urbana-Champaign** (School of Art + Design), and the **Ullman School of Design at DAAP, University of Cincinnati.**

In Mexico, the **university of Anahuac**, the **Autonomous University of the State of Mexico**, **Codigram**, also known as **Colegio de Diseñadores Industriales y Gráficos de México A.C**, the **technological institute of monterrey**, the **university Autónoma Metropolitana**, the **Iberoamericana university,** and the **university of Monterrey**.

In Latin America, as mentioned above they have members in countries like Argentina with the **nacionalDISEÑO**, also the **Centro Brasil Design in Brazil**, the **Universidad San Sebastián USS** in Chile, the **Colombian Academic Association of Design, the University of Los Andes, El Bosque, and Jorge Tadeo Lozano** in Bogota, Colombia.

World Design Partners

The members of the World Design Organization are professional associations, promotional associations, educational institutions, government agencies, companies and organizations to contribute to the development of the industrial design profession. These associations collaborate to establish an international platform through which design agencies around the world can keep in touch, share common interests and new experiences, and be heard as a powerful voice.

The World Design Organization seeks to cooperate out of their partnerships with effective design companies that are committed to design innovation and recognize the importance of design for good business and the power of responsible behavior for brand promotion.
The goal of the WDO with their partners is to enrich their programs and contribute to community development by enhancing knowledge and experience to improve the quality of life.

The World Design Partners (WDPP)[10] is a program created by the WDO with the aim of providing these companies the opportunity to position themselves as design and innovation leaders, showcase their brands in the global market, align with other well-known brands, and establish Community.

The WDO also established strategic alliances with international media and some organizations and development agencies that work together to demonstrate the impact of design on the realization of the United Nations Sustainable Development Goals.

Nowadays there are twenty-two (22) design partners around the world, that are part of this program, some of them are companies like Autodesk, BMW, Compal, Continuum, Cumulus, Design for America, Global Goals Jam, IMB, the International Space Station, Microsoft, the MIT, Montréal International, New Cities Foundation, Nestlé with Nescafé

10. *WDO | Community | World Design Partners*. Wdo.org. (2020). Retrieved 26 October 2020, from https://wdo.org/community/wdp/#1601494865356-16f4bdbb-63b2

Dolce Gusto, Rado, SoundWaters, the SPE Foundation, Tupperware Corporation, The United Cities, and Local Governments of Africa, the University of Brighton, UN Women, and the World Packaging Organisation (WPO).

Those collaborations with the companies started in different years, some of them like Autodesk, Continuum, and Tupperware's partnership were one of the three founding members of the Icsid Enterprise Innovator (ICI) program. Also, the WDO tries to actively participate in the pillars of the company, strive to achieve the objectives, and involve the most practical industrial designers in their work.

Continuum continues to support WDO and contributes its experience to the restructuring of projects such as the World Design Capital, which allows us to strengthen our brand value and provide higher quality programs.

Today, Tupperware continues to be actively involved as a corporate member and leading by example, promoting best solutions and practices for the environment in a responsible manner, and actively seeking to reduce waste, energy use, and greenhouse gases in all its operations. manufacturing processes on a global scale.

There is another example of companies like BMW, which requires a wide range of flexible designs and innovative methods to meet the challenges of fast-growing megacities, declining resources, and complex laws and regulations to meet ever-changing mobile needs. It also conducts continuous active research on improved concepts that may reduce costs, such as innovation, and technologies.

Microsoft through local project activation set the goal of providing long-term services and participated in the WDC Cape Town 2014 plan. By contributing knowledge and experience to community development and quality improvement, Microsoft launched the mobile library Langa in the city, which will empower its residents by accessing mobile devices and the Internet.

Also, the collaboration between the WDO and the International Space represented a unique opportunity to use industrial design to go beyond the limits of the earth and solve the practical problems facing the earth today. Under the patronage of the International Space Station, WDO seeks to develop aerospace projects in the future.

As part of the 2020 COVID19 design challenge, WDO has partnered with IBM and DFA to mobilize designers to use their skills to meet the challenges of the COVID19 pandemic.
Related also to innovation alongside the companies, in early 2021, Soundwaters, SPE Foundation, and WDO reached an agreement to participate in the Million Bottle Cap Design Challenge to guide American high school students in solving local and global microplastics problems.

The collaboration with the companies is mainly focused on supporting sustainable business practices and being also an example for other existing companies around the world. This was one of the main points related to the development of the project in order to use their shared commitment to sustainability and education as a means of organizing and implementing various cooperative projects.

Structure of the WDO

It all starts with the people. From the few who founded the organization in 1957 to the many who make up its member organization today, the WDO exists because of them.

The people who have contributed to the development of the industrial design industry inside of the organization are divided into four main areas: The board of Directors, the Senate, Regional Advisors & Community Liaisons, and the secretariat team[11].

The Executive Board of the World Design Organization is the governing body that guides and supports the mission and vision of WDO. It is made up of international Industrial Design professionals selected by members of the WDO during the General Assembly.

Is managed by a total of 11 members whose mission is to develop the organization, advance its mission and strengthen its international position. Members voluntarily contribute their time and expertise to strengthen the organization and its role as an international spokesperson for industrial design.

It is composed of the President, and the President-elect, and 9 members of the Executive Board. Each member of the board of directors has a two-year term and can be re-elected for a second term, but cannot run for a third term unless he or she stands in the presidential election[12].

The president appoints a treasurer for each new term. The treasurer's responsibility is to record the financial situation of Icsid during the two-year period.

The 2019-2021 Board of directors are Srini Srinivasan (President), David Kusuma (President-elect), Thomas Garvey, Anne Asensio, Chi-Yi Chang, Eray Sertaç Ersayin, Yongqi Lou, Pier Paolo Peruccio, Makiko Tsumura, Pradyumna Vyas, and Martha Zarza.

Being part of the board helps to understand the value of design in a very broad sense,

11. *WDO | About | People.* Wdo.org. (2020). Retrieved 31 November 2020, from https://wdo.org/about/people/

12. "2013-2015 Icsid Executive Board". Icsid and IDA. Archived from the original on 16 November 2013. Retrieved 8 July, 2021.

Figure 8: Board members of the World Design Organization, period 2019-2019. From left to right: Pier Paolo Peruccio, Martha Zarzara, Yongqi Lou, Chi-Yi Chang, Anne Asensio, David Kusuma, Srini Srinivasan, Thomas Garvey, Makiko Tsumura, Pradyumma Vyas, Eray Sertaç Ersayin. Retrieved from https://wdo.org/about/history/ on November 26, 2020.

also valuable information on how cities can shape the future and attract new investment to create a better environment. By promoting the goals of WDO in various regions, cities, and communities, and bringing WDO to people so that people can realize their dreams of a better world, said Srini Srinivasan[13].

The collaboration of each one of the members is really important for the organization, it helps the global WDO network identify opportunities in many situations[14]. They seek to attract young designers early in their careers. Expand and support promotional and professional initiatives around the world. Fostering diversity and increasing the number of members in different areas of design, remembering that real progress means more sustainable design.

In another hand, the Senate[15] is made up of the past chairmen of the organization, who agreed to serve in an honorary capacity to support and advise the existing board of directors when requested. The former president also serves as the convener of the Senate, acting as the liaison between the Senate and the current board of directors.

Senators contributed extensive knowledge and experience to the ongoing development of WDO. Some of the past presidents are **Robert Blaich** (1987-1989), **Luigi Ferrara** (2003-2005), **Peter Zec** (2005-2007), **Carlos Hinrichsen** (2007-2009), **Mark Breitenberg** (2009-2011), **Soon-In Lee** (20011-2013), **Brandon Gien** (2013-2015), **Mugendi M'Rithaa** (2015-2017) and **Luisa Bocchietto** (2017-2019).

The Regional Advisors and Community Liaisons[16] are former board members that can serve as regional advisors to strengthen WDO's influence in their region. They are appointed to represent Icsid through regional activities and strengthen the organization's global influence.

13. *WDO | Board | Meet Srini Srinivasan*. Wdo.org. (2020). Retrieved 27 July 2021, from https://wdo.org/about/people/board/srini-srinivasan/

14. *WDO | Board | Meet Thomas Garvey.* Wdo.org. (2020). Retrieved 10 July 2021, from https://wdo.org/about/people/board/meet-thomas-garvey/

15. *WDO | People | Senate*. Wdo.org. (2020). Retrieved 11 July 2021, from https://wdo.org/about/people/senate/#1496249540648-57717dbd-c31d

16. *WDO | People | Regional Advisors & Community Liaisons.* Wdo.org. (2020). Retrieved 31 July 2021, from https://wdo.org/about/people/regional-advisors-community-liaisons/

They are also the key to leveraging the power of their international membership, ensuring that the organization maintains visibility, and aligning the design agenda of different areas with the design aspirations for a better world.

Community liaison officers can be nominated by members of the board of directors for long-term appointments to provide an informed voice for a city, country or region.

They work closely with the board members responsible for the region to identify key personnel and resources to empower the local design community and connect them to the organization and its work.

Some of the WDO Regional Advisors around the world are, **Mr. Hicham Lahlou**, and **Ms. Adrienne Viljoen** from Africa.

Dr. Darlie Koshy, Mr. Kazuo Tanaka, Ms. Judit Várhelyi, Ms. Eunjoo Maing, Mr. Kuang-min (Tony) **Chang, Mr. Shikuan Chen, Dr. Geetha Narayanan**, and **Dr. Alpay Er** from Asia.

Ms. Vivian Cheng, András Mengyán, Pierre-yves Panis, Michael Thomson, and **Mr. Gilles Rougon** from Europe.

Mr. Mario Gagnon, Dr. Jorge Gómez Abrams, Mr. Nils J. Tvengsberg, Mr. Bruce Claxton, and **Dr. Lorraine Justice** from North America.

Finally, **Prof. Vesna Popovic** from Oceania.

In another hand some of the members of the Community Liaisons are, **Prof. Gülay Hasdoğan, Dr. Elif Kocabiyik, Rohit Lalwani, Mr. Deepak Gupta** from Asia.

Mrs. Anita Valkeemäki, and **Mr. Marco Van Hout** from Europe.

And **Mr. Joel-eric Missainhoun**, from Africa.

Finally there is the Secretariat Team[17], which implements various projects and initiatives to promote the exchange of ideas within the design community, through the implementation of various projects and initiatives, and raise people's awareness of the power of industrial design to bring positive changes to the world. Under the guidance of the general manager, the secretariat team manages the daily operations and schedule of the organization.

Some of the current members of the team are, **Bertrand Derome** (Managing Director), **Dorothée Bolade** (Community Engagement Officer), **Marie-Andrée Couture** (Digital Communications Officer), **Natalie Dutil** (Communications Manager), **Jerusalem Girma** (Administrative Officer), **Jessica Hanson** (Programmes Manager), **Eric Lauwers** (Project Manager), **Andréa Springer** (Programmes & Communications Director), **Sarah Virgini** (Programmes & Communications Officer), **Rose Wu** (Accounts Administrator).

17. *WDO | People | Secretariat Team.* Wdo.org. (2020). Retrieved 31 March 2020, from https://wdo.org/about/people/secretariat/#1547654945475-4b8060bb-662d

The 2030 agenda for sustainable development

In 2015, the Heads of State and Government and Senior Representatives, met at the United Nations Headquarters in New York from September 25 to 27, 2015, coinciding with the 70th anniversary of the Organization, they agreed on the new Goals of Sustainable Development with a global scope, the UN General Assembly approved the 2030 Agenda on Sustainable Development, an opportunity for peoples and their societies to embark on a new path to improve the lives of all, leaving no one behind. The Agenda has 17 Sustainable Development Objectives and 169 goals, ranging from the elimination of poverty, climate change, support education, women's equality, environmental protection or the design of our cities.

The Goals and targets will stimulate action in the following areas of critical importance for society and the planet. In their opinion, the next 15 years will be synthetic and indivisible and will combine three dimensions of sustainable development: economic, social and environmental.

The 2030 Agenda is an action plan, which was created to be implemented thought all nations and stakeholders through an alliance of cooperation for people, planet and prosperity. The agenda aims to strengthen universal peace within a broader concept of freedom and respect for both people and the environment. Liberating humanity from tyranny, poverty, and deprivation, seeking to heal and protect the planet, taking bold and transformative decisions and actions that are urgently needed to redirect the world down the path of sustainability and resilience.

The new agenda is based on the purposes and principles of the Charter of the United Nations, including full respect for international law. Its foundations are the Universal Declaration of Human Rights[18], international human rights

18. Resolution 217 A (III). Request, the United Nations International Children's Emergency Fund, as the United Nations agency entrusted with special responsibility for meeting emergency needs of children in many parts oí the world. Retrieved from https://undocs.org/Home/Mobile?FinalSymbol=A%2FRES%2F217(III)&Language=E&DeviceType=Desktop on January 24, 2021.

treaties, the Millennium Declaration[19] and the Final Document of the 2005 World Summit[20]. It is also based on other tools, such as the Declaration on the Right to Development [21].

Within the agenda are reaffirmed the results of all the major United Nations conferences and summits, which have established a solid foundation for sustainable development and have helped shape the new Agenda, in particular the Rio Declaration on the Environment and Development[22], the World Summit on Sustainable Development, the World Summit for Social Development, the Program of Action of the International Conference on Population and Development[23], the Beijing Platform for Action[24] and the United Nations Conference on Sustainable Development . Follow-up activities to these conferences are also reaffirmed, including the outcomes of the Fourth United Nations Conference on Least Developed Countries, the Third International Conference on Small Island Developing States, the Second United Nations Conference on Landlocked Development and the Third United Nations World Conference on Disaster Risk Reduction[25].

Today's world faces immense challenges in sustainable development, where inequality is evident in society, in different countries, and among them, extreme poverty and the difficulty of obtaining a decent life.

Currently, there are huge differences in terms of the opportunities, wealth, and power that people can access in different parts of the planet. It is important to mention different aspects that affect said sustainable development, such as gender inequality, unemployment among young people, global health risks (as we were able to show in the same way in these years with the Covid-19 pandemic), the increase and the intensity in the frequencies of natural disasters, the scale of armed conflicts in different territories, violent extremism, terrorism and the effects that these problems generate with humanitarian crises and forced displacement of the population.

The depletion of natural resources and the irreversible effects of environmental degradation, which over the years becomes a counter clock for the planet, with major problems such as deforestation, desertification, ocean acidification, drought, land degradation, water scarcity, global temperature rise, sea-level rise and loss of biodiversity present due to changes in its environment or the impossibility of survival and biological support of the planet and the societies present in it.

19. Resolution 55/2. Resolution adopted by the General Assembly [without reference to a Main Committee (A/55/L.2)] 55/2. United Nations Millennium Declaration. 18 September 2000, Fifty-fifth session. Retrieved from https://undocs.org/Home/Mobile?FinalSymbol=A%-2FRES%2F55%2F2&Language=E&DeviceType=Desktop on January 24, 2021.

20. Resolution 60/1. Resolution adopted by the General Assembly on 16 September 2005. 60/1. 2005 World Summit Outcome. Sixtieth session. Retrieved from https://undocs.org/Home/Mobile?FinalSymbol=A%-2FRES%2F60%2F1&Language=E&DeviceType=Desktop on January 24, 2021.

21. Resolution 41/128. General Assembly, Forty-first session. Retrieved from https://undocs.org/Home/Mobile?-FinalSymbol=A%2FRES%2F41%2F128&Language=E&DeviceType=Deskto p on. January 24, 2021.

22. *Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3–14 June 1992, vol. I, Resolutions Adopted by the Conference* (United Nations publication, Sales No. E.93.I.8 and corrigendum), resolution 1, annex I.

23. *Report of the International Conference on Population and Development, Cairo, 5–13 September 1994* (United Nations publication, Sales No. E.95.XIII.18), chap. I, resolution 1, annex.

24. *Report of the Fourth World Conference on Women, Beijing, 4–15 September 1995* (United Nations publication, Sales No. E.96.IV.13), chap. I, resolution 1, annex II.

25. Sendai Framework for Disaster Risk Reduction 2015–2030 (resolution 69/283, annex II).

Climate change is one of the greatest challenges of our time and its effects must be the number one point to achieve sustainable development.

Almost 20 years ago, the Millennium Development Goals were agreed, providing an important framework for the development of the world and since then considerable progress has been made in various areas to impact.

However, it is important to mention that some of the progress has been uneven, however, the panorama that has been observed since different countries have focused their attention on these problems has been encouraging, with improvements that, although small, offer hope of immense opportunities and significant progress to address many of the problems that we face today as a society, where our only objective is to achieve development. Some of these changes have been the considerable access to education for hundreds of boys and girls, hundreds of millions of people who have come out of extreme poverty, the expansion of technology and communications, offering to accelerate the processes and overcome the gap. digital, allowing the development of knowledge in different societies, scientific innovation, and expansion in health issues to offer the best treatments and prevention to the human body from medicine.

The 2030 Agenda, as mentioned above, is based on the Millennium Development Goals and aspires to complete those that were not achieved in the agreed time, with the most vulnerable as a focus.

Similarly, some of the development priorities are maintained, but a wide range of economic, social, and environmental objectives are also set. Defining within the document presented in 2015, the means of implementation, such as the integrated approach, and objectives and goals that are deeply interrelated and linked by numerous cross-cutting elements.

The biggest drawback at the time of achieving the proposed objectives has been the effect that these have and the results that differ from developed countries with underdeveloped ones, for example, the United Nations, mentions how in Africa and in countries least developed, some of the proposed objectives continue to be far from being achieved, specifically those that were reconsidered in the 2030 Agenda, specifically those related to maternal, neonatal and child health and reproductive health, to meet those objectives not achieved, presenting specific and broader assistance to underdeveloped countries.

Targets

Within the objectives set out in the agenda, five main targets are evident, which are: people, the planet, prosperity, peace, and alliances.

From the people's point of view, one of the most important and greatest challenges to meet is the eradication of poverty in all its forms and dimensions, including extreme poverty, such compliance with the objective constitutes an indispensable requirement for sustainable development, with the goal of the objective of ensuring that all human beings can realize their potential with dignity, equality, and a healthy environment.

On the other hand, there is the sphere of the planet, where it seeks to protect against degradation, taking into account issues such as sustainable consumption and production, sustainable management of natural resources, and urgent measures to face climate change, to meet the needs. Of the present and future generations.
Similarly, prosperity is an important area on the agenda, intending to ensure all human beings can enjoy a prosperous life, full and in harmony with nature, achieving economic, social, and technological progress.

Peace is currently one of the most mentioned areas, proposing to promote peaceful, just, and inclusive societies, free from fear and violence,

it is important to emphasize that there can be no sustainable development without peace, nor peace without sustainable development.

All this is resumed in the most important part of the agenda, and these are alliances, to mobilize the necessary means to implement the 2030 Agenda through a Global Alliance for Sustainable Development, based on a spirit of greater solidarity. with the collaboration of all countries, all stakeholders, and all those who participate, focusing particularly on the needs of the poorest and most vulnerable.

The links between the Sustainable Development Goals and their integrated nature are of crucial importance to fulfill the purpose of the new 2030 Agenda, if the objectives set out with each of the aspects mentioned within the 2030 Agenda are achieved, the conditions for people's lives and the environment will be transformed into a better place.

The 17 SDGs

The Sustainable Development Goals (SDGs)[26] are a set of goals adopted in 2015 by the United Nations as a response to the current environmental and development crisis and to address the most critical aspects like inequality, poverty, justice, and environmental degradation, all of them set in a timeframe for 2030.

The SDGs are a step forward concerning the Millenium Development Goals (MDGs) which were set to reduce poverty between 2000 and 2015. Within the objectives set by the assembly, it is intended to resume the Millennium Development Goals and achieve those that were not achieved, it is also intended to make the human rights of all people a reality.
Within the objectives it is recognized that the dignity of the human person is fundamental, so they seek to see the Objectives and goals fulfilled for all nations and peoples and for all sectors of society, and they strive to arrive first the furthest behind.

The 2030 Agenda is of unprecedented scope and importance. All countries accepted it and applied it to all of them, although taking into account the different realities, opportunities and levels of development and respect for their national policies and priorities. The Goals and targets are universal and affect the entire world, both developed and developing countries, are integrated and indivisible and combine the three dimensions of sustainable development.

The Goals and targets are the result of more than two years of an intense process of public consultation and interaction with civil society and other interested parties around the world, during which the opinion of the stakeholders was especially taken into account. poorer and more vulnerable. The consultations included the valuable work carried out by the General Assembly Open Working Group on Sustainable Development Goals and by the United Nations, whose Secretary-General presented a synthesis report in December 2014.

These goals and objectives establish a very

26. Contained in the report of the Open Working Group of the General Assembly on Sustainable Development Goals (A / 68/970 and Corr.1; see also A / 68/970 / Add.1-3).

ambitious and transformative vision for the future. Desire for a world free from poverty, hunger, disease, or deprivation, where all forms of life can thrive; a world free from fear or violence; a universal literacy, fair and broad access to quality education, healthcare and society at all levels A world that protects and guarantees physical and mental health and social well-being; a world that reaffirms the human rights to safe drinking water and sanitation facilities, better sanitation conditions, adequate, safe, affordable and nutritious food; a human habitat A safe, resilient and sustainable world with universal access to affordable, reliable and sustainable energy supplies.

Desire to build a world that respects human rights and human dignity, the rule of law, justice, equality and non-discrimination; respect racial, ethnic and cultural diversity, and have equal opportunities to fully realize human potential and contribute to common prosperity; to a world that respects human rights and human dignity, the rule of law, justice, equality and non-discrimination; The world where childhood is invested, where all children grow up without violence and exploitation; a world where all women and girls enjoy full gender equality. Equality and all legal, social and economic barriers that hinder their empowerment are eliminated; a just world, In a just, tolerant, wide, mind open and socially inclusive world, the needs of the most vulnerable groups are met.

A world where all countries enjoy sustained, inclusive and sustainable economic growth and decent work for all; a world where consumption and production patterns and the use of all natural resources are sustainable, from the air to the land, from rivers, lakes and aquifers to the ocean; a world where democracy, good governance, the rule of law and a favorable national and international environment are the basic elements of sustainable development, including sustained and inclusive economic growth, social development, environmental protection and eradication of poverty and hunger; A world where the development and application of technology respect the climate and biodiversity and are resilient; a world where humans live in harmony with nature and wildlife and other biological species are protected.

According to Chi-Yi Chang, a promotional member of the board of directors from the WDO, The 17 UN Sustainable Development Goals cover everything from eradicating poverty to building partnerships to achieve the goals. Global cooperation is the key to ensuring success. Collaboration means interdisciplinary integration, in which design plays a fundamental role in nature. My rich experience as an architect, educator, aesthetic education promoter and policy maker has given me the skills to be an integrator among many stakeholders. In addition, contributing to the solution economy is also part of it, which is why the establishment of DRI to promote government cooperation and become a factor in achieving the United Nations Sustainable Development Goals [27].

There are ways to implement responsible production and responsible consumption standards[28]

Eray Sertac Ersayin

27. *WDO | Board | Meet Chi-Yi Chang*. Wdo.org. (2020). Retrieved 3 July 2021, from https://wdo.org/about/people/board/meet-chi-yi-chang/

28. *WDO | Board | Meet Eray Sertac Ersayin*. Wdo.org. (2020). Retrieved 31 June 2021, from https://wdo.org/about/people/board/meet-eray-sertac-ersayin/

The 17 Sustainable Development Goals and the 169 objectives set are implemented in the interest of all, for current and future generations, to comply with and reaffirm the Universal Declaration of Human Rights, as well as different international instruments related to human rights and international law.

Previously, such a union between countries had not been witnessed with the objective of committing the world's leaders to common action and commitment in favor of a broad and universal policy agenda. Undertaking together the path to development and sustainability, collectively generating global development and cooperation between different territories and societies in which all parties win and benefit. Generating that, all those related to the 2030 Agenda, have the responsibility to respect, protect and promote human rights and fundamental freedoms of each and every one of the people in the world, without making a distinction on grounds of belief, race, gender, language, color, political or other opinions, national or social origins, economic situation, disability, or any other condition of discrimination.

It should be taken into account that the mentality that society currently exists, although it is different from what was thought a few years ago, still shows gender inequality in different spheres or areas. The systematic incorporation of a gender perspective and equality in the implementation of the 2030 Agenda is crucial, this can be observed with the empowerment of women and girls that has sought to be a protagonist in recent years in different parts of the world, wherein some countries have achieved major changes and in others small but significant, it is important to take into account and understand what is proposed in the 2030 Agenda by the UN, that it is not possible to realize all the human potential and achieve sustainable development if continues to deny half of humanity in full enjoyment of their human rights and opportunities, work must be done to achieve a significant increase in investments aimed at alleviating the gender disparity and strengthening access to quality education, resources economic, political participation, thus obtaining the same opportunities as men in employment, leadership and decision-making and n all levels, achieving the empowerment of women at the global, regional and national levels.

The different realities, capacities, resources, and levels of development of the different countries in the world are also taken into account. The decisions made over the next 7 years and those already made from 2015 to today, will guide and demonstrate the positive impacts that arise to generate this significant change in people's lives.

Each country faces specific challenges and problems, in the individual search for sustainable development, but in the same way, it is important to highlight those that concern us as a common, understanding also that those most vulnerable countries, underdeveloped countries, developing countries deserve special attention. landlocked, small island developing states, countries, and/or territories in or after armed conflict, middle-income countries, or those facing severe difficulties or experiencing the consequences of a natural disaster.

It is necessary not only to help vulnerable people but to empower them to generate development not only for them but among them, it is important to take into account and implement more actions and effective measures that allow eliminating the obstacles and restrictions that exist, strengthening the support of these people and attending to their needs.

As part of the research process for the development of the project, a detailed investigation and evaluation of each of the objectives set out in the 2030 Agenda was carried out, some of these will be explained in general below to understand the scope of each of these.

Goal 1 - No poverty

The first Objective proposed within the 2030 Agenda, is one of the most important to be fulfilled within the stipulated time, in this way the United Nations Organization and other countries, entities, and collaborators of the Agenda, commit to ending poverty in all its forms and dimensions, in order to eradicate extreme poverty, which is considered in those people who live on less than the US $ 1.25 per day (Goal 1.1)[29].

Also, reduce the proportion of men, women, and children living in poverty in all its dimensions, by at least half. (Goal 1.2)

The implementation of systems at the national level and appropriate measures of social protection for all people, including minimum levels, achieving a wide coverage of those most vulnerable (Goal 1.3)

Guarantee that all people, both men, and women, specifically those who are most vulnerable, have the possibility of obtaining the same rights to economic resources, and access to basic services, such as the possibility of owning property, controlling their land and assets, inheritances, natural resources, the possibility of accessing new technologies and financial services such as microfinance. (Goal 1.4).

Finally, promote the resilience of people who are in extreme poverty and vulnerable situations, reducing their exposure to extreme phenomena, such as economic, social, and environmental disasters. (Goal 1.5).

Figure 9: Photo by Rainier Ridao on Unsplash.

For the fulfillment of the first of the Sustainable Development Goals, it is important to guarantee a significant mobilization of resources that come from different strengths, seeking cooperation for development, providing sufficient and predictable means to developing countries, those underdeveloped, and implementing programs and policies that help end poverty in all its dimensions. Creating solid regulatory frameworks, not only at the regional level but also nationally and internationally, based on development strategies that are always in favor of the most vulnerable and take gender issues into account, thus supporting investment and different measures to eradicate poverty.

29. The $1.25 line has initially been defined as the simple average of the national poverty lines for fifteen impoverished countries (Ravallion et al., 2009). However, those same lines (expressed in local currency units at 2005 prices) inflate later in 2011 using each country's own consumer price index.

Goal 1 - Zero hunger

The United Nations, within the 2030 Agenda, reaffirms the importance of the participation of different entities for the fulfillment of the objectives proposed during the proposed years, such as the important role of the Committee on World Food Security and the Declaration of Rome on Nutrition and the Framework for Action[30]. All people should enjoy a basic standard of living, including through social protection systems, achieve food security and eliminate forms of malnutrition, dedicate resources to develop rural areas, sustainable agriculture, and fisheries, support small farmers, ranchers, and fishermen in underdeveloped countries.

The 2030 Agenda proposes ending hunger, and ensuring access to healthy, nutritious, and sufficient food throughout the year for each one of the people, taking into account the most vulnerable people such as the poor and children under 18 years of age. 1 year. (Goal 2.1).

It is even proposed with a temporary goal of achieving it by 2025, ending all forms of malnutrition and addressing the nutritional needs of adolescents, pregnant or lactating women, and the elderly. (Goal 2.2).

Double agricultural productivity and the income of those who produce food on a smaller or small scale, taking into account the most vulnerable subjects such as women, indigenous people, family farmers, ranchers, and fishermen, through continued and equitable access to their lands and properties, to input resources for production and also to offer new knowledge in the field and financial and market services and opportunities to add value and obtain different jobs. (Goal 2.3).

From a more environmental scope, it is proposed to ensure by 2030, the sustainability of those systems that are used to produce different foods, this from the application of different resilient practices that increase production but that in the same way contribute to the maintenance and conservation of ecosystems, strengthening the capacity to adapt to different phenomena of climate change, extreme weather conditions, droughts, floods and other natural disasters that affect the quality of the land and soil. (Goal 2.4).

Figure 10: Photo by Steve Knutson on Unsplash.

Also, it seeks to maintain the genetic diversity of seeds, plants, and animals (both domestic, farm, and their wild species) through good management and diversification of seed and plant banks at not only regional but national and international levels, promoting access to benefits to those who derive the use of genetic resources and traditional knowledge as agreed internationally within this agenda, with fair and equitable distribution. (Goal 2.5).

30. World Health Organization, document EB 136/8, annexes I and II. Outcome of the Second International Conference on Nutrition. Retrieved from: https://apps.who.int/gb/ebwha/pdf_files/EB136/B136_8-en.pdf

For the fulfillment of this goal, it is important to increase international cooperation, investments in rural infrastructure to offer a good state of transport not only for those who work but also for the merchandise that travels from different parts of the territory. Increase agricultural research and extension services, technological development, and gene banks for plants and livestock to improve agricultural production in terms of its capacity, mainly in developing and underdeveloped countries.

Prevent and correct those trade restrictions and distortions in world agricultural markets, including the parallel elimination of all forms of agricultural export subsidies and export measures with equivalent effects, based on the mandate of the Doha Development Round [31].
Finally, take measures to ensure the smooth functioning of markets for staple foods and their derivatives in order to facilitate access to information on these markets, food reserves, to control or limit extreme price volatility in food.

31. Fergusson ps, Ian F. (18 January 2008). “World Trade Organization Negotiations: The Doha Development Agenda” (PDF). Congressional Research Service. Retrieved 09 August 2021.

Goal 3 - Good health and well-being

The third of the Sustainable Development Goals goes hand in hand with the issues of health coverage and access to good quality medical care, to promote health and well-being not only physical but mental, to prolong the life expectancy of all people and exclude no one from these services.

Another important issue for this Objective is the neonatal[32], infant, and maternal mortality, thus it seeks to increase and commit to medical and knowledge advances that allow such deaths to be reduced to the agreed date.

Without leaving behind the importance of access throughout the planet, to health services and sexual and reproductive education, including family planning, information, and the transmission of knowledge mainly to underdeveloped countries and vulnerable people.

Similarly, accelerating progress in the fight against different diseases such as tuberculosis, HIV/AIDS, malaria, Ebola, hepatitis, Covid-19[33], and other communicable diseases and epidemics; Also, the prevention of non-communicable diseases and offer the necessary treatments, including developmental, behavioral and neurological disorders.

End the epidemics of AIDS, malaria, hepatitis, tuberculosis, and neglected tropical diseases that are transmitted by water. (Goal 3.3).

Reduce one-third of premature mortality from non-communicable diseases through preventive treatments, promoting the mental health and well-being of all people by 2030. (Goal 3.4).

Strengthen the treatment and prevention of addictive substance abuse, including the abuse of narcotics and the harmful use of alcohol. (Goal 3.5).

Figure 11: Photo by CDC on Unsplash.

Last year (2020) the objective was to reduce half of the deaths and injuries caused by traffic accidents in the world. (Goal 3.6) It is possible that due to the situation that different countries in the world went through due to the Covid-19 pandemic, this figure has had some improvements that will be seen when counting the results in 2030 of the Agenda.

32. During the first 28 days of life – the neonatal age – is the expected vulnerable time for a child’s endurance. Children suffer the immense danger of dying in their first month of life at a standard rate of 17 decease per 1,000 live births in 2019; this scale is nowadays dropping by 52 percent from 37 deaths per 1,000 in 1990, according to the data presented by UNICEF in Neonatal Mortality, retrieved from https://data.unicef.org/topic/child-survival/neonatal-mortality/.

33. Coronavirus Desease Outbreak, 2019. For more information: https://www.who.int/es/emergencies/diseases/novel-coronavirus-2019. Retrieved on August 09, 2021.

Guarantee universal access to sexual and reproductive health services, such as family planning, information on these topics, sex education in schools, the integration of reproductive health into national strategies and programs. (Goal 3.7).

Likewise, achieve health coverage in all parts of the world and access to essential and quality health services, such as access to medicines and vaccines, as well as protection from financial risks. (Goal 3.8).

Significantly reduce the number of deaths and illnesses caused by dangerous chemicals, pollution, and contamination of water, air, and soil. (Goal 3.9).

To comply with the aforementioned, it is essential to strengthening the application of the Framework Convention of the World Health Organization, support research and development activities for new vaccines and drugs against communicable and non-communicable diseases that primarily affect developing countries, facilitating access to said essential drugs and vaccines following the Declaration on the Agreement on Aspects of Intellectual Property Rights Related to Trade and Public Health, which affirms the rights of developing countries to make maximum use of the provisions of the agreement to protect public health and provide access to all people. Significantly increase health financing and recruitment, improving training and retention of health personnel in underdeveloped countries, strengthen capacities for early warning, risk reduction and risk management for national and global health.

It is worth mentioning what was experienced during the Covid-19 pandemic, which reflects each one of the aspects raised within this macro objective, whereby what the world has lived since 2019 and that until today it continues to be in a state of emergency trying to control the virus and its variants, the importance of strategic planning is evident not only in developed countries but worldwide with those most vulnerable regarding the possible management of a disease such as the Covid-19 or future diseases that we can have. It is also mentioned in the Agenda 2030, to work and achieve sustainable development it is important to work together.

Goal 4 - Quality education

There is also a commitment to provide good quality, inclusive and equal education for all people of all levels, regardless of their sex, race, ethnic origin, disability, that is, pre-school, primary, secondary and tertiary education, the technical and professional training. Providing an environment conducive to the full realization of their rights and capacities, helping countries to take advantage of the demographic dividend, especially if they are in situations of vulnerability, they must have access to lifelong learning possibilities, which helps to acquire knowledge and skills necessary to take advantage of the opportunities that present themselves and to participate fully in society, through school safety and the cohesion of communities and families.

To promote learning opportunities for all and ensure inclusive and equitable education, it must be ensured that all children complete primary and secondary school. (Goal 4.1) It is proposed that this be free, equitable and of quality to produce relevant and effective learning outcomes.

It is necessary to ensure that both girls and boys have access to early childhood care and development services, to quality preschool education so that they are prepared for primary education. (Goal 4.2).

Also, equal access for all men and women to quality technical, professional, and superior training. (Goal 4.3). Considerably increasing the number of young people and adults who have the necessary skills to access the job or job they want. (Goal 4.4).

For this, it is important to eliminate the gender disparity in education and ensure equal access to all levels of education and vocational training for the most vulnerable people. (Goal 4.5).

Achieve literacy for all young people and a significant proportion of adults. (Goal 4.6). Ensuring that all students acquire practical and theoretical knowledge that is necessary to promote sustainable development, a knowledge that promotes a sustainable lifestyle, human rights, gender equality, the promotion of a culture of peace and non-violence, citizenship world, and the appreciation and respect of cultural diversity that contributes to the culture of sustainable development. (Goal 4.7).

Figure 12: Photo by Annie Spratt on Unsplash.

For this, educational facilities must be built and adapted to the needs of children and people, including those with disabilities, to offer safe, non-violent, inclusive, and effective learning environments for all.

By 2020 the objective was to considerably increase the world level of scholarships available to developing countries, particularly those underdeveloped countries, African countries[34] so that their students can access enrollment in higher education programs, training programs professional, technical and scientific programs, engineering and information and communications technology.

Also increasing the considerable supply of qualified teachers through international cooperation for their training.

34. Sifuna, D. N. (2001). African education in the twenty-first century: The challenge for change. Journal of International Cooperation in Education, 4(1), 21-38. doi:nfo:doi/10.15027/34143

Goal 5 - Gender equality

To achieve gender equality and empower women and girls it is important to end all forms of discrimination against them (Goal 5.1). Eliminate all forms of violence against women and girls, in different spheres, both public and private, including trafficking and sexual exploitation. (Goal 5.2).

Eliminate harmful practices such as child, early and forced marriage, as well as female genital mutilation. (Goal 5.3).

Recognize and value the care of domestic work that is not paid, through public services, infrastructure, or social protection policies that promote shared responsibility at home and the importance of participation in the family in each country. (Goal 5.4).

Allow the full and effective participation of women and equal leadership opportunities at all decisive levels in different areas such as politics, the economy, society, and public life. (Goal 5.5).

Hand in hand with the aforementioned objectives, universal access to health and sexual education must be ensured, allowing women to access their reproductive rights as agreed with the Program of Action of the International Conference on Population and Development, of the Beijing Platform for Action. (Goal 5.6)[35].

To achieve the goals, it is important to undertake reforms that grant women equal rights to access economic resources, ownership, and control of land, and other types of goods, natural resources, inheritance, and financial services following the national laws.

Improve, in particular, information and communications technology, approve and strengthen sound policies and applicable laws to promote gender equality and the empowerment of women.

Figure 13: Photo by Lindsey LaMont on Unsplash.

35. Program of Action of the International Conference on Population and Development, of the Beijing Platform for Action. For more information: https://www.un.org/en/events/pastevents/pdfs/Beijing_Declaration_and_Platform_for_Action.pdf Retrieved on June 09, 2021.

Goal 6 - Clean water and sanitation

Within the Agenda, the United Nations Framework Convention on Climate Change[36] is recognized as the main intergovernmental and international forum to negotiate the global response to climate change, resolutely impacting the threat it poses and the degradation of the environment. Maximum international cooperation is required to accelerate the reduction of global greenhouse gas emissions and address adaptation to the adverse effects of climate change, such as the increase in the average global temperature above 1.5 or 2 degrees Celsius.

Thus, from the environmental aspect, to guarantee the availability and sustainable management of water, universal and equitable access to drinking water must be achieved at an affordable price for all people. (Goal 6.1).

Equally achieve access to sanitation and hygiene services that are equitable and adequate for all, putting an end to open defecation, and paying special attention to the needs of women and girls in vulnerable situations. (Goal 6.2).

Improve water quality, eliminating dumping, minimizing the emission of chemicals and hazardous materials, reducing the percentage of the wastewater to be treated, in order to reduce pollution, hand in hand with considerably increasing recycling and reuse worldwide. . (Goal 6.3).

Have an efficient use of water resources and increase their quantities in all sectors, ensuring the sustainability of extraction and supply of freshwater to face the scarcity of this resource. (Goal 6.4). Also, through cross-border cooperation, implement the integrated management of water resources at all levels. (Goal 6.5).

As mentioned above, protecting and re-establishing ecosystems related to water, such as wetlands, rivers, lakes, mountains, aquifers, forests, among others. (Goal 6.6).

Similarly, it is important to expand international cooperation and support provided to developing countries for capacity building in activities and programs related to water and sanitation, such as desalination, efficient use of resources, water treatment, and reuse technologies, all of this bearing in mind the importance of supporting and strengthening the participation of local communities.

Figure 14: Photo by Chinh Le Duc on Unsplash.

36. United Nations, Treaty Series, vol. 1771, No. 30822. Retrieved from: https://www.un-ilibrary.org/content/periodicals/24121495 Retrieved on May 12, 2021.

Goal 7 - Affordable and clean energy

It is essential to increase international cooperation in order to facilitate access to research, knowledge, and technologies related to clean energy[37], renewable energy sources, and energy efficiency, reaching advanced technologies that pollute the least.

Investment in energy infrastructure should also be promoted, and technology improved to offer modern and sustainable services in all countries.

Access to modern energy services that are affordable and reliable for all must be guaranteed worldwide. (Goal 7.1), considerably increase the proportion of renewable energy as the main energy source. (Goal 7.2) and doubling the global rate of energy efficiency. (Goal 7.3).

Figure 15: Photo by Andreas Gücklhorn on Unsplash.

37. According to the book: Environmental Education, renewable energy is the energy collected from virtually limitless natural sources, either because of the extensive amount of energy they contain or because they can achieve regeneration by natural means.

Goal 8 - Decent work and economic growth

Currently, it is important to generate dynamic, sustainable, innovative, and people-centered economies that promote job opportunities among young people, and the empowerment of women, all this, with access to decent work for all.

Within the 2030 Agenda, it is sought to lay solid economic foundations in all countries, sustained, inclusive, and sustainable economic growth is the key point to achieve prosperity and achieve sustainable development, which will only be possible if wealth is shared and income inequality is being fought.

Forced labor and human trafficking must be eradicated, end child labor in all its existing forms. Strengthen underdeveloped countries in different sectors, through structural transformation, adopting policies that increase production capacity, employment and productivity, financial inclusion, and the sustainable development of agriculture, industry, and transport systems with quality and resilience.

To promote all this, per capita economic growth must be maintained, according to national circumstances, and the growth of gross domestic product at least 7% per year in underdeveloped countries. (Goal 8.1).

To achieve higher levels of economic productivity, through innovation, diversification, and modernization of technologies in sectors with high added value. (Goal 8.2).

Encourage policies aimed at productive activities, the creation of new jobs, creativity, innovation, and entrepreneurship, promoting the formalization and growth of micro, small and medium enterprises. (Goal 8.3).

According to the Ten-Year Framework[38] of Programs on Sustainable Consumption and Production, it seeks to progressively improve the production and consumption of world resources, seeking to decouple economic growth with environmental degradation. (Goal 8.4).

Figure 16: Photo by Andreas Gücklhorn on Unsplash.

Achieve equal pay for work of equal value, full, productive, and decent for all women, men, youth, and people with disabilities. (Goal 8.5). As well as considerably reducing the proportion of young people who are not employed and those who do not study or receive no training. (Goal 8.6).

It is necessary to adopt immediate measures, which are effective to eradicate forced labor, to put an end to all existing forms of slavery and human trafficking, to prohibit and eliminate forms of child labor, including the recruitment of better and better use of children for war,

38. Ten-Year Framework. For more information: https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=1444&menu=35 Retrieved on August 01, 2021.

with a target set to be met by 2025. (Goal 8.7).

Labor rights must be protected and promoted in a safe and secure work environment for those who work, including migrants, especially women and people with precarious jobs. (Goal 8.8).

It is necessary to develop and put into practice policies that promote sustainable tourism, with the aim of promoting culture, local products and creating new jobs. (Goal 8.9). To do so, strengthen the capacity of national financial institutions to promote and expand access to financial, banking, and insurance services for all people. (Goal 8.10).

The economic issue, however, is one of the greatest contrasts in terms of the scope of sustainable development, since each country has different situations and methods to counteract them. Therefore, within the 2030 Agenda, it is emphasized to increase support for trade in underdeveloped countries, through the Enhanced Integrated Framework[39] for Technical Assistance to Least Developed Countries in Trade Matters. A global strategy for youth employment must be developed and implemented, applying the Global Jobs Pact of the International Labor Organization.

39. Enhanced Integrated Framework for Technical Assistance to Least Developed Countries in Trade Matters. This framework seeks to improve the advantages that least-developed countries acquire from the trade-related exceptional support from the six agencies associated with designing it. Information based on https://www.wto.org/english/tratop_e/devel_e/framework.html

Goal 9 - Industry, innovation and infraestructure

Looking forward to the United Nations Conference on Housing and Sustainable Urban Development, held in Quito[40], where the management and sustainable development of the urban environment is emphasized as a fundamental basis for the quality of life in cities. For this, a work plan is proposed with the authorities and local communities, in order to renew and plan cities and human settlements from a perspective that promotes community cohesion, people's safety and stimulates jobs and innovation.

Thus, reducing the negative effects of urban activities, and those pollutants that are dangerous to health and the environment, based on ecologically sound management of products and their use without risks, the efficient use of energy, the caring for water, and eliminating the impact of cities on the global climate system by reducing and recycling waste, taking into account demographic trends and forecasts of national political strategies in rural and urban development.

To build resilient infrastructures, it is important to promote inclusive and sustainable industrialization, fostering innovation, developing reliable, sustainable, quality projects, characterized by supporting economic development and human well-being, taking into account affordable and equitable access for all people. (Goal 9.1).

Figure 17: Photo by Scott Blake on Unsplash.

By 2030, significantly increase the industry's contribution to employment and Gross Domestic Product, promoting inclusive and sustainable industrialization, according to each of the national circumstances. (Goal 9.2). In addition, and to increase mainly in underdeveloped countries the access of small industries and other companies, to financial services, integration in value chains and markets with affordable credit. (Goal. 9.3).

As mentioned above, seeking that all countries take measures according to their capacities, the infrastructure must be modernized and reconverted to address a sustainable perspective, making use of resources more effectively, promoting the use of technologies and industrial processes. clean and environmentally sustainable. (Goal 9.4).

40. In Resolution 66/207 and line with the bi-decennial cycle (1976, 1996, and 2016), the United Nations General Assembly determined to congregate the Habitat III Conference to reinvigorate the global engagement to sustainable urbanization and to converge on the implementation of a New Urban Agenda, building on the Habitat Agenda of Istanbul in 1996. https://habitat3.org/the-conference

An increase in the technological capacity of the industrial sectors must be generated, accompanied by scientific research, of each of the countries present in the agreement, particularly those underdeveloped, which considerably promote innovation, and the number of people working in this area. (Goal 9.5).

To facilitate the development of sustainable and resilient infrastructures, there must be the possibility and support of accessing technological and technical financial aid that is reflected in the national research and innovation of each of the countries, guaranteeing a regulatory environment conducive to industrial diversification and value addition to basic products, mainly within developing countries. Where also through information and communications technology an effort is evidenced to provide universal and free access to the Internet anywhere in the world.

Goal 10 - Reduced inequalities

Something important, and worth emphasizing, that is mentioned within the 2030 Agenda[41], is the understanding, tolerance, and mutual respect between different cultures, regardless of the ethical values of global citizenship, and recognizing the natural diversity and world cultures and all those civilizations that play a vital role in sustainable development.

A problem that is currently being faced in different countries of the world, is the issue of migration and its increase in recent years, it must be taken into account that the contribution of migrants to sustainable development is positive and must be understood as a reality multidimensional of great relevance not only for the development of the countries of origin but also for the transit and destination that requires that others find coherent and comprehensive responses to the situation that is occurring.

Community improvement and gain will be evident in each of the countries if a healthy workforce is available, with the knowledge and skills necessary to perform productive and rewarding work, allowing people to fully participate in society.
For this, it is important to cooperate at the international level proposed by the United Organizations, with which security, order, respect for human rights, and the regularization of migration are guaranteed, providing humanitarian treatment to migrants, refugees, and displaced, whatever their situation or immigration status. Strengthening the resilience of communities that are willing to host refugees, particularly in developed countries, where this type of situation occurs most often.

To reduce inequality in the countries, the income growth of the poorest 40% of the population must be progressively achieved and maintained at a rate higher than the national average. (Goal 10.1). To empower and promote the social, political, and economic inclusion of absolutely all people regardless of their age, sex, race, ethnicity, religion, disability, origin, or economic situation. (Goal 10.2). With the aim of guaranteeing equal opportunities, including eliminating discriminatory policies that increase inequality. (Goal 10.3). Equally adopting fiscal, salary, and social protection policies that promote equality. (Goal 10.4).

As it is a matter in the political sphere, the surveillance and regulation of the institutions should be improved to strengthen the application of said laws. (Goal 10.5). Obtain a greater intervention representation of those underdeveloped countries to increase the effectiveness, reliability, legitimacy, and accountability in the decisions taken by economic and financial institutions. (10.6).

Finally, facilitate the orderly, safe, regular and responsible mobility of people. (Goal 10.7).

Although the situation of each of the countries is different based on their development, mainly those developed countries should be taken into account, with the aim of promoting assistance to those underdeveloped, in terms of financial flows, foreign direct investment in accordance with the agreements of the World Trade Organization.

41. The 2030 Agenda for Sustainable Development. For more information: https://unric.org/it/agenda-2030/ Retrieved on August 02, 2021.

Figure 18: Photo by James Eades on Unsplash.

Goal 11 - Sustainable cities and communities

Sustainable development is in danger of not becoming a reality if there is no peace and security within cities and communities. It is important to recognize the need that as a society we have to build peaceful, together and inclusive communities that provide access to laws and justice for each of the people that compose it, based on respect for human rights, good governance, institutions transparent and effective, allowing the exercise of an effective rule of law aimed at development.

Some factors such as injustices, insecurity, inequalities, violence, corruption, poor governance, and illicit flows of financial resources, are those that are encountered as obstacles to the efforts we make as a society to resolve or prevent conflicts. watching over each of the people involved, seeking to consolidate peace and build a rule of law.

Nowadays, countries must take effective measures through actions, to eliminate those obstacles that prevent the full realization of the established objectives, to economic, environmental, and social development.

Make cities and towns open, safe and resilient for all to adequate housing and basic services must be ensured, and slums upgraded. (Goal 11.1).

Provide access to safe and sustainable transport systems to improve road safety, particularly with a plan to expand public transport, paying attention to the needs of the most vulnerable people. (Goal 11.2). Like the increase in inclusive and sustainable urbanization, from the capacity of planning and participatory and integrated management of human settlements in each of the countries belonging to the agreement. (Goal 11.3). Safeguarding the cultural and natural heritage of the world. (Goal 11.4).

Figure 19: Photo by Victor on Unsplash.

On the other hand, the number of deaths caused by water-related disasters, and people affected by them, must be significantly reduced. Significantly reduce direct economic losses caused by disasters in relation to world gross domestic product, and people in vulnerable situations, seeking to protect the poorest. (Goal 11.5).

It is necessary to reduce the negative per capita environmental impact of cities, paying attention to air quality and municipal waste management. (Goal 11.6).

Provide access to green areas and safe public spaces, which are characterized by being inclusive and accessible, particularly for women, children, people with disabilities, and the elderly. (Goal 11.7).

Promoting positive economic, social, and environmental links between rural and urban areas that strengthen not only national but also regional development planning, is one of the key points to take into account for the fulfillment of this objective. Based on the consonance with the Sendai Framework for Disaster Risk Reduction 2015-2030[42], promoting the inclusion and efficient use of resources with the objective of considerably increasing the implementation of integrated policies and plans, which focus on climate change mitigation, adaptation to it, and disaster resilience.

42. Sendai Framework for Disaster Risk Reduction 2015-2030. Retrieved from: https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030 on February 17, 2021.

Goal 12 - Responsible consumption and production

One of the main actions to commit ourselves to make changes that have a positive impact and are fundamental to combat climate change is the change of paradigm in our societies with the production and consumption of goods and services. The business sector, international organizations, governments, and other non-state agents must contribute to modifying unsustainable actions of consumption, production, transport, process technologies, not only in developed countries but also in those that send development, to move towards a mode of consumption and production that takes into account innovation and a basis on environmental sustainability.

To guarantee sustainable consumption and production modalities, the Ten-Year Framework of Programs on Sustainable Consumption[43] and Production modalities must be applied, being led by those developed countries, taking into account the degree of development and the capacities of those developing countries. (Goal 12.1).

In the same way, as mentioned above, based on the established times, sustainable management of natural resources based on their efficient use must be sought. (Goal 12.2).

Food losses must be reduced during production and supply chains, including losses during harvesting, with the goal of halving global per capita food waste. (Goal 12.3).

Figure 20: Photo by Hermes Rivera on Unsplash.

In the same way, as mentioned above, based on the established times, sustainable management of natural resources based on their efficient use must be sought. (Goal 12.2).

Food losses must be reduced during production and supply chains, including losses during harvesting, with the goal of halving global per capita food waste. (Goal 12.3).

By 2020, it was proposed within the agenda, to achieve the rational environmental management of those chemical products and wastes of the life cycle of each one, significantly reducing pollution and adverse health effects of these in the atmosphere, soils, and the environment. Water. (Goal 12.4). It is important to reduce considerably, through the prevention, reduction, recycling, and reuse of waste. (Goal 12.5).

43. The Ten-Year Framework of Programs on Sustainable Consumption and Production. Information retrieved from: https://sustainabledevelopment.un.org/index.php?page=view&type=400&nr=1444&menu=35.

One of the sectors that generate the greatest impact is the productive sector, that is, large and traditional companies, the use of sustainable practices must be encouraged in each part of the product life cycle. (Goal 12.6). Promoting practices that are sustainable in accordance with the policies and priorities established in each nation. (Goal 12.7).

It must be ensured that everyone has the possibility of acquiring information and accessing knowledge in relation to sustainable development, and lifestyles that are friendly to the environment. (Goal 12.8).

In order to achieve the proposed objectives, the scientific and technological capacity must be strengthened to move towards much more sustainable consumption patterns, develop the instruments and apply machinery to the production phases that allow environmentally friendly practices, rationalize the inefficient subsidies that Currently they are used for the use of fossil fuels, seeking to eliminate them from the market and introducing new methods, taking into account the specific needs and conditions of each of the countries.

Goal 13 - Climate action

The effort that is sought to obtain from each of the countries is similarly focused on the sessions of the Conference of the Parties in Paris, where an agreement is sought to change the modus operandi of humans and the consequences of this with the climate change, corroborating mitigation, adaptation, financing, development, and transfer of solutions, technology, knowledge, and capacities to the extent of transparency and the support provided.[44]

Figure 21: Photo by Chris LeBoutillier on Unsplash.

To adopt measures to combat the effects that we are currently facing from climate change, the capacity to adapt risks in relation to natural disasters in the countries must be strengthened. (Goal 13.1) Incorporating measures into national and international policies, strategies, and plans. (Goal 13.2). Improving education and awareness on the subject from an early age. (Goal 13.3).

To achieve this, it is important to comply with the commitment agreed in the United Nations Framework Convention on Climate Change, which was scheduled to be fulfilled in 2020, with the support of an economic incentive, which came from allied sources, to thus, meet the needs of developing countries and make the Green Climate Fund[45] fully operational.

44. Acknowledging that the United Nations Framework Convention on Climate Change is the primary international, intergovernmental forum for negotiating the global response to climate change.

45. Green Climate Fund. For more information: https://www.greenclimate.fund

Goal 14 - Life below water

The United Nations Organization recognizes economic and social development, based on the meeting of the Conference of the Parties to the Convention on Biological Diversity, which was held in Mexico, as the sustainable management of the resources of the planet, such as the use and preservation of the oceans and seas, freshwater resources, ecosystems, forests, mountains, arid areas, animals, diversity, flora and fauna and others. It is important to preserve and promote sustainable methods, which cope with scarce resources and pollution.

Consequently, objective number 14 proposes to preserve, conserve and use in a sustainable way the oceans, seas, marine resources, among others, between now and 2025, with the aim of significantly reducing pollution of all kinds, either due to the activities carried out inland like seas. (Goal 14.1).

Protect marine and coastal ecosystems, to avoid significant adverse effects, strengthen their resilience, and adopt restoration measures that protect the health and productivity of the ocean. (Goal 14.2). Minimizing the acidifying effects of the oceans, including through scientific cooperation. (Goal 14.3).

During the past year, 2020, fishing exploitation and excessive, illegal, unreported, or unregulated fishing should be regulated effectively, in order to eliminate destructive practices to the environment, with the aim of putting an end to the shortest possible time to reestablish fish populations and their biological characteristics. (Goal 14.4). Also, conserve 10% of coastal and marine areas (Goal 14.5) and prohibit forms of fishing subsidies that contribute to overcapacity and overfishing, in addition to the problem generated by illegal fishing. (Goal 14.6)[46].

By 2030, the economic benefits of developing countries that, through the application of these measures, achieve sustainable use of marine resources, in particular fishing, aquaculture, and tourism, must be increased. (Goal 14.7).

Access to marine resources and markets should be facilitated for artisanal fishermen, increasing scientific knowledge and developing research and innovation in the technology currently used for marine activities, in order to improve the health of the oceans, enhance the contribution of marine biodiversity in the development or activities of countries, conservation and sustainable use of resources, taking into account the Criteria and Guidelines for the Transfer of Marine Technology of the Intergovernmental Oceanographic Commission and the United Nations Convention on the Law of the Sea[47], which is evidenced in document 14. “The future we want”[38] .

Figure 22: Photo by Naja Bertolt Jensen on Unsplash.

46. Taking into account ongoing World Trade Organization negotiations, the Doha Development Agenda and the Hong Kong ministerial mandate.

47. United Nations Convention on the Law of the Sea (United Nations, Treaty Series, vol. 1833, No. 31363).

48. “The future we want” (resolution 66/288, annex).

Goal 15 - Life on land

To protect and promote the sustainable use of terrestrial ecosystems, the plan is similar to the one mentioned above for marine ecosystems.

The conservation and sustainable use of these territories must be ensured, conserving important resources such as freshwater, specifically in wetlands, mountains, forests, and arid zones. (Goal 15.1). Promoting sustainable management practices to stop deforestation and forest degradation worldwide. (Goal 15.2). Fight against desertification and rehabilitate soils degraded by drought or floods. (Goal 15.3). Ensure the conservation of mountains, including flora and fauna species, to improve the capacity they offer us and all the benefits to achieve sustainable development. (Goal 15.4).

It is urgent to adopt these measures to significantly reduce natural habitats, that is, to stop the loss of biodiversity and protect threatened or endangered species. (Goal 15.5).

Promote from production and consumption, the fair and equitable sharing of these benefits that resources generated within society. (Goal 15.6). Adopting urgent measures to put an end to trafficking in protected species of flora and fauna, which is currently justified as a trade and labor action for the people who participate and continue to support these practices. (Goal 15.7).

Species are as important as their habitat, it is essential to adopt measures that prevent the introduction of other invasive alien species that generate negative effects within both terrestrial and aquatic ecosystems. (Goal 15.8). Integrating the values of biodiversity in ecosystems, and the planning and development processes within them. (Goal 15.9).

To achieve the objectives, the financial resources that are destined to conserve and make sustainable use of ecosystems and the biodiversity of species must be increased, finance forest management, and also promote at all levels considerable aid or adequate incentives to promote their use. sustainable and ecological activities that do not generate negative impacts on the environment, such as eliminating poaching and trafficking of protected species as mentioned above, increasing the capacity of local communities that carry out these practices to pursue different livelihood opportunities and sustainability.

Figure 23: Photo by Esteban Benites on Unsplash.

Goal 16 - Peace, justice and strong institutions

Without a peaceful and inclusive society, sustainable development cannot be achieved, therefore, access to justice must be facilitated for each and every one of the people who participate in society, at each and every one of the institutional levels.

The forms of violence that correspond to the highest mortality rates in the world must be significantly reduced. (Goal 16.1). End abuse, trafficking, exploitation, and different forms of violence that are exercised towards minors. (Goal 16.2). Promote that the state carries out national plans that guarantee equal access to justice for all people. (Goal 16.3).

Reduce the allocation of financial resources for the acquisition of illicit weapons, and fight against all forms of organized crime. (Goal 16.4). Similarly reducing corruption and bribery in all its forms. (Goal 16.5). Creating effective and transparent levels of institutions when rendering accounts and showing management results. (Goal 16.6).

Allow the adoption of inclusive, participatory, and representative decisions that respond to the needs of society, (Goal 16.7) that expand and strengthen the international participation of developing countries in global governance institutions. (Goal 16.8).

Provide access through birth registration to a legal identity for all (Goal 16.1), guaranteeing access to public information and the protection of fundamental freedoms (Goal 16.9).

To achieve the objectives, the relevant national institutions must be strengthened, and if necessary, have the possibility of accessing international cooperation specifically to developing countries to prevent violence, combat crime, and eliminate terrorism, through the application and enactment of laws or policies that do not discriminate and favor sustainable development.

Figure 24: Photo by Jesse Young on Unsplash.

Goal 17 - Partnerships for the goals

The last of the Sustainable Development Goals are based on strengthening the means of implementation and the World Alliance for Sustainable Development[49] said macro-objective is divided into five categories that cover each of the areas necessary to address to achieve sustainable development.

The first is finance, where it is proposed to mobilize internal resources, through international support to developing countries, (Goal 17.1). Ensure those countries that comply with the agreed commitments, specifically the objective of allocating 0.7% of gross national income to official development assistance for developing countries and between 0.15% and 0.20% of the gross national income to official development assistance to least developed countries, (Goal 17.2).

Mobilize your financial resources from multiple sources that support developing countries, (Goal 17.3). In addition to helping them achieve long-term external debt sustainability, with policies and incentives that help encourage financing. (Goal 17.4). Adopting investment promotion systems, (Goal 17.5).

The second category is technology, based on achieving regional and international cooperation in terms of access to science, technology, and innovation, increasing the exchange of knowledge (Goal 17.6). Promoting the development of new technologies that are highly sustainable and sustainable, specifically in developing countries. (Goal 17.7). For 2017, the creation of the technology bank was proposed, in support of science, technology, and innovation, in particular information and communications technology, (Goal 17.8).

49. Global Alliance, Reporting Progress on Peaceful, Just and Inclusive Societies: https://www.un-globalalliance.org

The third of the categories is capacity building, increasing international support for the implementation of the different effective and specific activities of each of the countries, to support the national plans for the implementation of all the Sustainable Development Goals. (Goal 17.9).

The fourth category is trade, which seeks to promote a universal multilateral system, based on non-discriminatory and equitable rules within the framework of the World Trade Organization and the Doha Development Agenda[50], (Goal 17.10). To in turn, significantly increase the exports of developing countries, (Goal 17.11). Where also, an opportunity to access markets is generated, ensuring that the rules are transparent and simple, (Goal 17.12).

Finally, the fifth of the categories talk about systemic issues, mainly in three specific areas, the first regulatory and institutional coherence, managing to increase global macroeconomic stability (Goal 17.13), improving the coherence of the policies applied to achieve sustainable development, (Goal 17.14), and respect the norms and leadership margin of each of the participating countries to eradicate poverty and achieve sustainable development, (Goal 17.5).

The second is multi-stakeholder alliances, intending to improve, complement, and strengthening alliances that mobilize and exchange knowledge, specialized in order to achieve the objectives and support their achievement, (Goal 17.6), wherein the same way The establishment of effective alliances is fostered and promoted in different spheres of

50. Known semi-officially as the Doha Development Agenda as a primary goal to increase the trading possibilities of developing countries. Retrieved from: https://www.wto.org/english/tratop_e/dda_e/dda_e.htm on February 17, 2021.

civil society, taking advantage of the experience of the participants, the underdeveloped countries and the strategies for obtaining resources to be used to meet the objectives. (Goal 17.17).

The third and final is data-driven monitoring and accountability, where last year it was proposed to improve support for capacity building in developing countries, with the availability and access of timely data, reliable and of quality, regardless of gender, race, origin, immigration status, age, disability, or geographic location. (Goal 17.18). To take advantage of initiatives to measure income in achieving sustainable development and to support capacity building in different countries. (Goal 17.19).

Figure 25: Photo by Matthew TenBruggencate on Unsplash.

Towards a quantification od the SDGs

Within the 2030 Agenda, one of the issues to be discussed is in the same way the means of implementation that are proposed to achieve the objectives, these means of implementation are fundamental to put the 2030 Agenda into practice, they are of the same importance as the same. objectives proposed within each of the 17 macro-objectives.

Based on the specific policies and measures indicated in the final document of the Third International Conference on Financing for Development, held in Addis Ababa[51] from July 13 to 16, 2015, with which the General Assembly of the Agenda was approved of Action of Addis Ababa , through a broad and ambitious alliance, which seeks to commit the participants to work together and in a spirit of solidarity, with intense participation to achieve the objectives and goals.

It is understood that each of the participating countries is responsible for their progress based on economic and social development, which in the same way is possible according to the characteristics of each of these, therefore, within the agenda the mobilization of resources to the most vulnerable countries that do not have the same capacity to act as the goals of those developed countries.

Supporting and recognizing the role that these changes will have in the economy of different countries, such as micro-enterprises, multinational cooperatives, and other organizations based on civil society and philanthropic organizations.

Another document that is proposed as support and reference for the implementation of the strategies, objectives, and relevant action programs is the Istanbul Declaration and Program of Action[52], the Modalities of Accelerated Action for Small Island Developing States. and the Vienna Program of Action for Landlocked Developing Countries for the Decade 2014-2024, and the importance of supporting the African Union Agenda 2063 and

51. Addis Ababa Action Agenda of the Third International Conference on Financing for Development (Addis Ababa Action Agenda), adopted by the General Assembly on July 27, 2015 (resolution 69/313, annex).

52. Report of the Fourth United Nations Conference on the Least Developed Countries, Istanbul, Turkey, May 9-13, 2011 (A / CONF.219 / 7), chaps. I and II.

the New Partnership for Africa's Development program[53].

An important role to take into account is international public financing, which includes development assistance, and the mobilization of resources from different sources, both public and private, that can be destined to countries in need.

Private entrepreneurship, investment, and innovation are the great drivers of productivity, inclusive economic growth, and job creation.

As well as the participation of national parliaments, who will develop an indispensable role for the effective fulfillment of the agreed commitments and objectives, internally promulgating legislation and laws that guide the decisions of society and the country in the fulfillment of the Sustainable Development Goals.

In the same way, it is the responsibility of governments to carry out the necessary strategic plans for monitoring and reviewing the progress achieved throughout the 15 years established for the fulfillment of the goals, so that each of them will be able to share information and data. relevant to show the progress that was obtained.

The United Nations Organization proposes a systematic follow-up process that examines the different levels indicated within the agenda, for the supervision of the process in each of the countries. In addition to the development of indicators that help to measure the work of each of these, formulating methods that allow evidence of progress and complement decision-making.

53. Annex to the letter dated 14 August 2002 from the Permanent Representative of South Africa to the United Nations addressed to the President of the Security Council, The New Partnership for Africa's Development. Fifty-seventh session (Item 41 of the provisional agenda). Retrieved from https://documents-dds-ny.un.org/doc/UNDOC/GEN/N02/525/84/PDF/N0252584.pdf?OpenElement

The sustainable development goals report 2021

The United Nations Organization made a report showing the progress or delays of each of the Sustainable Development Goals, based on the situation that the world and societies have been facing today.

Considering the factors made within the same document of the 2030 Agenda, the United Nations decided to implement communication through infographics as one of the implementation methods, the current situation that each of the Objectives of Sustainable development.

The graphs provided in the report for the year 2021 by the United Nations will be presented below, showing the evolution in proportion to the measures and variables that refer to each of the objectives.

It is essential to highlight the effect that Covid-19 had on the results of this report, not only becoming a focus but also the positive effect, from the fact of restricting so many people to stay inside their homes, reducing the level of contamination that is generated by the daily activities of people, companies, and others. But in the same way, the negative aspect is due to the impossibility of monitoring the processes that were being developed to make essential changes within each of the objectives, in addition to the new problems that arose not only during the pandemic but after it.
Regarding this, it is worth mentioning the importance of making this information known to the public, that is to say, annually showing the status of each of the objectives.

In the same way, the relationship with the project approach is essential, where the lack of information is evidenced related to sustainable issues. This type of tool shows some ways of quantifying and qualifying the data based on said aspects.

However, it is evident in the same way that most of the information is communicated in general terms; that is, the depth of the problems is not displayed in detail about what is happening and is related to the Sustainable Development Goal. So then, it is crucial to take into account this aspect as one of the opportunities that will later be exposed within the project, evidencing the difficulty not only in areas related to design but also in the way in which the projects are being developed and communicated, leaving behind a lot of relevant information that allows verifying both the positive and negative aspects of the impacts that are generated from a sustainable perspective.

Another critical point, which is related in the same way to those as mentioned earlier, is the possibility of making changes or updating the situation over the time established for the fulfillment of the objectives, as the example of the modification of Objective No. 1: End poverty in any of its forms in all parts of the world, where initially within the document proposed in 2015, the proportion of poverty was raised like those who live with less than $ 1.25 a day; This data was updated in 2011 to $ 1.90 per day.

In conclusion, the tools to communicate the progress of the Sustainable Development Goals allow to show the process within the established time and avoid doing a review only at the end. Where, unlike the Millennium Goals, it is possible to understand which are those that need a greater focus and those that have made significant progress in changing the planes of protagonism and giving priority to those that have not generated an impact.

Some of the graphic elements provided within the report will be presented below, which show the status of compliance with the goals agreed in 2015.

Goal 1

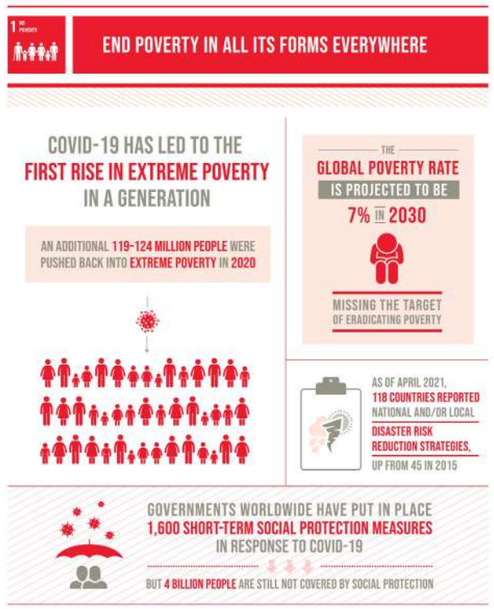


Figure 26: The Sustainable Development Goals Report 2021 - Goal 1 (unstats.un.org/sdgs/report/2021/).

Goal 2

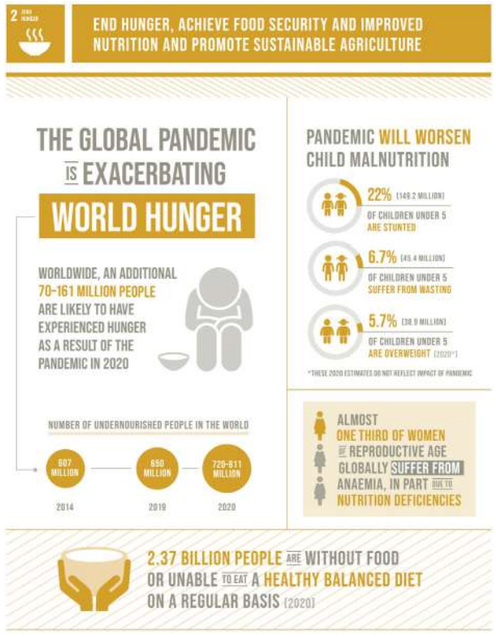


Figure 27: The Sustainable Development Goals Report 2021 - Goal 2 (unstats.un.org/sdgs/report/2021/).

Goal 3

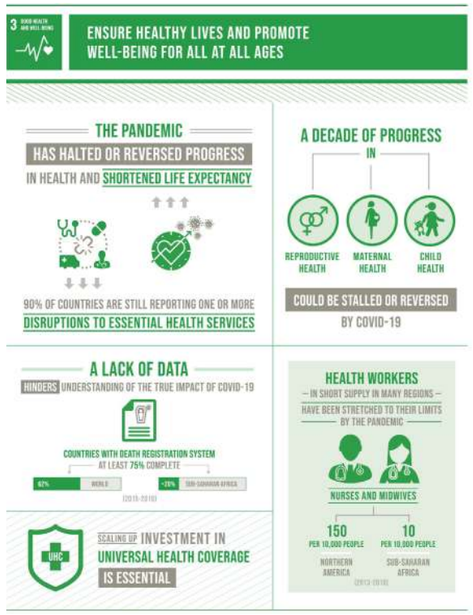


Figure 28: The Sustainable Development Goals Report 2021 - Goal 3 (unstats.un.org/sdgs/report/2021/).

Goal 4

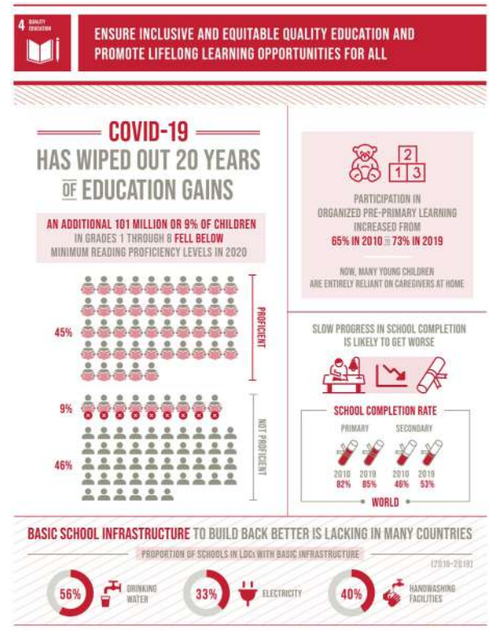


Figure 29: The Sustainable Development Goals Report 2021 - Goal 4 (unstats.un.org/sdgs/report/2021/).

Goal 5

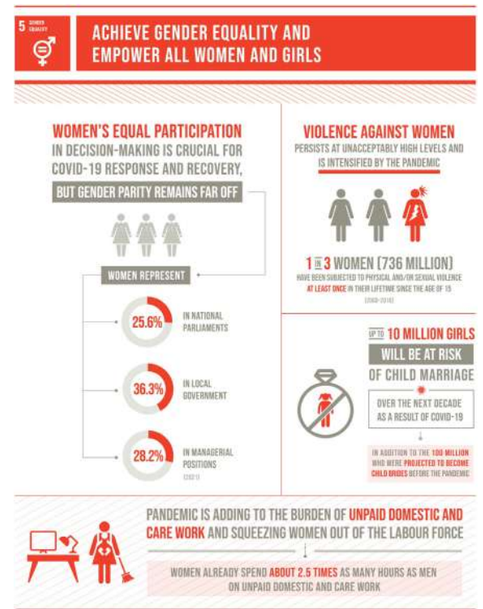


Figure 30: The Sustainable Development Goals Report 2021 - Goal 5 (unstats.un.org/sdgs/report/2021/).

Goal 6

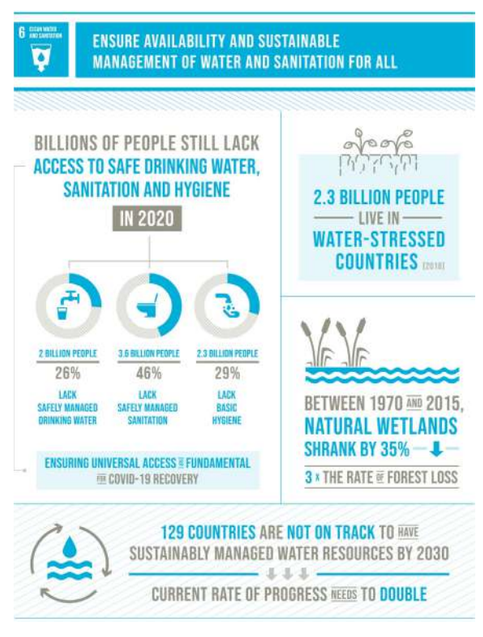


Figure 31: The Sustainable Development Goals Report 2021 - Goal 6 (unstats.un.org/sdgs/report/2021/).

Goal 7

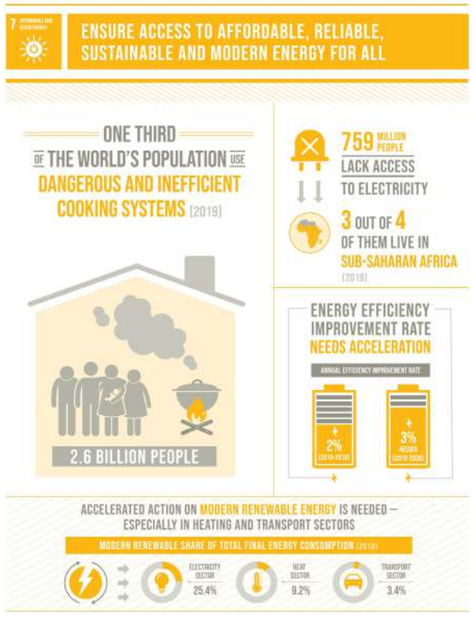


Figure 32: The Sustainable Development Goals Report 2021 - Goal 7 (unstats.un.org/sdgs/report/2021/).

Goal 9

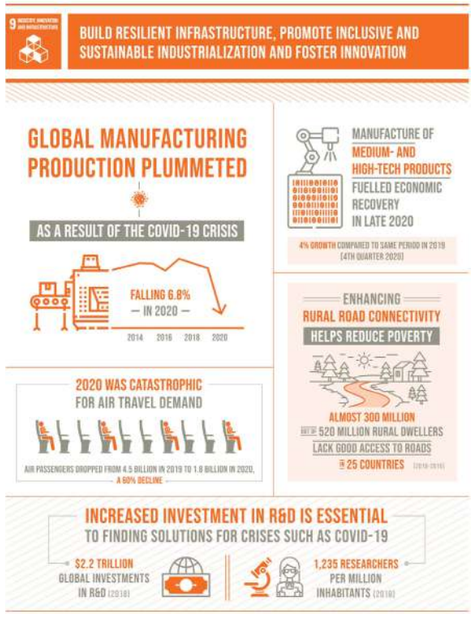


Figure 34: The Sustainable Development Goals Report 2021 - Goal 9 (unstats.un.org/sdgs/report/2021/).

Goal 11

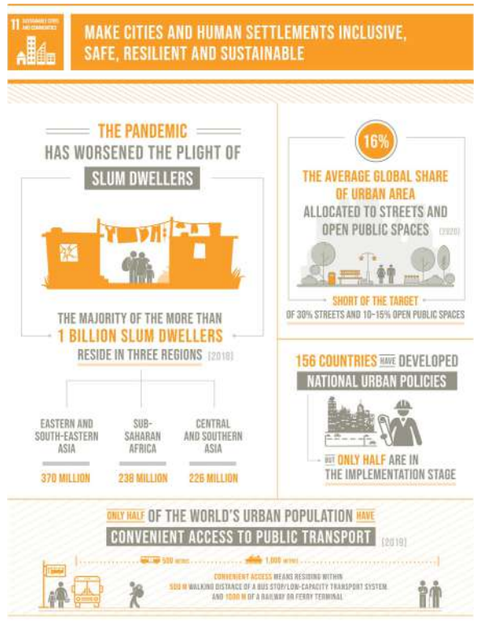


Figure 36: The Sustainable Development Goals Report 2021 - Goal 11 (unstats.un.org/sdgs/report/2021/).

Goal 13

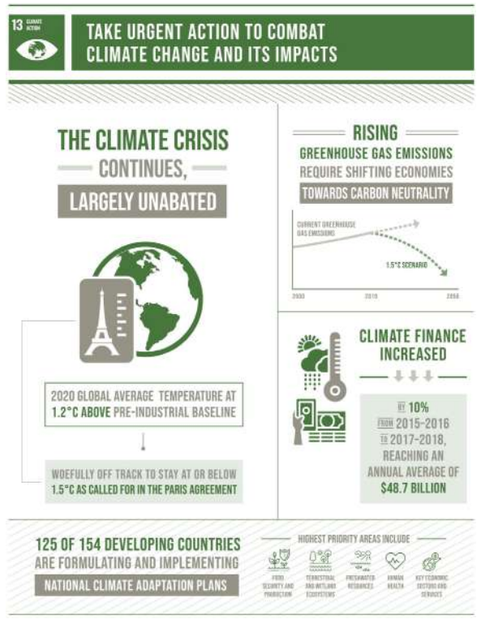


Figure 38: The Sustainable Development Goals Report 2021 - Goal 13 (unstats.un.org/sdgs/report/2021/).

Goal 8

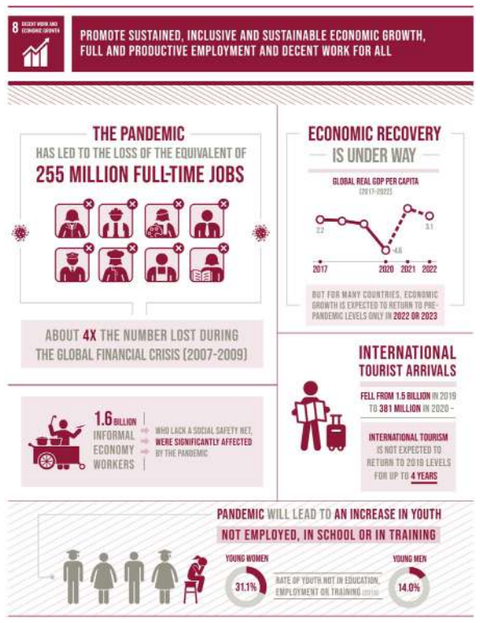


Figure 33: The Sustainable Development Goals Report 2021 - Goal 8 (unstats.un.org/sdgs/report/2021/).

Goal 10

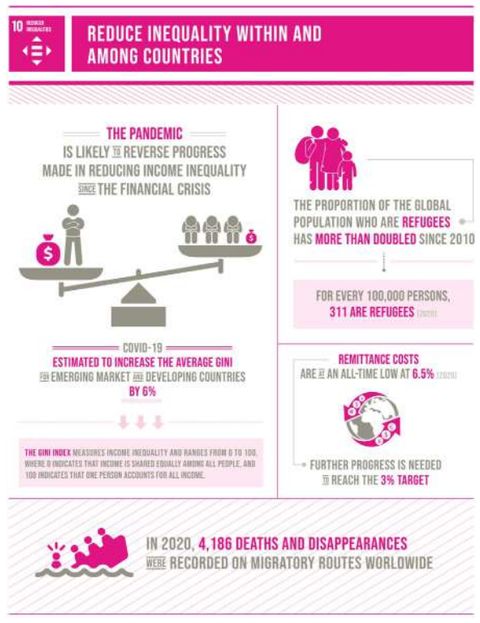


Figure 35: The Sustainable Development Goals Report 2021 - Goal 10 (unstats.un.org/sdgs/report/2021/).

Goal 12

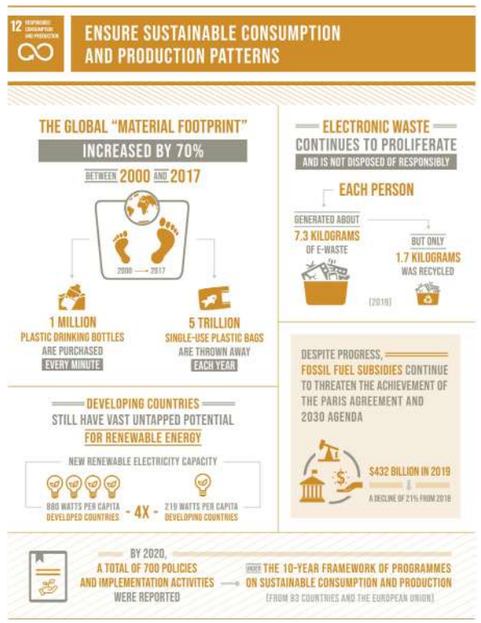


Figure 37: The Sustainable Development Goals Report 2021 - Goal 12 (unstats.un.org/sdgs/report/2021/).

Goal 14

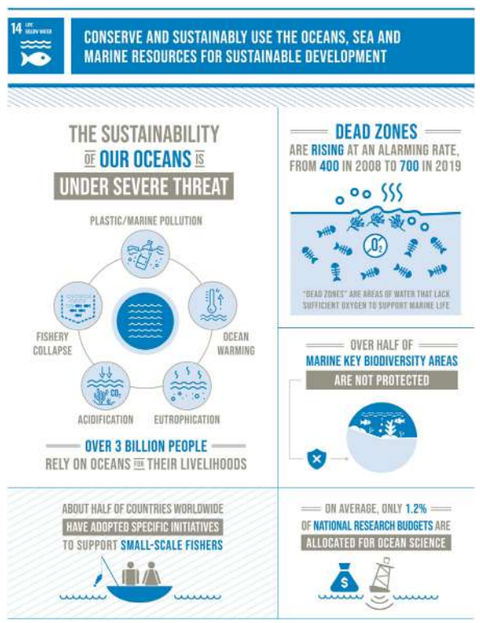


Figure 39: The Sustainable Development Goals Report 2021 - Goal 14 (unstats.un.org/sdgs/report/2021/).

Goal 15

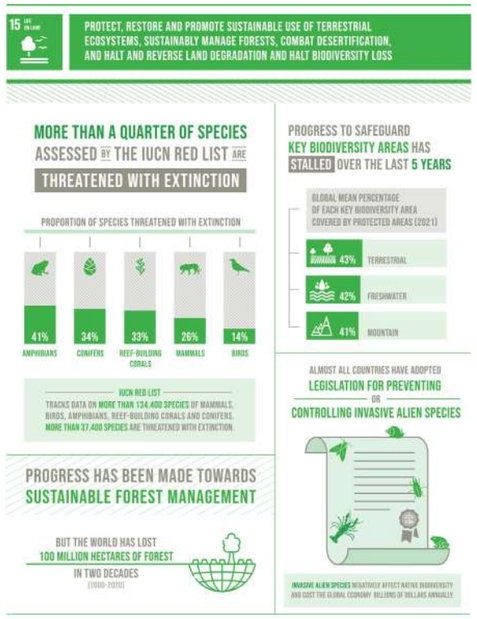


Figure 40: The Sustainable Development Goals Report 2021 - Goal 15 (unstats.un.org/sdgs/report/2021/).

Goal 16

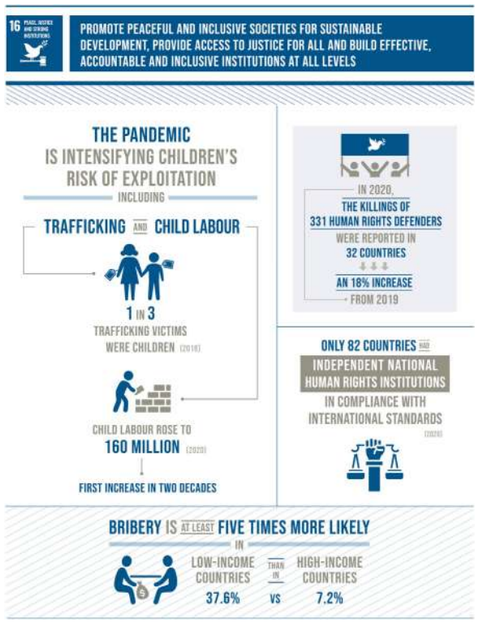


Figure 41: The Sustainable Development Goals Report 2021 - Goal 16(unstats.un.org/sdgs/report/2021/).

Goal 17

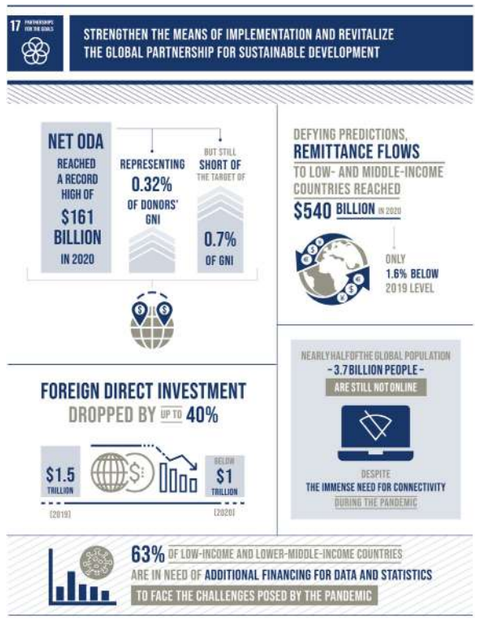


Figure 42: The Sustainable Development Goals Report 2021 - Goal 17 (unstats.un.org/sdgs/report/2021/).

The role of systemic design

Systemic Design can be described as a combination of Systems Thinking and Human-Centered Design, the main objective is aiming to help designers deal with complex design projects, taking into account a wider perspective of a project. Its methodology integrates the relationships between the components and different areas that generate the system, enhances the value of identity and local resources and produces development and well-being for the individual and the community.

Designers need better ways to design responsibly and avoid unnecessary side effects, because of the increasing complexity of recent design challenges caused by globalization, migration and sustainability has made traditional design methods inadequate.

Systemic design[54] aims to develop diverse methodologies and methods to help integrate system thinking and solutions by design to achieve environmental, social and economic sustainability. It is a diversified initiative that encourages the development of many different methods, and the organic development of dialogue and new practices is the foundation of researching networks and focusing on different aspects of a problem.

Different academic groups through the past years, had faced systemic design in teaching and research activities, for example, the Systemic Design master's degree program at the Politecnico di Torino, named after Aurelio Peccei, where teaching and research grow together[55]. This method was proposed by Luigi Bistagnino, who focuses on the relationship between the input and the output of a system by treating waste as a valuable resource. The relationships between the components are generated through interaction, to find a balance. The result is the quality of the system created, and benefits not only for individuals but companies, locals, and communities.

54. Systemic Design Research Network « Systemic Design". *systemic-design.net.* Retrieved 20 April 2021 from https://systemic-design.org

55. Barbero, S. (2016). Opportunities and challenges in teaching Systemic Design. The evolution of the Open Systems master courses at Politecnico di Torino. Proceedings of the 6th International Forum of Design as a Process, Universitat Politècnica de València, Valencia, pp. 57-66.

Figure 43: Luigi Bistagnino. Picture by: edizioniambiente.it. Retrieved from http://www.methodpliant.com/1_designing-the-world-through-a-systemic-approach.html on July 18, 2021.

Another example of academic practices that teach systemic design as a methodology is the OCAD University[56] Toronto's Master of Strategic Innovation and Foresight is a well-known system design program led by Peter H. Jones. The emphasis is on teaching how to discover, construct and solve complex problems in order to visualize and develop a sustainable future.

There is also a group of scholars in the design department, led by the late M.P. Ranjan and now by Praveen Nahar and many other members of the faculty at the National Institute of Design (NID) in India. Systems thinking and design is part of the NID academic curriculum, which involves the application of systematic methods to complex and difficult problems with a high degree of ambiguity, uncertainty, and complexity from the perspective of the sociocultural economic environment.

On another hand, we can mention the System-oriented design that is a systemic design methodology used by the Oslo School of Architecture and Design[57]. It aims to cultivate the designer's ability to cope with a greater degree of complexity and take greater responsibility for the consequences of their actions, taking into account critical aspects by holistic views, ethics and sustainability, as well as cultural, organizational, economic, and technical considerations.

56. Strategic Foresight and Innovation (MDes). "Creating a new kind of designer: A strategist who sees the world from a human perspective and re-thinks what is possible; An innovator who can imagine, plan and develop a better world." OCAD University. Retrieved on 22 April 2021 from https://www.ocadu.ca/academics/graduate-studies/strategic-foresight-and-innovation/

57. "The Oslo School of Architecture and Design". *aho.no*. Retrieved 21 April 2021 from https://aho.no/en/

The Alberta government[58], a group of system designers that Alex Ryan leads, combined system design and strategic foresight to redesign the government's policy-making process.

Last but not least, we can mention the Master of Applied Sciences in Design, Design, and Complexity (DESCO), which is taught at the University of Montreal, their program focuses on design activities and aims to cultivate students' complex thinking and prepare them to act and think as true integrators taking a 360 view of the complex context.

One of the characteristics of Systemic Design is that it is a transdisciplinary profession, within the development of a project it is important to have as many collaborators that can be helpful for understanding the problem and finding solutions.

Some of the areas that are included in the ambit of design are sustainable design and ecological design, social design, project management, digital design, new technology, innovation, strategic design, game design, interaction design, service design, experience design, and collaborative design.

58. Ryan, Alex (3 April 2016). "The Alberta CoLab Story". *medium.com.* Retrieved 18 April 2021 from https://medium.com/the-overlap/the-alberta-colab-story-2d409ecf747c

History

In order to understand the complexity that arises within the Systemic Design methodology and its principles, it is important to mention the origins and the people who were related to its creation.

Systems thinking in the area of design has a long history from the past years, with the contemporary debate on system design, and the related system thinking and design seminar (RSD) series, also with initiatives from different personalities like Christopher Alexander, Horst Rittel, Russell Ackoff, Bela Banathy, Ranulph Glanville, M.P. Ranjan, Harold Nelson, and many others.

The system design methodology as we mentioned above, solves problems by finding new connections and relationships between system thinking and design work.
Complexity theory helps to manage a complete system, and suggested design methods help to plan different elements.

In addition, the main principles and models of systems have been known and applied to design from the beginning. However, systems thinking has never become mainstream in design, the reason for this situation may be that the prescribed techniques and methods are too technical and not suitable for the organic design process[59].

Systemic design is based on the approaches and manifestations that can occur in the different types of thinking that science encompasses, the first of these is systemic thinking, the second is mechanistic.

59. "Feature Article: Learning the Lessons of Systems Thinking: Exploring the Gap between Thinking and Leadership - Integral Leadership Review". *integralleadershipreview.com.* Retrieved 18 April 2021 from Feature Article: Learning the Lessons of Systems Thinking: Exploring the Gap between Thinking and Leadership

These complex methods of thought include the concept of science and knowledge, based on the natural philosophy of things, based on a particular method which is normally known as the scientific method, this concept is based on the acquisition of knowledge of organized manner, in the observation of the phenomenon under study, in the recording of information, the verification, relationship and connection of the data received or those that emerged during the process in a coherent manner and in relation to what is studied.

According to the book published in 2014 by Fritjof Capra and Pier Luigi Luisi[60], the study of matter is based on the elements that compose it, the measurements and quantities thereof, while the study of the form questions the pattern behavior of these elements, evaluating and observing small characteristics such as organization, relationships, interaction, mapping, qualitative analysis, among others.

This process to understand the complexity of systems gave rise to a systemic vision of the world, which originates from Ancient Greece, with the Greeks assuming that the world was a system and that all parts of it lived in harmony and relation through a universal bond.

Understanding the world as a vital organism and a set of elements characterized the cultures and the different civilizations throughout the years until the Middle Ages, where Christian theories began to have an influence, where because of this scientific theories entered into having conflicts with what was imposed by the church in relation to creation and way of understanding the world.

Some philosophers like Plato had already related the theme of energy beyond us that guided every decision made on earth, for him it was the soul. On the other hand, Thomas Aquinas merged the theories derived from Aristotle and caused a major break between Christianity and science.

The father of the scientific method, better known as Leonardo da Vinci later evidenced the distance between the systemic vision and the scientific vision, introducing observation, reasoning, the use of mathematics, but without a doubt, the most important thing was the relationship with nature as a source of inspiration.

Darwin on the other hand, with his evolutionary theory, I relate the universe as an interconnected system that is in constant evolution and change, here nature was already directly related to the thought of understanding us humans and our objective within this world.

Darwin affirmed that all living beings were related and that all those derived from a common ancestor, thus showing more complex structures based on simple characteristics, and differences due to needs about the survival of each of the species.

The duality between the two thoughts, the scientific and the systemic, is expressed in different fields of knowledge, such as sociology, ecology, economics, and biology, showing that the problems expressed and as mentioned for so many years by philosophers derive from a worldview of understanding the world.

It is essential to understand the systemic design as the understanding of the context, the observation, and investigation of it is based on the basic elements and the fundamental principles of what is constantly interacting in a specific place.

60. Capra, F., & Luisi, P. (2014). The Systems View of Life: A Unifying Vision. Cambridge: Cambridge University Press. doi:10.1017/CBO9780511895555

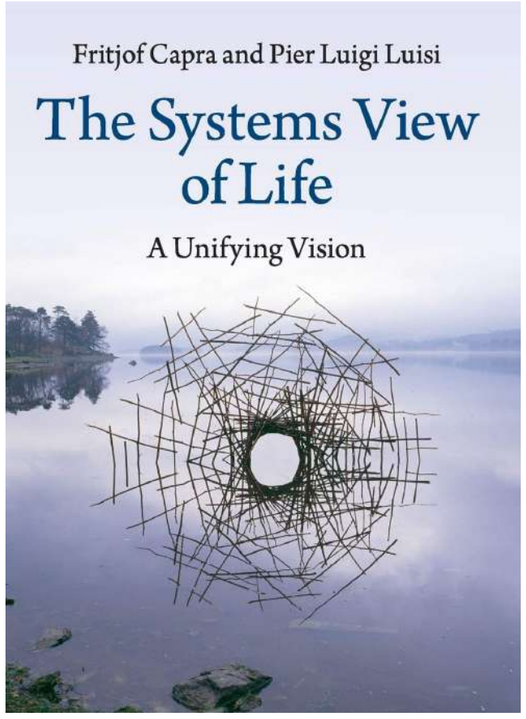


Figure 51: Capra, F., & Luisi, P. (2014). The Systems View of Life: A Unifying Vision. Retrieved from https://www.cambridge.org/core/books/systems-view-of-life/35186BA5B12161E469C4224B6076ADFE on July 24, 2021.

This, in the same way, shows the millions of possibilities in terms of characteristics that can be generated when one context is compared to another, for example, talking about ecosystems, the same species can be observed interacting with each other but in two different scenarios and what It will be collected from the observation will be different results, because each one presents characteristics of the space according to the context and each of the species adapts to it to survive.

61. von Bertalanffy, K.L. (1968) General System theory: Foundations, Development, Applications, George Brazziller, New York.

62. Porter, M.E. (1990) Competitive Advantage of Nations, Free Press, New York.

63. Frosh, R.A. and Gallopoulos, N.E. (1989) Strategies for Manufacturing, Scientific American, Vol.3 No.189, pp.94-102.

The theory of Karl Ludwig von Bertalanffy in 1968, says that the complexity theory is developed on the basis of the life system constantly absorbing external energy and maintaining a low-entropy stable state, which is based on its general system theory[61].

The complexity model of living systems also applies these theories to artificial systems, the basic reasons address the production model and its organization and management, in which the relationship and interaction between components is more important than the components themselves.

Porter also in 1990, proposed the Cluster Theory[62] that evolved into more environmentally sensitive theories, such as industrial ecology that was based on another theory by Frosh and Gallopoulos[63], in 1989, and the industrial symbiosis theory by Chertow[64], in 2000.

In 1992, Buchanan said that design thinking means creatively and strategically reconfiguring design concepts in the context of systems integration[65]. This requires strong interdisciplinarity in the design phase according to Fuller in 1981[66], by increasing participation in different disciplines, including urban planning, public policy, business management, and environmental science (Chertow et al., 2004)[67].

64. Chertow, Marian R. (2000). “INDUSTRIAL SYMBIOSIS: Literature and Taxonomy”. Annual Review of Energy and the Environment. 25: 313–337. doi:10.1146/annurev.energy.25.1.313

65. Buchanan, R. (1992) Wicked Problems in Design Thinking, Design Issues, Vol.8 No.2, pp.5-21.

66. Fuller R.B. (1981), Critical Path, St. Martin’s Press, New York.

67. Chertow, M. R., Ashton, W. and Kuppali, R. (2004) The Industrial Symbiosis Research Symposium at Yale: Advancing the Study of Industry and Environment, Yale School of Forestry and Environmental Studies, New Haven.

Gunter Pauli and Heitor Gurgulino de Souza founded the Zero Emission Research and Initiative Institute (ZERI)[68], in 1994, based on the idea that progress must include respect for the environment and allow the production process to be part of the natural technology ecosystem.

According to Pisek and Wilson[69], in 2001 understanding productive organizations as complex adaptive systems, can emerge new management models in terms of economic, social and environmental benefits.

The intrinsic multidisciplinarity, integrating different academic disciplines, not only within the system but from the understanding of it.

The relationship of the objects at each level, understanding the configurations and networks that can be created from the internal relationships of the system.

Measurement and mapping, which allows an understanding of the configurations, to understand those that dominate the patterns.

The quality instead of the quantity, in turn, the processes of the structures, the objective science and the epistemic science, finally the Cartesian certainty to approximate knowledge.

System theory and complexity and design thinking have redesigned a fairly new discipline:

Systemic design, which is positioned as a human-oriented system-oriented design practice.

A weakness of the systemic approach over the years was the lack of specific and adequate knowledge that managed to address the relationships and interconnections, since despite the previously presented theories, currently, the biggest problem is the measurement and quantitative mathematical demonstration of the stuff.

In order to understand Systemic Design, we also need to talk about how over the last years, the definition of sustainable development has undergone major changes. The first definition was based on a human-centered view and has been replaced by current definitions that focus on the environment, society and the economy.

Sustainable development is defined as a process aimed at achieving environmental, economic and social improvement goals at a local and global level. Therefore, the protection and enhancement of natural resources, economic and social levels are interdependent to meet the needs of present and future generations.

Sustainable development is related to the design of systems, for example, in the product of the coexistence of resources, the activities and people in the territory. If they are connected and valued as a result, they can produce enormous social, environmental and economic well-being benefits.

Nowadays, sustainability is a viable approach only when people think they are part of a network in which the relationships between the components are more important than the individual elements, as for example the 2030 Agenda.

Thomas Kuhn's theory on the scientific paradigm[70] is directly related to the aforementioned, where currently the environmental crisis is causing a paradigm shift to be generated, and with this a rupture that

68. Zero Emission Research and Initiatives. Retrieved 2 May 2021 from www.zeri.org

69. Pisek, P.E. and Wilson, T. (2001) Complexity, Leadership, And Management In Healthcare Organizations, British Medical Journal, Vol.323, pp.746-749.

70. Kuhn T., 1962, "The structure of scientific revolutions";

produces new thoughts which will form the basis of the new ones. scientific approaches, in turn to the validation of problems and the search for solutions to them.

The paradigm shift has been generated at different times and concerning different issues throughout the history of humanity, the first of these occurring with the scientific revolution from the 16th to the 17th century.

Applying the systemic design methodology allows us to delve into the problems, understand the causal relationships between phenomena and understand the priorities towards which to guide the design process.

it is important to mention cybernetics, a movement that began during World War II, as one of the main influences of systemic design, with the main figures that promoted the L.V. Bertalanffy and N. Wiener, who defines cybernetics as "a science of control and communication in animals and machines."

One of the most important moments of this science was the Macy's Conference in New York in 1946, whose purpose was to establish a dialogue between people of different origins to explore new ideas.

The most important contribution that relates cybernetics with systemic design is the concept of the feedback loop, and how each element that interacts with the system has a cause and an effect between its connections.

The consequence of this interaction is that the first connection (input) is influenced by the last one (output) and this produces the self-regulation of the whole system.

Systemic Design proposes solutions by acting innovatively on processes and their relationships, where growth occurs by autopoiesis and aiming to achieve sustainable development. The confrontation between local communities produces a local culture, where their identity arises from the awareness of one's values, which are expressed through behavior.

Therefore, there is the theory of autopoiesis, presented in 1970 by Humberto Maturana and Francisco Varela, which refers to the capacity for self-creation and self-maintenance that results from the internal activity of a chemical system.

The systemic vision foresees the capacity of the system to feed itself by autopoiesis, where an autopoietic system is understood as a system that is continuously redefined and in itself sustains and reproduces itself, obtaining the resources it needs from the flow of matter that passes through it. where the components of a system are the product of the relationships between the interconnected elements, one with the other, inserted in a given context.

As mentioned above, the context is one of the key factors for any design methodology, in systemic design, the study of local systems that generate innovation is favored, the implementation of changes in small communities improves the way of managing problems, whether they are social, economic or environmental, seeking to generate solutions from the design that leads to sustainable development.

The designer's job is to investigate the quantitative and qualitative criticalities of the system under study, from a holistic approach, highlighting the areas for improvement and the points of generation of new value.

After a long process and evolution of systems thinking, it can be said that it represents the very essence of life, from the change in perception of structures, objects, and materials that generate intangible processes and organization patterns.

Analysis

The starting point of the research was based on the question: What is design? To find an answer, different factors were taken into account, for example, the context, the users who are related, the situation or factors that characterize the design, how important is design, what is the priority or main objective that design has today, what is the relationship of design with different professions and what is its role in the development of a project.

Starting from the first factor, the context, different questions continued to arise that framed the system that the design itself presents. For example, how do people understand design today? How is design understood from different contexts?

The design perspective can change depending on the context in which it is found, for example, a work context has different objectives than an academic context, in the same way, it presents different users, goals, and objectives. While in a work context the main objective to be fulfilled may be the economic aspect, the academic context presents wider perspectives to the impact that a design project can generate, in this case, they begin to take into account different aspects and not only the economic issue. Although the academic context is based mainly on research, designers have a broad overview of the solutions or situations that are currently being presented concerning industrial design or their specific project, that is, different existing solutions, different studies carried out with relation to the theme that is being raised. Thus, the design is evaluated from a systematic perspective in the academic field, which generates the different aspects that design can impact, such as the economic, social, cultural, and environmental aspects.

But now, what is the importance of design within companies, how much priority or prominence is being allowed from the different companies, and what changes or improvements are being generated from the said profession.

The value of design in companies depends not only on the activities that take place within the company but also on the team and the perspective that is had within the same company, the design is unique and a safe bet to the generation of opportunities and solutions to different problems or objectives of the company itself. Design can create value, design has a lot of potentials, it is innovation and creativity applied to problem-solving, not just choosing a font or advertising.

In short, the value of design depends on numerous factors, from the perspective of the designers themselves, such as the area of action of the company, as well as the external factors of the situations that are occurring in the world.

The development of the framework for the World Design Organization is an opportunity to expose the importance and values of design not only from an academic or work perspective but also taking into account the main aspect of design today, which is sustainability. , with the aim of changing the perspective that one has. Currently, design and in the same way the image that design people have today, and how designers can become a key piece to generate so many opportunities and solutions in any professional field.

01

WHAT IS DESIGN?

The first is what is design, starting with a clear definition of what design is, intending to address general information, its benefits, the importance and changes it has had over the years because design nowadays is different from how it was years ago, what has been said the perception in designers and different professions about design, and what is the current definition of it. This in turn connects us with its relationship to the Sustainable Development Goals proposed by the United Nations Organization to meet between 2030, specifically talking about the impacts that design currently has on society, and on the elements of design in general that develop affecting both positively and negatively to society, from any solution that design can provide, be it a product, an idea, a methodology, a project, etc…

02

DESIGN LENS

The second is design lens, this category specifically seeks to question what is currently understood as design lens, from the development methods of a project, such as the approach of solutions, research, understanding of the system as a whole, the user integration, and different aspects that are taken into account when a designer raises, develops and creates a project, product, system or methodology through the lens of design. Also, an investigation of the categories or areas where design has a presence is proposed and in the same way, the influence that it has had over the years, which can connect us more clearly with the categorization that the UN carried out for its 17 SDGs.

03

SUSTAINABILITY

The third macro category is undoubtedly sustainability, seen in its generality, but in the same way sustainability in design. This last category proposes to address these aspects that over the years have been the main issues to deal with from sustainability, the impacts that it has on society and the planet, and in the same way the actions that currently have so much positive as negative towards sustainable development. Likewise, the position of sustainability today and the importance that many areas and professions are giving it, intending to change the paradigm and think much more about the impacts of the things we create and/or destroy, this especially from the design field to show how sustainability is being taken into account during the design process, and what happens when it is taken into account from the base, the beginning of the creation of the project, and the changes or benefits that this perspective project development can generate.

Design

The main objective of Industrial Design is to provide a more optimistic view of the world, a perspective that treats challenges as opportunities.

Just as how the world has changed, so has the world of industrial design. It has been transformed into an interdisciplinary profession that uses creativity to solve problems and improve people's quality of life. As a result, people all over the world welcome more ideal products and better lifestyles.
In 2015, the World Design Organization invited industrial designers to speak about the Renew Icsid initiative and the new direction the organization wanted to take[71].

According to Richard Seymour, Co-Founder and Design Director of Seymour Powell, if we as designers are going to solve half of the world problems that we need to solve nowadays, we have to stop running away and designing for expensive brands and start applying ourselves to the real issues that the world is facing right now, the environment. Because that is what we do as designers, when we change things, we change them for the better because if you cannot be an optimistic futurist, you should do something less dangerous.

However, Roger Martin said that we must make the world a better place in many ways and different dimensions, and the key to that design. We must also imagine the possibilities for a better world that we currently have and then let these things happen.

At the same time, Tasos Calantzis, the Director of Terrestrial, mentioned that design is not just a problem-solving discipline; it is also a solution grading discipline.

Mauro Porcini, senior vice president and design director of PepsiCo, said that design is responsible for envisioning and implementing relevant, meaningful, and enjoyable experiences for people, so we also have the opportunity to shoulder the responsibility of creating solutions. It is sustainable from an ecological, emotional, and social point of view.

John Barratt, the President, and CEO of Teage, said that over the next 60 years, designers would have an even greater role in improving the human experience.

If we continue to see design only as a business strategy, as a form of management, or as a structural thinking methodology to have it overall, we will face some of the real issues where we should create solutions in order to change for a better way of living, said Gordon Bruce.

Geetha Narayana, the Director of the Srishti School of Art, Design, and Technology, said that the aim of the design is to lead people to a better future; it perhaps needs not to promise solutions but to look at possibilities that are positive.

Eric Rondolat, CEO of Philips Lighting, on the other hand, expresses how he strongly believes that industrial design is the best half, and it has the possibility to bring a competitive advantage.

The Global Design Director of Advanced Concepts GE Healthcare, Duncan Trevor-Wilson, said that design naturally lives in the inception between art, science, technology, and humanity; that's why it's never been more relevant to solve the world's biggest challenges. Same as Antoinette Lemmens, CEO of Lemmens Executive Search, who believes that design can play a leading role and help to solve some of the world's major issues.

On second thought, Tim Selders, Co-Founder of Park Strategic Design, believes that design and specifically industrial designers are a growing ability to thicken systems and accurate models that will generate modern solutions to the problems we need to tackle.

As another opinion, Anne Marie Boutin, President of APCI, said that if we want to leave our children a more desirable and sustainable world, our societies have to become globally more creative, more reactive with citizens fully involved.

Boris Berlin also said that the ability of designers to stay in the crossfire would give design an essential role for the future regarding the decision-making process.

Furthermore, Rob Curedale, the Adjunct Professor of the Art Center College of Design, expressed that our role as designers is about taking responsibility for the people we're designing for and the environment.

The CEO of the Danish Design Center, Christian Bason, also mentioned how nowadays designers must learn about this new mission about design for a better world. Because nowadays design is being used much more for co-design together with citizens and customers and users. Design is also taking a social turn and is being leveraged to create new business models and government models.

Bruce Claxton, Professor of Design Management at the Savannah College of Art and Design, said that we have an opportunity as a group of creative thinkers to help come up with all new solutions and have a positive impact. Business leaders are not asking; they are demanding that we step up and lead.
It is important to cooperate as a community in creating clever solutions for the future.
Tim Brown, the President, and CEO of IDEO, mentioned how being a positive catalyst of changes has been one of the best traditions of industrial design; nowadays, it has turned into a position where design helps humanize the world around us.

Finally, the Principal Design Leverage of Deloitte, Maureen Thurston, mentioned how industrial designers are uniquely prepared and particularly well qualified to navigate the shifting currents and uncharted waters of unprecedented change, but with change, there remains still one constant the overriding desire of every industrial designer to make the world a better place.

71. World Design Organization. Voices of Design. Retrieved on 21 July 2021, from https://www.youtube.com/watch?v=Q4avxxuzXfs&t=90s

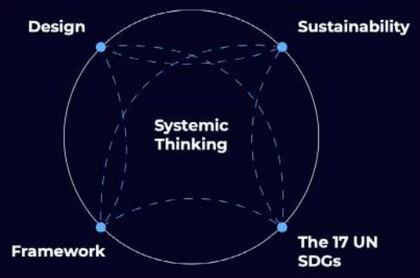


Figure 52: Diagram of relations within Systemic thinking and the subject of the research

Design nowadays is being crucial in different areas of the development of solutions and projects, and those design problems are reaching insoluble levels of complexity.

That is how the methodologies within the decision-making process are essential to approaching any problem; The methodology of systems thinking is basically a broad term to represent a set of methods and tools that focus on system (rather than parts) as the context for defining and solving complex problems.

That is why design is taking into account diverse perspectives or areas of impact, so as we said before, one of the main characteristics of design is multidisciplinarity.
In spite of their superficial simplicity, even these problems have a background of needs and activities which is becoming too complex to grasp intuitively[72].

To conclude, the action of using design for creating a better world will act as a pivotal moment in defining and shaping our future, and that will be a result of our efforts now; we're only limited by our imaginations.

Definition

*"Industrial Design is a strategic **problem-solving process** that drives innovation, builds business success, and leads to a better quality of life through innovative **products, systems, services, and experiences**. Industrial Design bridges the gap between what is and what's possible. It is a **trans-disciplinary profession** that harnesses creativity to **resolve problems and co-create solutions** with the intent of making a product, system, service, experience, or business, better. At its heart, Industrial Design provides a more optimistic way of looking at the future by **reframing problems as opportunities**. It links innovation, technology, research, business, and customers to provide new value and competitive advantage across **economic, social, and environmental spheres.**"*[73]

*"Industrial design is the **process of design applied to products** that are to be manufactured through techniques of **mass production**. This distinguishes industrial design from craft-based design, where the form of the product is determined by the product's creator at the time of its creation."*

*"Industrial Design (ID) is the professional practice of designing **products, devices, objects, and services used by millions of people** around the world every day. Industrial designers typically focus on p**hysical appearance, functionality, and manufacturability** of a product, though they are often involved in far more during a development cycle. All of this ultimately extends to the overall **lasting value** and **experience** a product or service provides for end-users."*

For the development of the project, it was crucial to carry out an investigation in relation to the changes that have occurred in the definition of design, specifically industrial design, over the years.

It is evidencing the evolution and changes that have been affected according to the time and the situation that is occurring in the world at that time, in addition to the relationship of the methodologies that are applied to the design according to the problems of those times.

72. C. Alexander, Notes on the Synthesis of Form, 1964.

73. Professional Practice Committee, 29th General Assembly in Gwangju (South Korea), WDO.

74. Kirkham, Pat (1999). "Industrial design". *Grove Art Online*. Oxford University Press.

75. Industrial Designers Society of America. For more information: https://www.idsa.org

The design approach has changed over the years, and it is evident how initially the design was proposed as a clearly functional solution to the development of objects, where the main objective was the user within the project; after this to this day, it continues to mix design with art and aesthetics, where, beyond making a functional piece, key elements such as shape, aesthetics, colors, and others that add value to the object come into play, turning it into a more sophisticated piece.

Similarly, it is important to mention the different design movements over the years, which in turn became the protagonists of the production objects of the moment and approaches to the projects of that time.

For this, the essence of design starts from its current definition, and it is important to understand each of the parts and each of the actors that are related to it, which contextualizes us with the reason why design is what it is today.

According to the American Association of Industrial Designers, industrial design emerged as a professional practice in the early 1800s. Industrial design can be directly related to the industrial revolution and can be transformed from small batch crafts to mass produced products for the consumer class. . Early industrial designers often crossed the lines between artists and engineers and often found themselves in a position to deal purely with aesthetics and style.

Over time, the designer's influence and role changed from focusing only on the appearance or function of the product to include ergonomics, end user benefits, material innovation and corporate branding. All these considerations have become the core of the industrial design industry and have a lasting impact on business and society.

Collaborating from so many different perspectives enables the design team to understand the problem to the fullest extent possible and then craft solutions to subtly respond to the unique needs of users.

The industrial design industry is constantly changing and developing to keep up with the rapid progress of technology, cultural trends, and socio-economic forces. Designers are now facing new challenges that were unimaginable when the industry was born.

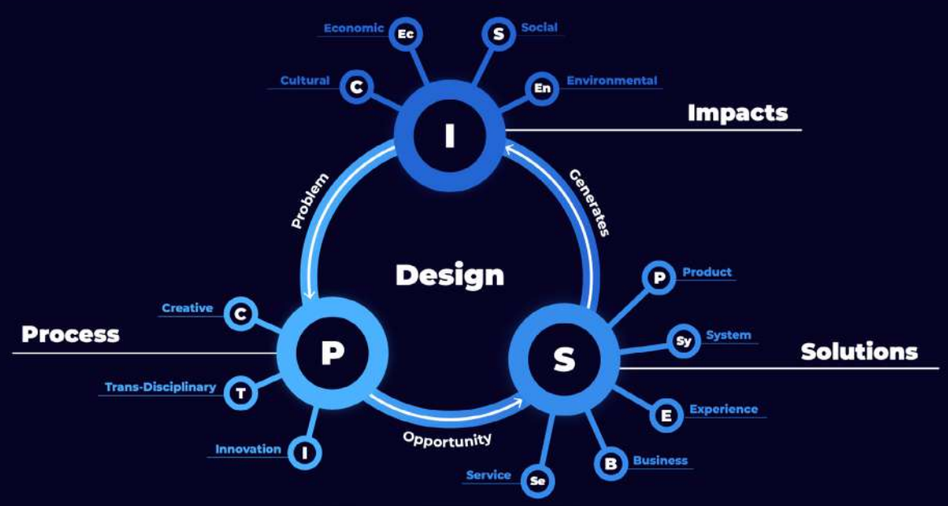


Figure 53: Visual representation of the Design definition

Design process

The design process is cyclical; any methodology used within the development of a project has three main categories, which based on the definition of the design are based on a specific problem, which through a process becomes an opportunity, which is one of the particular characteristics of design, and how those opportunities from problems generates solutions and in turn generates impacts in different areas.

The different processes that can be generated in the design area are defined as methodologies, and there is an infinity of these, each of them has different approaches, specific objectives, and steps to follow.

The main characteristic of design methodologies is that they are creative, transdisciplinary, and innovative processes.

Those three characteristics, along with the process chosen, helps designers to turn problems into opportunities within the different categories of solutions that can be services, experiences, business, systems, or products.

Those solutions will have an impact in four dimensions, that are economic, environmental, social, and cultural.

Within the three main categories that define design, the core is the process; the analysis of the definition allows us to see that the design process is the factor that has a greater influence on the development and execution of a project and could be the element that defines what we understand as a design lens.

There are multiple examples of how design has been done nowadays with the diverse methodologies that exist.

There are also different categories of design[76], like fashion design, automotive design, product design, industrial design, social design, architectural design, environmental design, eco-design, experience design, communication design, service design, and many others, but the process is what defines the decision-making process in every project.

Design is mainly focused on the industry and the interaction of it with the people, but another main area is the context that is strongly related to sustainability.

According to the information found concerning the industries and the design classification, currently, there is a great variety of design disciplines that have many opportunities to impact the SDGs; the results vary in turn within each category. So the most important part is not the result but the process, and how through the methodology and the design influence, it can generate a bigger impact on the SDGs.

Empathy for users, the environment and society as a whole is the central attribute of the modern design process.

Within the analysis of the design process, multiple design methodologies were analyzed to find the structure or elements in common that characterize and identify them.

The design process is the main factor in the development of a project, and it is guided by methodologies; this involves a decision-making process, often iterative, in which resources are applied optimally to achieve the stated objectives.

76. Data displayed is from 2018 to 2020. Rankings cover over 100+ different design industries. DAC, the Design Classifications.

Every methodology is composed of diverse aspects; in the core of it, we can found three principles, the problem, the motivation, and the focus that will be explained below:

Problem

The problem inside the design methodology can be categorized (into micro and macro) and also being of different natures.

Motivation

The motivation inside the design methodology is the reason why the designer is working to solve that specific problem.

Focus

The focus inside the design methodology is the factors and aspects that are keys to solving the problem and are also driven by motivation. There are the aspects or factors that guide and define the methodologies. These are reflected within each of the steps of the project, and they can also be forgotten and not connected with some of the steps, which generates different impacts or results. (Examples of these are human approaches, territory, sustainability, products, processes, systems, etc.)

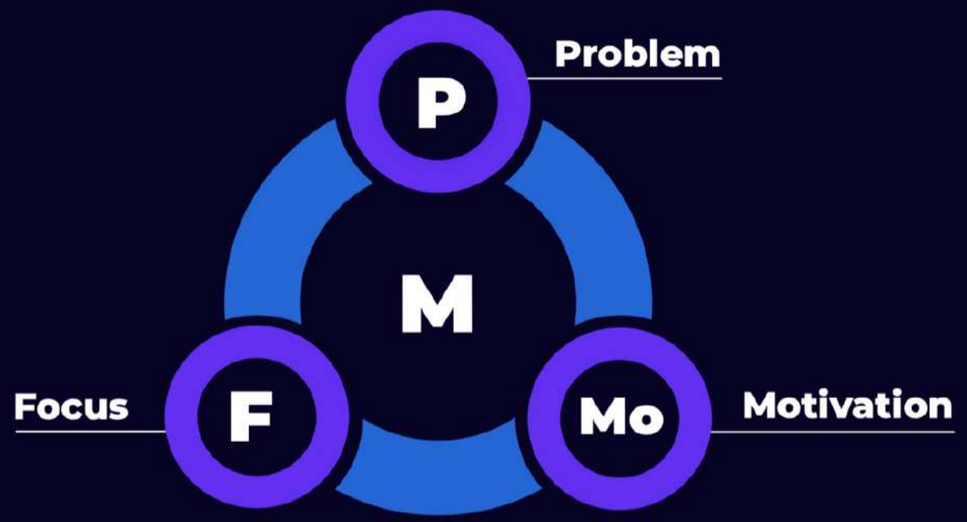


Figure 54: Core elementes of the design process

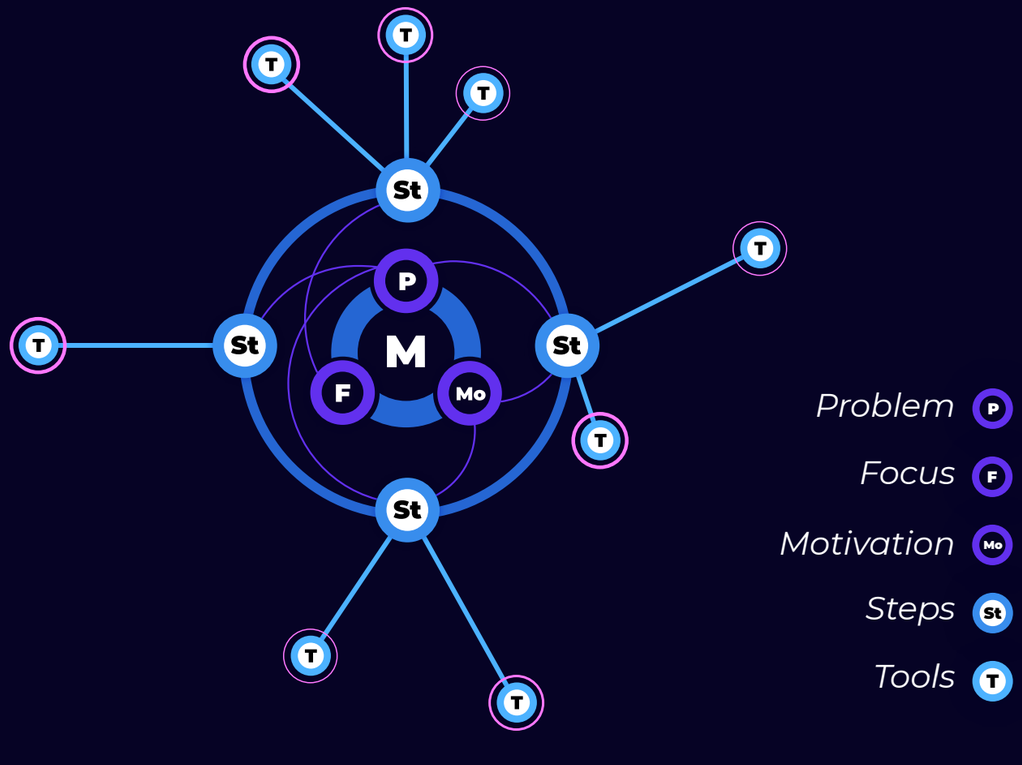


Figure 55: Design process structure with its steps and tools

Methodology

With the methodology, it can also be found some steps and tools that the designer will follow during the development of the project.

Steps

The process is composed of specific steps to work on to achieve desirable results. These steps are convenient to help designers, in order to follow a path during the development of a project, to make sure we don't forget anything important.

Tools

The tools will also help designers to obtain as much information as they need from the user, the context, and many other factors to achieve each one of the steps in the development of projects.

There will always be an update of the methodologies that are being applied in the design area, and it depends on the situation of the world and the issues that we are facing currently, in the ideas or objectives of the company, the organization, or the individual that came up with the idea of the development of a new methodology for design.

Then the research leads us to a more specific area inside of the design process, with their specific characteristics of factors that are the essence of every methodology used in the design.

Scale

One of those factors is the scale that a project can have and is basically related to the environment or the context in which the project is being developed and its amplitude; this scale allows determining the complexity of the systems in which they are going to work, the larger the scale, the more complex its components and the relationship between them. The scale is defined in two categories: geographic and social.
The scale defines the scope of the project. Each project must be analyzed to determine whether it is small, medium, or large. A more appropriate method of determining project size will be based on the complexity of the project or individual complexity attributes. Such as stakeholder engagement, political/social influence, or impacts.

The complexity of the project is not limited; it can be defined as the general combination of related factors, such as stakeholder participation, dependence, and interaction of internal or external companies with the company, the amount of resources (internal and external) required for the execution of the project and financial responsibilities[77].

The scale component is divided into two main categories, geographic and social, where inside each one of them, there is an organization from small to large that describes every single group that can impact the scale[78].

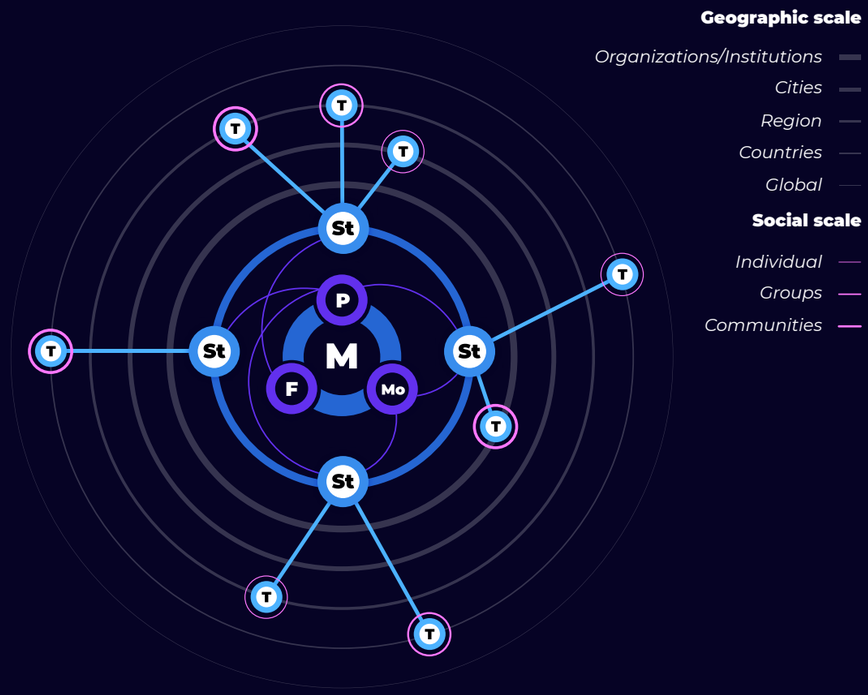


Figure 56: The scale component within the design process

77. Project Management Institute. (2013). A guide to the project management body of knowledge (PMBOK® guide) – Fifth edition. Newtown Square, PA: Author.

78. Project Management Institute. (2014, February). White paper: From complexity to dexterity. Retrieved November 5, 2020, from: http://www.pmi.org.

Inside the social category of scales, we can found three levels, individual, groups, and communities:

Social

Individual

The personal level is a small-scale project. The project focuses on a personal approach for specific participants. It takes into account the needs or requirements of a single individual with a specific perspective.

Group

This one also belongs to the small scale of a project. Consider the needs or requirements of many people or things located, gathered, or grouped—for example, a group of people with similar characteristics.

Community

This one is a medium-sized project. A community is a social unit (a group of organisms) with points in common such as norms, religion, values, customs, or identity. Communities can share a sense of place in a given geographic area—for example, a village, town, or community.

Moreover, moving onto the second category, the geographical scale, we can found five levels, organization and institutions, cities, regions, countries, and globally[79]:

Geographic

Organization and institutions

The organization layer is a small-scale project. It is a group organized for a specific purpose, such as a commercial or government department—for example, a company, a company. Therefore, the institutional level is a medium-sized project. It is an organization established for religious, educational, professional, or social purposes, like schools, hospitals.

Cities

This level is part of a medium-scale project. Rather, this is a set of the categories mentioned above. The project also considered external and non-human factors—for example, the entire system, local patterns, rules, and characteristics.

Regions

The regional level is a large-scale project. The impact is greater because the project will have a different perspective on the system itself in terms of legislation, weaknesses, strengths, and local characteristics.

Countries

The national level is a large-scale project. A country is a country, nation, or political territory. An important factor in this category is the culture, background, and current state of design.

79. Robertshaw, D. (2011, December 19). Avoid pitfalls of small projects. ProjectManagement.com. Newtown Square, PA: Project Management Institute. Retrieved November 5, 2020, from: http://www.pmi.org.

Global

The global level belongs to a big project. It is the earth, along with all its countries and people. For example, universal design is the design and composition of an environment so that everyone can access, understand, and use it to the fullest extent possible, regardless of age, size, ability, or disability.

Continuing with the descriptions of the main components of the design process, we can also find the actors.

Actors

Actors are external to the system and interact with the system. They define the limit or scope of the system. They can be human users or another system that participates in some or several stages of the process, and they have goals and responsibilities to satisfy the interaction with the system. Participants solve the problem of who and what interacts with the system, and they become an important factor in the implementation of certain tools or tools to gain a deeper understanding of the users. Without identifying the participants, we cannot know if we have identified all the functional requirements of the system.

There also are main actors who are the ones that will develop the project or the investors, buyers, or consumers of the project. In other words, the ones that will interact directly with the solution of the project.

And there are also the secondary actors that are the ones who will help in the development of some phases of the project.

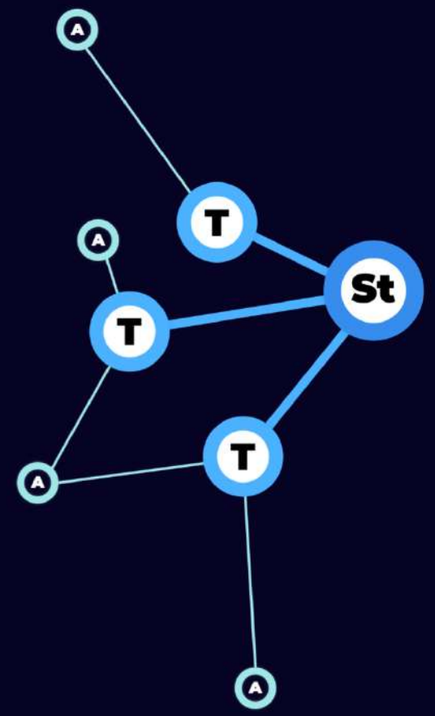


Figure 57: The design process and the interaction with the actors

Some example of actors are:

Main actors:
- Designers
- Clients
- Users

Secondary actors:
- Engineers
- Project Managers
- Architects
- Organizations
- Educators
- Providers

Limitations

On the other hand, there are also limitations that can be divided into internal and external based on the project itself.

They are factors or determinants that may directly or indirectly affect the project and its results and must be taken into account in the development process of each step of the project. Two types of restrictions (internal and external) can occur during any project development stage. There are multiple levels of restrictions. There may be restrictions on actors, steps, and the use of specific tools.

- **Internal:** From the project itself, characteristics or disadvantages during the development that limits the project or the implementation of an instrument.

- **Externals:** From the context or the environment that can affect the development of a project.

These are the factors to be considered in the project development process. These factors can be expanded to promote the improvement of the project. Applying these factors at each stage of the project can enhance its results. One example is to explore the potential synergy between the project and other methods, increasing the complexity of the project and its impact.

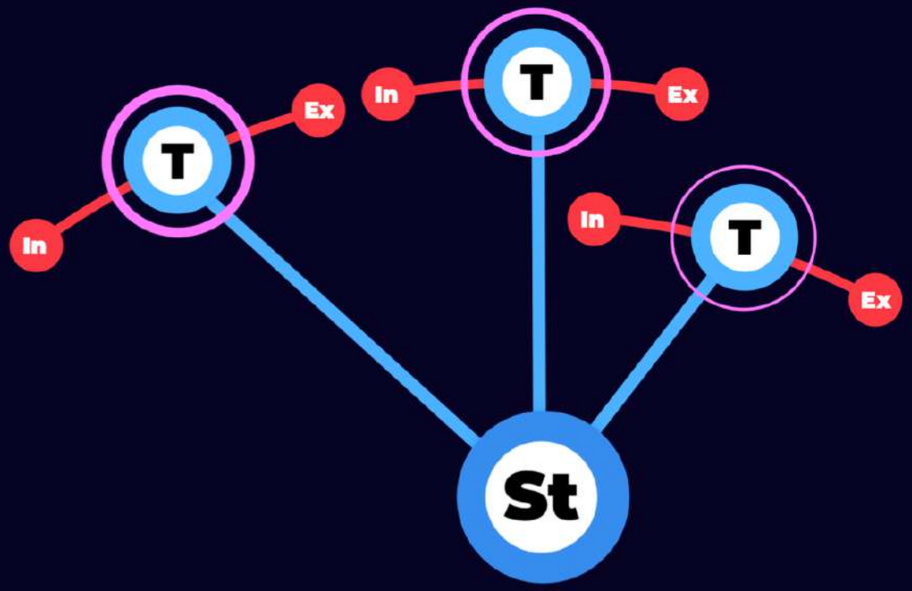


Figure 58: External and internal limitions of the design process in different steps of a project

DNA of design

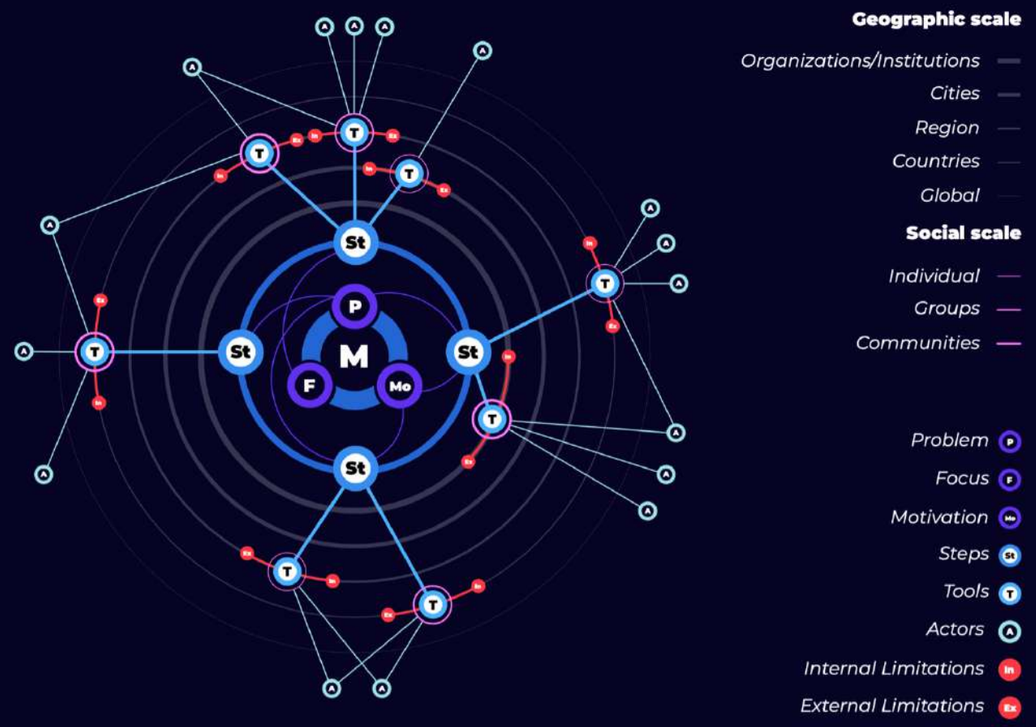


Figure 59: The entire structure of the design process and representation of the DNA of design

The methodologies help the designer to develop a project from a specific perspective. However, each of these has its nature. There are many methodologies with different processes, approaches, objectives, and tools; you can subtract the best or pertinent of each one that is relevant to the project, thus increasing its complexity and taking into account more points of view or perspectives within the development.

In conclusion, the Design Process is the DNA of Design, with the Design Process, we can understand a lot of factors that were taken into account during the development of a project (like how was the decision-making process, what do they miss when designing, what can be improved, what and why was the reason to take a specific focus).

It's easier to see the design in the process rather than just looking at the solution or results. The DP answers the question as to why we're designing like this.

Solutions

The second step in the design process cycle is the solutions that appear when the problem is turned into an opportunity and turned into a result. Those are divided into five leading solutions, product, service, experience, business, and systems.

Suppose the DNA of every design methodology is the process within solutions. In that case, we need to understand how that solution arrives in the real world and how it interacts with it, whether the people or the impact that that result will have.
From solutions to impacts, the result is the driver to get directly to the impact.

The moment a product faces the real world is when it is possible to understand what and how it interacts with the environment, context, people, and other factors that interact, and we as designers should take into account in order to understand the impacts of it.

It is necessary to know and study in-depth as well as the process, the afterlife of a product by using classic questions to get specific information; one example of those can be who, when, why, where, how, and what is related to.

How? Ways

How new is the project? How is used?
How does it work? How was communicated?

Why? Needs

Why _____ was the motivation?

Who? Subjects

Who is the user? Who is the consumer?
Who are the stakeholders? Who designed it?

Where? Context

Where is the context? Where is placed?
Where was the place of research during the development?

When? Moments

When was created? When was launched?
When (circumstances, time, seasons, years, moments)? When is being used?

With? Relations

With what other objects it relates?
What are the relations that it has with other projects?

Products

Moving forward to the definition of the solutions, the first one is the product, which is defined as anything that can be offered to a market to satisfy the desire or need of a customer[80].

The products can be tangible or intangible. Tangible products are physically perceived by tactile hearts, such as buildings, vehicles, appliances, and clothing.
Each product has a useful life after which it needs replacement and a life cycle after which it has to be re-invented.
All products are performed at cost and each sold at prices. The price that can be loaded depends on the market, quality, marketing, and specific segments. Each product has a lifespan and needs a life cycle if it is necessary to replace it.

In retail, products are often referred to as commodities, while in manufacturing, products are purchased as raw materials and then sold as finished products.

A product needs to be communicated, relevant, adaptable, functional, able to do what it is supposed to, and do it with good quality; the

80. Kotler, P., Armstrong, G., Brown, L., and Adam, S. (2006) Marketing, 7th Ed. Pearson Education Australia/ Prentice Hall.

user must use it immediately. The products can function functionally, and it is necessary to do it of good quality.

Consumers and potential users need to know why they need to use it, what benefits they can get, and how it makes a difference in their lives. Advertising and “brand building” get better.

The product needs a name that people will remember and identify with. A product with a name becomes a brand. The product must be able to adapt to changes in market trends, time, and segments, and the product must help adapt to make it more relevant and maintain your revenue stream.

Figure 60: Products

Services

A service is an intangible form, a special activity of activity, gain, or satisfaction scheduled for sale that does not lead to any property.
Services are considered product types. An intangible product is a product that can be perceived only indirectly as an insurance contract. Services can be widely classified into durable or durable intangible products.

The design of services is a process that creates sustainable solutions and optimal experiences for customers with their own context and service providers that are involved.

The practice of service design is the standardization and construction of processes to provide valuable operating capabilities for specific users. The practice of service design can be tangible and intangible and can involve artifacts or other elements, such as communication, environment, and behavior.

Service design is the activity of planning and organizing service personnel, infrastructure, communication, and material components to improve service quality and the interaction between service providers and their users. Service design can be used as a way to report changes to existing services or to create new services altogether[81].

This requires a comprehensive understanding of all relevant participants, their interactions, and supporting materials and infrastructure. Service design usually involves the use of customer journey maps to tell stories about how different customers interact with the brand to provide insights.

The purpose of the service design method is to establish best practices for designing services according to the needs of users and the capabilities and capabilities of service providers. If a successful service design method is adopted, the service will be user-friendly and relevant to the user while being sustainable and competitive for service providers.

Figure 61: Services

81. Hollins, Bill; Shinkins, Sadie (2006). Managing Service Operations: Design and Implementation. SAGE. p. 8. ISBN 978-1848604667.

Experiences

Experience is, first and foremost, sensory, and perceptual experience encompasses much of what we call “experience” that comes along the lines of “perception,” “sensation,” or “observation.”[82] Several different meanings of the word “experience” must be distinguished.

According to Hassenzahl, designing experiences happen before designing the product as the encasing is secondary. It means that designers cannot fully control the user experience, but they are nevertheless responsible for orchestrating a complex series of interactions, including the emotional and physical responses that these interactions generate.

This means that experienced designers need to pay more attention to the “why” of product use rather than usability. The latter still focuses on the “how,” the beauty of interaction, including the technology used. Usability is to make it easier for users to use the product, and experience design is to question the model behind it, first consider what is the expected impact on people, pay attention to the consequences of using the product, and how they are affected (Hassenzahl, nd)[83].

Experience design is not dominated by a single design discipline. Instead, it requires an interdisciplinary perspective, from the product, packaging, and retail environments to clothing and employee attitudes, considering multiple aspects of brand/business/environment/experience[84]. Experience design aims to develop the experience of products, services, or events from any or all of the following dimensions.
Reiss defines user experience design as “a conscious behavior that coordinates controllable interactions, recognizes interactions beyond our control, and reduces negative interactions” (Reiss, n.d.)[85]. This means that designers cannot fully control the user experience but are still responsible for coordinating a series of complex interactions, including the emotional and physical reactions generated by these interactions.

Figure 62: Services

Business

A business is defined as an organization or corporate entity that is engaged in commercial, industrial, or professional activities. A business can be a for-profit entity or a non-profit organization that operates to fulfill charitable missions or promote social enterprises.

The term “business” can also refer to the organized efforts and activities of people to produce and sell goods and services for profit. The size of the company varies from a sole proprietorship to international companies. Several theoretical lines involve the understanding of business management, including organizational behavior, organizational theory, and strategic management.

The word business comes from the word busy and means doing things. In a business, people work to make and sell products or services.

Most businesses are created for commerce. There are big and small businesses. It is an activity that makes a living or earns money by manufacturing or selling business and products (such as goods or services)[86].

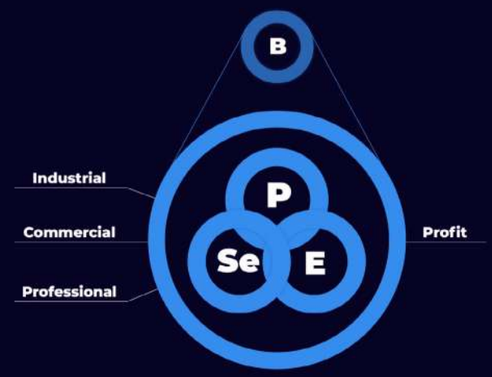


Figure 63: Businesses

Systems

A system is an organized collection of highly integrated parts (or subsystems) to achieve the overall goal. The system has various inputs that go through a specific process and produce a specific output to achieve the overall goal required by the system.

Therefore, a system typically consists of many small systems or subsystems. For example, an organization consists of many administrative and administrative functions, products, services, groups, and individuals. Thus, when a part of the system is changed, the character of the whole system also changes.

A high-functioning system constantly communicates between the various parts, allowing them to focus on achieving the goals of a closely linked system. If one of the parts or activities of the system appears to be weakened or out of position, the system makes the necessary adjustments to more effectively achieve the goal. So the system is systematic.

Systems can range from simple to complex. In addition, there are many types of systems. For example, biological systems, mechanical systems, human/mechanical systems, ecosystems, and social systems.
Complex systems, such as social systems, also consist of many subsystems. These subsystems are organized in a hierarchical structure and integrated to achieve the overall goals of the entire system. Each subsystem has its kind of boundaries and contains different inputs, processes, outputs, and results to achieve the overall goals of the subsystem. Complex systems are generally open systems because they interact with the environment.

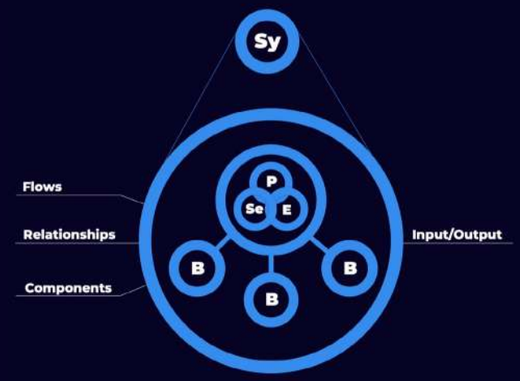


Figure 64: Systems

82. Popper, Karl R.; Eccles, John C. (1977). The self and its brain. Berlin: Springer International. p. 425. ISBN 3-540-08307-3.

83. Hassenzahl, M. (n.d.) User Experience and Experience Design. In: Soegaard, M., Dam, R.F. (eds). The Encyclopedia of Human-Computer Interaction. 2nd Ed. [Online] The Interaction Design Foundation. Accessible at: https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/user-experience-and-experience-design?r=-bayle-marion

84. Steve Diller, Nathan Shedroff, Darrel Rhea (2005): Making Meaning: How Successful Businesses Deliver Meaningful Customer Experiences. New Riders Press ISBN 0-321-37409-6

85. Reiss, E. (n.d.) User Experience and Experience Design. In: Soegaard, M., Dam, R.F. (eds). The Encyclopedia of Human-Computer Interaction. 2nd Ed. [Online] The Interaction Design Foundation. Accessible at: https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/user-experience-and-experience-design?r=bayle-marion

86. American Heritage Dictionary Archived 2019-03-31 at the Wayback Machine “business [:] 1. The activity of buying and selling commodities, products, or services”.

Sustainability

In order to ensure the current and future prosperity of mankind and the planet, sustainability is based on responsible social, cultural, environmental, and economic development. To meet the goals outlined in the United Nations Sustainable Development Goals (SDG), designers can strive to use sustainable strategies and practices to balance economic feasibility, environmental protection, and social equality in order to build a better tomorrow.

According to Pier Paolo Peruccio, board member of the World Design Organization, We have just entered an era full of challenges and changes, and we are required to reshape most of our common behaviors and habits in the direction of sustainable development. A paradigm shift is necessary: from a method based on capabilities and the logic of continuous growth to a system vision based on collaboration, awareness, and rediscovering qualitative value[89].

By making relation with sustainability, and the result of different processes of design, we can evidence how nowadays the main focus when designers start to ideate, develop, and create a project is sustainability.

As the main issue that the world is facing right now is the environmental crisis, we have changed our mindsets in order to achieve some results that are positive from the environment and avoid continuing to act as we were doing for the past years by incrementing the negative impacts specifically to the environment.

Current knowledge shows that sustainability is an attribute of the system, not an attribute of each element of the system. Therefore, achieving sustainability requires a systematic, multi-scale, process-based approach to goal / vision-driven sustainability planning, rather than traditional goal-based optimization methods[90].

89. *WDO | Board | Meet Pier Paolo Peruccio*. Wdo.org. (2020). Retrieved 6 February 2021, from https://wdo.org/about/people/board/meet-pier-paolo-peruccio/

90. Bagheri & Hjorth, 2007; Clayton & Radcliffe, 1996; Holling, 2001; Walker, Holling, Carpenter, & Kinzig, 2004.

Definition

Sustainability is the ability to persist. The 21st century generally refers to the ability of the biosphere to coexist with human civilization[91].

The focus of sustainability is to meet the needs of the present without compromising the ability of future generations to meet their needs. The concept of sustainability consists of three pillars: economy, environment, and society, informally also called profit, planet, and people[92].

In the area of design, there are many types of focuses in Sustainable design that uses tools, methods, and strategies to enhance the social and cultural benefits of a product and reduce its environmental footprint while being financially feasible.
There are some subdefinitions that are crucial to be mentioned in order to understand the relation between design and sustainability deeply.

For example, Social design involves using design to solve various social problems and formulate solutions and impacts to enhance the overall worth of living. The social design also aims to reduce or eliminate any negative impact on the stakeholders involved in the production, use, and management of our goods and services.

Also, environmental design aims to reduce the impact of products, services, or systems on the earth, the biosphere, and ecosystems. Designers use various life cycle tools and methods to consider material selection, logistics, usage, and end of life. As part of the process, they also considered potential impacts ranging from climate change to resource depletion and water and air pollution.

On the other hand, the pillar of sustainable cultural design ensures the preservation, enrichment, and diversity of cultural identity. Designers can have a positive or negative impact on culture, and their work can influence the beliefs and behaviors of users and non-users through the various direct and indirect information that we show them.

Finally, Economic sustainability is a critical element of sustainable design because the financial viability of the design will help make it available to more people, and multiple business models can help achieve this goal. Sustainable economic design can also refer to the design of solutions that can improve the economic health of individuals and communities.

History

There are many definitions of sustainability, and it is not easy to find a unified vision for a long time. However, it can be broadly defined as a condition for managing human activities to allow the protection of terrestrial ecosystems. The basis for changing human life is maintaining safety, well-being, health, and non-renewable things. Increasing global environmental problems, climate change, loss of biodiversity, and changes in the nitrogen cycle have created an adequate space to spread terms such as sustainability.
In the last years of the 20th century, the Stockholm Conference 14 (1972) and the Limits to Growth[93] report 15 focused on the terms “development” and “environment,” which were considered two opposing elements.

The generally accepted definition regards sustainability as “development that not only

91. “What is sustainability?” www.globalfootprints.org Retrieved 2 May 2021.

92. Grant, M. (2020). *Sustainability*. Investopedia. Retrieved 7 March 2021, from https://www.investopedia.com/terms/s/sustainability.asp

93. D. H. Meadows, D. L. Meadows, J. Randers, W. W. Behrens III,1972, “ The Limits to Growth”.

satisfies the requirements of the present without conciliating the capacity of future generations to meet their future demands."[94]

To understand the concept of sustainability, it is also interesting to consider its pillars, namely, people, profit, and the planet, which are understood as a balanced integration between the economic, environmental, and social fields. These should function as interrelated and interdependent elements.

According to the paper "Implementing sustainable design theory in business practice: A call to action[95] "Under the unsustainable development paradigm, the intensification of industrial activities has led to a shocking environmental crisis intertwined with social problems on a global scale.

As was mentioned above, sustainable design theory contains extensive knowledge about how to solve these environmental and social problems by rethinking industrial products and processes, and more broadly, how organizations operate in the context of a more sustainable socio-economic system.

However, evidence suggests that the implementation of these ideas is problematic, but they are rarely resolved, leading to a gap between abstract speculation and concrete actions. In this research, we focus on this critical gap by studying how to implement existing sustainable design theories in business practices.

94. United Kingdom : Private sector vital to creating a sustainable Wales. (2014). MENA Report, n/a.

95. Brian Baldassarre, Duygu Keskin, Jan Carel Diehl, Nancy Bocken, Giulia Calabretta, Implementing sustainable design theory in business practice: A call to action, Journal of Cleaner Production, Volume 273, 2020, 123113, ISSN 0959-6526, https://doi.org/10.1016/j.jclepro.2020.123113. (http://www.sciencedirect.com/science/article/pii/S0959652620331589)

Circles of sustainability

According to work accomplished with the participation of beBerlin, Metropolis, and Western Sydney University, called "Urban Sustainability in Theory and Practice: Circles of Sustainability"[96] By Paul James, published by Routledge.

The Sustainability Circle[97] provides a way to achieve sustainability and resilience by combining qualitative and quantitative indicators. It establishes a conceptual and technical support framework, which contains guidance tools for the investigation of the problems faced by the community. The purpose of this is to be flexibly applied to different environments in cities, communities, or organizations. Therefore, this method is particularly sensitive to the needs of negotiations from the local to the global level.

The Circles of Sustainability provide an easy way to present complex data. The round figures are divided into four areas: ecology, economy, politics, and culture. Each of these domains is divided into seven subdomains. Thus, circles provide a basis for thinking about the domains and subdomains of social life in general.

96. URBAN SUSTAINABILITY IN THEORY AND PRACTICE. http://www.circlesofsustainability.org/wp-content/uploads/2014/10/Ch-08-Circles-Questionnaire-2015.pdf

97. Circles of Sustainability. https://www.circlesofsustainability.org

Environmental

Ecology or environmental aspect is defined as the practice, speech, and material expression that occur at the intersection of the social and natural realms. In this case, the focus is on the essential dimensions of human involvement in nature, from the built environment to the "desert."

In other words, it is considered to be narrower than the natural domain. Although ecology is based on nature, including a range of environmental conditions from radical changes to relatively undisturbed, the natural domain includes all of these and more. Moreover, it includes nature beyond the scope of the Anthropocene: infinitely large and infinitely small. The difference between the social realm and the natural realm, using nature as the "background" of human behavior, is common in traditional (cosmological) and modern (scientific) understanding, but we have added an extra dimension.

It takes "ecology" in two terms, that is, in "nature" and "society," called the participation of humans and non-humans in nature and the connections within nature, from objects and bodies to areas of participation. This means that the ecological field involves the interrelated problems of the social environment, including the unintended consequences of human life on earth. Therefore, ecology is not considered the background environment of human behavior but rather a place for humans and non-humans.

1. Materials and Energy

A. Availability and Abundance
B. Soil and Fertility
C. Minerals and Metals
D. Electricity and Gas
E. Petroleum and Biofuels
F. Renewables and Recyclables
G. Monitoring and Reflection

2. Water and Air

A. Vitality and Viability
B. Water Quality and Potability
C. Air Quality and Respiration
D. Climate and Temperature
E. Greenhouse Gases and Carbon
F. Adaptation and Mitigation Processes
G. Monitoring and Reflection

3. Flora and Fauna

A. Complexity and Resilience
B. Biodiversity and Ecosystem Diversity
C. Plants and Insects
D. Trees and Shrubs
E. Wild Animals and Birds
F. Domestic Animals and Species Relations
G. Monitoring and Reflection

4. Habitat and Settlements

A. Topography and Liveability
B. Original Habitat and Native Vegetation
C. Parklands and Reserves
D. Land-use and Building
E. Abode and Housing
F. Maintenance and Retrofitting
G. Monitoring and Reflection

5. Built-Form and Transport

A. Orientation and Spread
B. Proximity and Access
C. Mass Transit and Public Transport
D. Motorized Transport and Roads
E. Non-motorized Transport and Walking Paths
F. Seaports and Airports
G. Monitoring and Reflection

6. Embodiment and Sustenance

A. Physical Health and Vitality
B. Reproduction and Mortality
C. Exercise and Fitness
D. Hygiene and Diet
E. Nutrition and Nourishment
F. Agriculture and Husbandry
G. Monitoring and Evaluation

7. Emission and Waste

A. Pollution and Contamination
B. Hard-waste and Rubbish
C. Sewerage and Sanitation
D. Drainage and Effluence
E. Processing and Composting
F. Recycling and Re-use
G. Monitoring and Evaluation

Cultural

The cultural aspect is defined as a social field that emphasizes practice, discourse, and material expressions that over time express the continuity and discontinuity of the unusual social meaning of life.

In other words, culture is “how and why we do things here.” “How” is how we practice materially, “why” emphasizes meaning, “we” refers to the particularity of life that is considered unusual, and “here” refers to the particularity of space and also implies that culture is the particularity of time. The concept of “culture” originated from agriculture and farming, and its secondary meaning is the “respect” of culture, which was linked to the understanding of human growth and development in the 16th century. There are always issues of power in the cultural realm associated with controversial results about social meaning.

1. Identity and Engagement

A. Diversity and Difference
B. Belonging and Community
C. Ethnicity and Language
D. Religion and Faith
E. Friendship and Affinity

F. Home and Place
G. Monitoring and Reflection

2. Creativity and Recreation

A. Aesthetics and Design
B. Performance and Representation
C. Innovation and Adaptation
D. Celebrations and Festivals
E. Sport and Play
F. Leisure and Relaxation
G. Monitoring and Reflection

3. Memory and Projection

A. Tradition and Authenticity
B. Heritage and Inheritance
C. History and Records
D. Indigeneity and Custom
E. Imagination and Hope
F. Inspiration and Vision
G. Monitoring and Reflection

4. Beliefs and Ideas

A. Knowledge and Interpretation
B. Ideologies and Imaginaries
C. Reason and Rationalization
D. Religiosity and Spirituality
E. Rituals and Symbols
F. Emotions and Passions
G. Monitoring and Reflection

5. Gender and Generations

A. Equality and Respect
B. Sexuality and Desire
C. Family and Kinship
D. Birth and Babyhood
E. Childhood and Youth
F. Mortality and Care
G. Monitoring and Reflection

6. Enquiry and Learning

A. Curiosity and Discovery
B. Deliberation and Debate
C. Research and Application
D. Teaching and Training
E. Writing and Codification
F. Meditation and Reflexivity
G. Monitoring and Reflection

7. Wellbeing and Health

A. Integrity and Autonomy
B. Bodies and Corporeal Knowledge
C. Mental Health and Pleasure
D. Care and Comfort
E. Inclusion and Participation
F. Cuisine and Emotional Nourishment
G. Monitoring and Reflection

Economic

The economical aspect is defined as a social field that emphasizes the practices, discourses, and material expressions related to the production, use, and management of resources.

The concept of “resources” here is used in the broadest sense, even when the resources are not instrumented or are reduced to means for other purposes, including cumulative exchange value. Although the field of economics is only abstracted as a named field from social life in modern times and is consciously practiced as an independent field, this definition allows this concept to be used in different places and times. The issue of power always exists in the economic field related to the controversial result of the use of resources.

1. Production and Resourcing

A. Prosperity and Resilience
B. Manufacture and Fabrication
C. Extraction and Harvesting
D. Art and Craft
E. Design and Innovation
F. Human and Physical Resources
G. Monitoring and Reflection

2. Exchange and Transfer

A. Reciprocity and Mutuality
B. Goods and Services
C. Finance and Taxes
D. Trade and Tourism
E. Aid and Remittances
F. Debt and Liability
G. Monitoring and Reflection

3. Accounting and Regulation

A. Transparency and Fairness
B. Finance and Money
C. Goods and Services
D. Land and Property
E. Labour and Employment
F. Taxes and Levies
G. Monitoring and Reflection

4. Consumption and Use

A. Appropriate Use and Re-use
B. Food and Drink
C. Goods and Services
D. Water and Electricity
E. Petroleum and Metals
F. Promotion and Dissemination
G. Monitoring and Reflection

5. Labour and Welfare

A. Livelihoods and Work
B. Connection and Vocation
C. Participation and Equity
D. Capacity and Productivity
E. Health and Safety
F. Care and Support
G. Monitoring and Reflection

6. Technology and Infrastructure

A. Appropriateness and Robustness
B. Communications and Information
C. Transport and Movement
D. Construction and Building
E. Education and Training
F. Medicine and Health Treatment
G. Monitoring and Reflection

7. Wealth and Distribution

A. Accumulation and Mobilization
B. Social Wealth and Heritage
C. Wages and Income
D. Housing and Subsistence
E. Equity and Inclusion
F. Re-distribution and Apportionment
G. Monitoring and Reflection

Social

Politics or social aspect, is defined as a social field that emphasizes the practice and significance related to the basic issues of social power because it involves the organization, authorization, legitimization, and supervision of social life that is considered unusual.

Therefore, the parameters in this field go beyond the traditional political meaning, including general social relations. They cross the public / private divide and are formally a modern structure unto themselves. The key concept related here is “rare in social life.” It is reliable that not everything that is arranged in the public or private sphere is political, just because it can have possible consequences for the organization, authorization, legitimacy, and supervision of unusual issues of social life, among which issues of power involve a kind of modality directly practice, or a set of meanings is political.

1. Organization and Governance

A. Legitimacy and Respect
B. Leadership and Agency
C. Planning and Vision
D. Administration and Bureaucracy
E. Authority and Sovereignty
F. Transparency and Clarity
G. Monitoring and Reflection

2. Law and Justice

A. Rights and Rules
B. Order and Civility
C. Obligations and Responsibilities
D. Impartiality and Equality
E. Fairness and Prudence
F. Judgement and Penalty
G. Monitoring and Reflection

3. Communication and Critique

A. Interchange and Expression
B. News and Information
C. Accessibility and Openness
D. Opinion and Analysis
E. Dissent and Protest
F. Privacy and Respect
G. Monitoring and Reflection

4. Representation and Negotiation

A. Agency and Advocacy
B. Participation and Inclusion
C. Democracy and Liberty
D. Access and Consultation
E. Civility and Comity
F. Contestation and Standing
G. Monitoring and Reflection

5. Security and Accord

A. Human Security and Defence
B. Safety and Support
C. Personal and Domestic Security
D. Protection and Shelter
E. Refuge and Sanctuary
F. Insurance and Assurance
G. Monitoring and Reflection

6. Dialogue and Reconciliation

A. Process and Recognition
B. Truth and Verity
C. Mediation and Intercession
D. Trust and Faith
E. Remembrance and Redemption
F. Reception and Hospitality
G. Monitoring and Reflection

7. Ethics and Accountability

A. Principles and Protocols
B. Obligation and Responsibility
C. Integrity and Virtue
D. Observance and Visibility
E. Prescription and Contention
F. Acquittal and Consequence
G. Monitoring and Reflection

Design for sustainability

The designer assumes an important role in the environmental challenge because his figure can generate different branches of knowledge, from the integration of different disciplines with the aim of finding the necessary pieces that allow him to dedicate himself carefully to the design of a resilient solution.

The designer outlines society and its limits. He is a noble character who cannot escape prudence and moral economic valuation. Solving ethical problems means investigating the relationship between individual behavior and sustainability. The designer's task is to research tools that promote appropriate consumer behavior to protect the ecosystem and its inhabitant[s].

The designer assumes an important role in the environmental challenge because his figure can generate different branches of knowledge, from the integration of different disciplines with the aim of finding the necessary pieces that allow him to dedicate himself carefully to the design of a resilient solution.

Relations between design and ustainability

We are changing the paradigm; nowadays, sustainability is being the main focus that can be evidence in the process design; we as designers must expose those specific factors that are related to the project, and what points of sustainability are touching and are directly related to the project, taking into account each area of impact, for example environmental, social, economical, political, material, production, and many others.

We need to understand how it is possible to reshape most of our common behaviors and habits with design in the direction of sustainability[98].

One comparison can be the way design was used to see a project, where for the past decades, it has been intended into a process that combines time, quality, and cost. Nowadays, we also take into account human satisfaction, the impacts on the environment, and also the consumption of materials and energy.

That shows how designers have changed not only the perspective of the environmental crisis but also the focus of future projects.

98. Vanegas, Jorge & DuBose, Jennifer & Pearce, Annie. (1995). Sustainable technologies for the building construction industry.

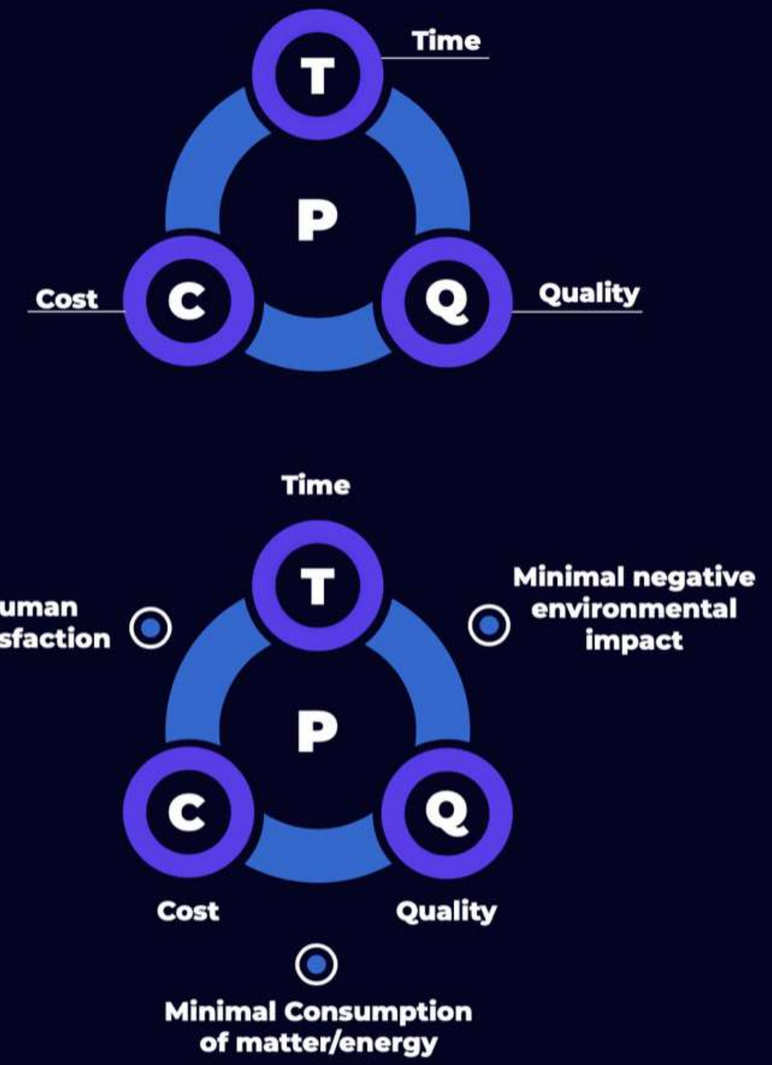


Figure 65: Current models used to approach sustainable projects

Design methodologies for sustainability

To analyze deeply some design methodologies that are mainly focused on sustainability, the paper, “Evolution of design for sustainability: From product design to design for system innovations and transitions. Design Studies”[99], written by Fabrizio Ceschin and Idil Gaziulusoy, was the main reference to discover insights for the project research.

Following the quasi-chronological model, its exploration provides an overview of the sustainable design field. The design methods developed in recent decades are divided into four innovative levels: products, product service systems, space society, and socio-technical systems. Therefore, they proposed an evolutionary framework and mapped the revised DfS method within this framework. The proposed framework synthesizes the evolution of the DfS field and shows how it gradually expands from technology and production methods to large-scale changes at the system level, where sustainability is understood as a socio-technical challenge. The framework also shows how various DpS methods contribute to specific aspects of sustainability and visualizes the links, overlaps and complementarities between these methods.

The paper talks about four main categorizations for the design methodologies that are:

- Product innovation level: The design method focuses on improving existing products or developing new products.
- Product service system innovation level: The focus here is to move beyond a single product and to an integrated mix of products and services.
- Level of spatial, social innovation: The background of the innovation here is the spatial, social conditions of human settlements and their communities. This can be solved at different scales, from community to city.
- Level of innovation of the socio-technical system: the design approach here is focused on promoting fundamental changes in the way that social needs (such as nutrition and transport/mobility) are met to support the transition to a new social system -technical.

99. Fabrizio Ceschin, Idil Gaziulusoy. Evolution of design for sustainability: From product design to design for system innovations and transitions. Design Studies, Volume 47, 2016, Pages 118-163, ISSN 0142-694X, https://doi.org/10.1016/j.destud.2016.09.002. (http://www.sciencedirect.com/science/article/pii/S0142694X16300631).

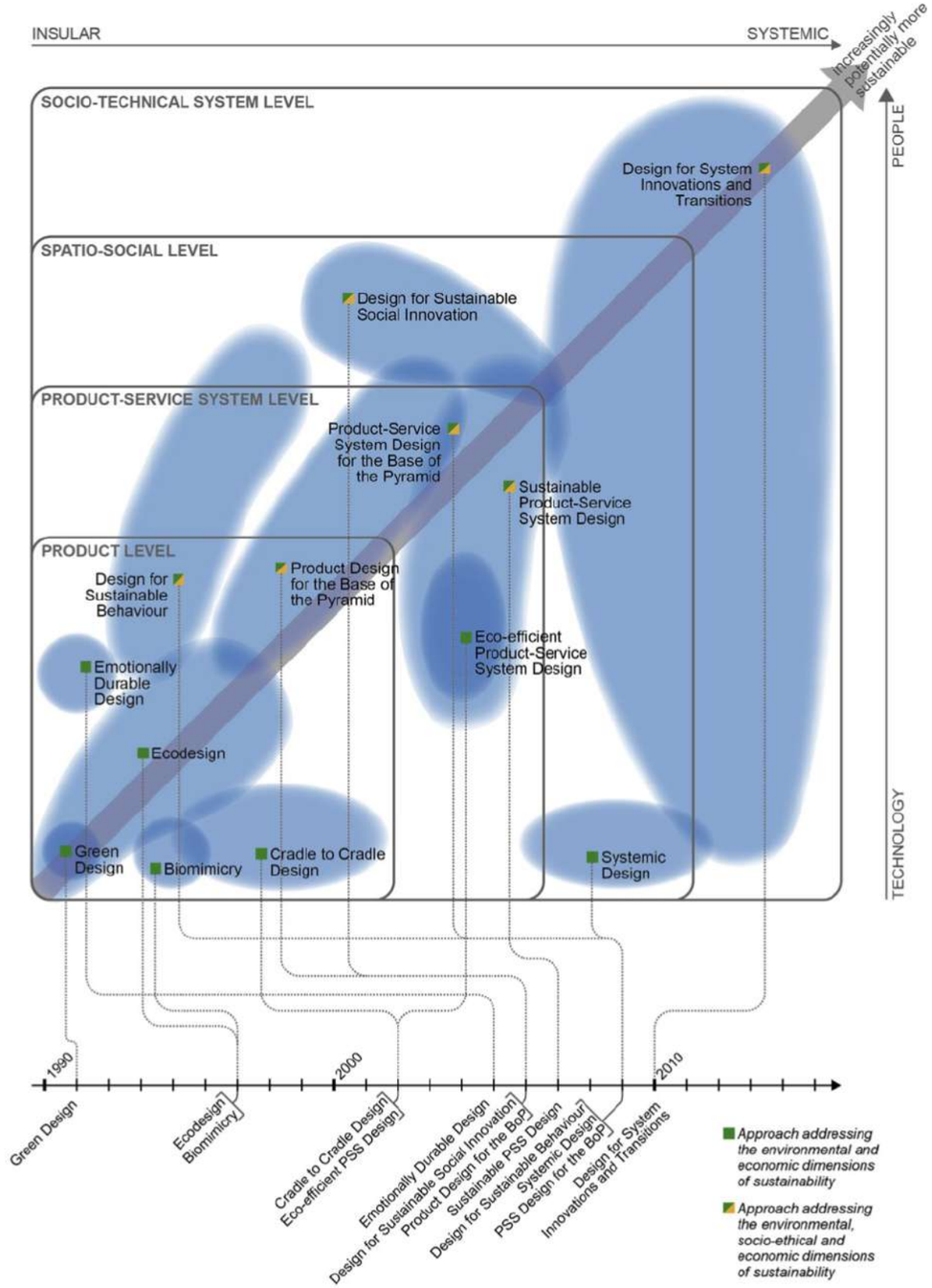


Figure 66: The DfS Evolutionary Framework with the existing DfS approaches mapped onto it. The timeline shows the year when the first key publication of each DfS approach was published. Retrieved from: Fabrizio Ceschin, Idil Gaziulusoy. Evolution of design for sustainability: From product design to design for system innovations and transitions. Design Studies, Volume 47, 2016, Pages 118-163, ISSN 0142-694X, https://doi.org/10.1016/j.destud.2016.09.002. (http://www.sciencedirect.com/science/article/pii/S0142694X16300631).

In order to understand the importance of the different design methodologies inside the design process it is crucial to describe them, taking into account their focus, areas, steps, and tools that are the essence of each methodology.

Design Thinking

It is a problem-solving methodology that is based on Human-Centered Design, and it focuses on understanding the mindsets and needs of the people they're creating by turning problems into questions. It encourages organizations to focus on the people they create, leading to better products, services, and internal processes.

The process is deeply human and is not always linear; there are three main steps: inspiration, ideation, and implementation. It is applicable in diverse areas no matter the role or industry, whether business, government, education, or nonprofit.

The tools connect the designer with the people they are working on by observation, interviewing, immersive empathy, and exploring extreme users to develop innovative solutions to understand and respond to their main needs.

It's about adopting simple changes in thinking and solving problems from new directions. Design thinking can help to develop innovative solutions based on people's needs, and guide you to get started with quick, low-fidelity experiments and innovative new solutions, which will bring learning and gradually increase fidelity.

As a method, design thinking takes advantage of capabilities that all of us have, but is ignored by more traditional problem-solving practices. Design thinking is based on intuition, recognizing patterns, constructing ideas with emotional meaning and functionality, and the ability to express oneself through other media than words or symbols[100].

Figure 67: Design Thinking, framework example. Retrieved from: https://vitolavecchia.altervista.org/definizione-caratteristiche-e-processo-del-design-thinking/

Human-Centered Design

This is a process that begins with the person you are designing for and ends with a new solution tailored to their needs. Human-Centered Design is a creative way to solve problems, is about developing deep empathy with the people you design for, generating lots of ideas, building lots of prototypes, sharing what you've done with the people you design for, and finally putting it into practice[101].

It is commonly used to design and manage frameworks for developing solutions to problems by engaging human perspectives in all steps of the problem-solving process. Human participation generally occurs in the context of observing problems, brainstorming, conceptualizing, developing, and implementing solutions.

The human-centered design includes three steps. In the inspiration phase, when you are immersed in their lives and deeply understand their needs, you will learn directly from the people you designed for them. In the conception stage, you will understand what you have learned, identify design opportunities, and build possible solution prototypes. In the implementation phase, you will put your solution into practice and finally bring it to the market. And you will know that your solution will be successful because you put the person seeking service at the core of the process[102].

100. Tim Brown, Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation, New York: HarperBusiness, 2009.

101. Innovating for People: Handbook of human-centered design methods. (2012). Pittsburgh, PA: LUMA Institute, LLC.

In the 2008 paper called "On the Symbiosis of Humans and Machines," Cooley said: "People-oriented, first of all, we must always put people before machines, no matter how complicated or elegant they are". The original human-centered system movement keenly examines these scientific and technological forms that meet our cultural, historical, and social requirements and seeks to develop more suitable technological forms to meet our long-term aspirations.

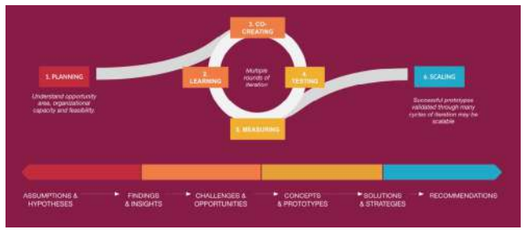


Figure 68: Human-Centered Design, framework example. Retrieved from: https://dalberg.com/what-is-human-centered-design/

Systemic Design

Systemic Design, as mentioned in the past chapters of this thesis, combines the approaches of Systemic Thinking and Human-Centered Design. It integrates both focuses intending to help designers cope with complex design projects.

Thanks to that, systemic design is well known as a transdisciplinary methodology that intends to work on diverse areas, that intends to develop approaches that help to integrate design towards sustainability at the environmental, social, and economic levels.
It has different steps that depend on the essence of the project itself, and the need of the designers. Some of them are framing, listening, understanding, defining the desired future, exploring the possibility space, designing the intervention model, fostering the transition.

System design that uses a human-centered approach improves quality, for example, by improving user productivity and organizational, operational efficiency; easier to understand and use, thereby reducing training and support costs; increasing availability for people with a wider range of capabilities, thereby increasing accessibility Improve user experience; reduce discomfort and stress; provide a competitive advantage, such as by enhancing brand image; and contribute to sustainable development goals.

This methodology is also characterized by using different kinds of tools to communicate and expose the process, like system maps, gigamaps, network system maps, relations maps, taking sustainability as the main factor.

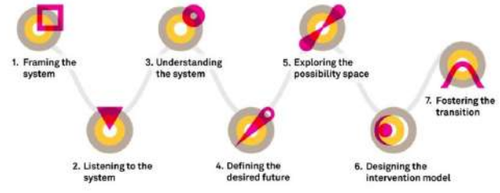


Figure 69: Systemic Design, framework example. Retrieved from: https://flbcn.gitbook.io/reflowhandbook/tools-and-methods-for-your-pilot/toolkits-and-handbooks/systemic-design-toolkit

102. Matheson, G. O., Pacione, C., Shultz, R. K., & Klügl, M. (2015). Leveraging human-centered design in chronic disease prevention. American Journal of Preventive Medicine, 48(4), 472-479.

Circular Design

This methodology is mainly based on the circular economy and how the scale of what we're designing has shifted from products to companies to economic systems.

The main characteristic of circular design is the end phase of the project, where the change of paradigm happens, from looking into a linear process into a circular one.

Whom we're designing for has expanded from a solitary user to an intimately connected web of people spanning the globe. That is why circular design is used in different areas of design and also industrial.
The main steps are designing, the product cycle, restoring things, sense of meaning, using and experiencing things, and creating value for consumers.
Along with this and so as the circular economy, new tools such as artificial intelligence, the internet of things, and biomimicry are some tools that Circular Design use mean our design ambitions are limited only by our imagination.

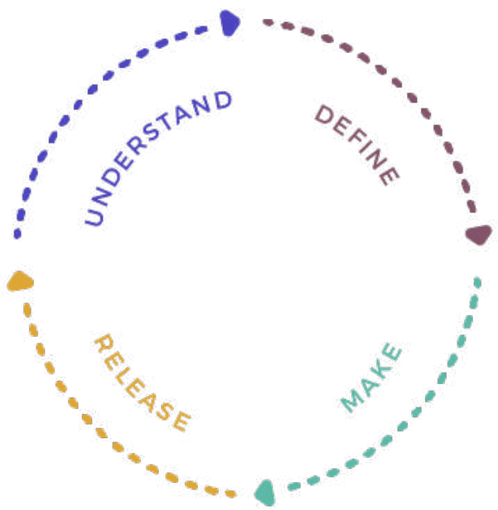


Figure 70: Circular Design, framework example. Retrieved from: https://www.circulardesignguide.com

Embodied Design

The Embodied design stems from the idea of embedded cognition-body movements can play a role in the development of ideas and concepts[103]. Built-in layouts make mathematics come to life; by studying the effects of the body on the mind, researchers learn to design learning objects and activities[104]. Incarnation is an aspect of pattern recognition in all areas of human endeavor.

Built-in design-based learning strategies are based on movement and visualization; physical activities help to learn mathematical concepts. When students are involved in learning physically and mentally, they will remember the content better. Recent theoretical advances, such as built-in cognitive load theory, have been suggested to take advantage of the potential benefits of built-in interaction models for learning without crowding out cognitive resources[105]. Built-in design usually includes error-proof learning.

One function of Embodied Design is to expand the use of operations to promote undergraduate student's understanding of abstract mathematics. A disadvantage of operation is that it is difficult for students to associate physical activity with mathematical signs and symbols. Although operations can give students a deeper understanding of a concept, they need to support the transfer of this knowledge to algebraic representation[106].

103. Sam McNerney "Embodied Cognition and Design: A New Approach and Vocabulary" (2013).

104. Martha W. Alibali & Mitchell J. Nathan "Embodiment in Mathematics Teaching and Learning: Evidence From Learners' and Teachers' Gestures (2011).

105. Skulmowski, Alexander; Pradel, Simon; Kühnert, Tom; Brunnett, Guido; Rey, Günter Daniel (2016). "Embodied learning using a tangible user interface: The effects of haptic perception and selective pointing on a spatial learning task". *Computers & Education. 92–93: 64–75.*

106. April Alexander & Larissa Co "Tangible Digital Manipulatives for Math Learning" (2009).

Although the influential theory of cognitive load theory in the field of instructional design suggests that design involves low-level interactions to save cognitive resources for learning, the benefits of built-in interaction are obvious. Therefore, a built-in cognitive load theory has been proposed to aid the built-in design. In this model, if the cognitive costs (such as motor coordination) are outweighed by its benefits (such as multimodal processing), the built-in interaction is beneficial for learning.

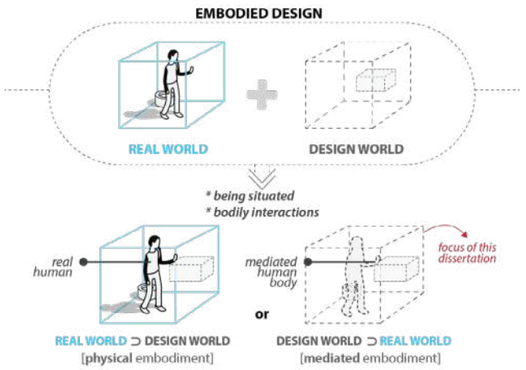


Figure 71: Embodied Design framework example. Retrieved from: https://boleehci.com/portfolio/embodied-framework/

Emotionally Durable Design

This methodology reduces consumption and waste by increasing the durability of relationships established between users and products.

It is mainly focused on the relation that designers can create with emotions, memories, experiences in order to add value to the project or product, the main areas where nowadays Emotionally Durable Design is being promoted are sustainable design such as design for recycling, biodegradability, and disassembly, correlated with the environmental crisis.

This methodology as well is based on specific steps depending on the essence of the project; some of those can be designed for attachment and Trust, adaptability and upgradability, designing for ease of maintenance and repair, durability, and longevity.

The main tools are similar to any design process, but this is strictly focused on the strength of the emotional bond a consumer experiences with a durable product, memories, emotions, pleasure, senses, etc.

Figure 72: Emotionally Durable Design framework example. Retrieved from: MDPI and ACS Style Haines-Gadd, M.; Chapman, J.; Lloyd, P.; Mason, J.; Aliakseyeu, D. Emotional Durability Design Nine—A Tool for Product Longevity. Sustainability 2018, 10, 1948. https://doi.org/10.3390/su10061948

Having collected and understood these different methodologies, we tried to the define the core elements of the design process of each methodology using our model of the design structure, giving use the opportunity to show and test even more the reach of the project and at the same time.

This task also works as a tool to show how design has been working on finding new methodologies that focus on different problems and aspects of sustainability, growing even stronger as a discipline to tackle and reach the objectives set for 2030 and ever further.

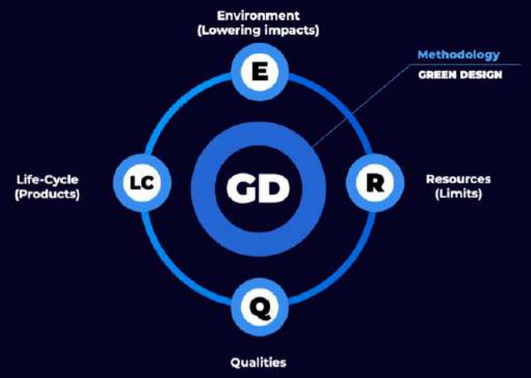


Figure 73: Green design model

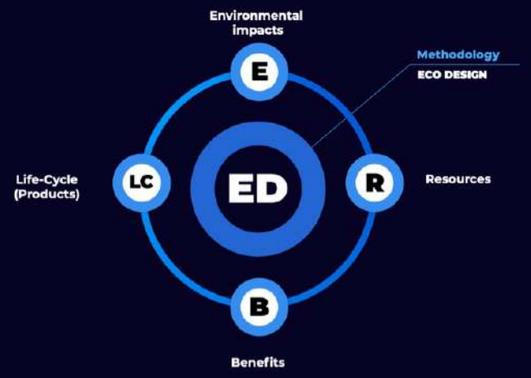


Figure 74: Eco design model

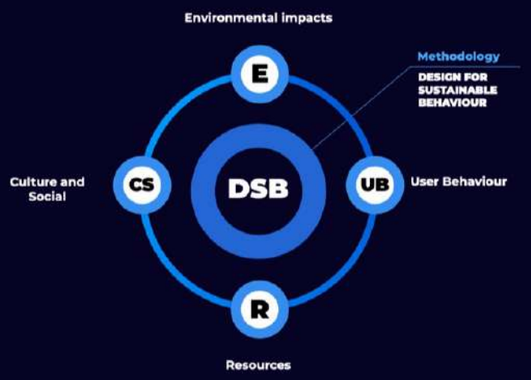


Figure 75: Design for sustainable behaviour model

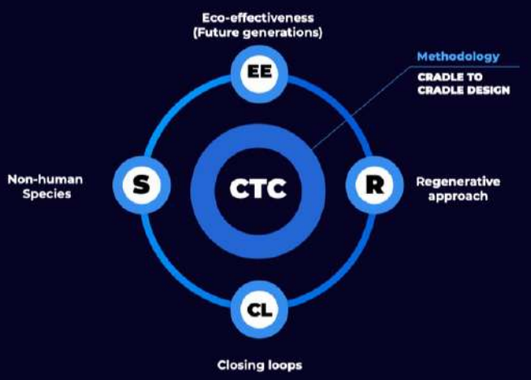


Figure 76: Cradle to Cradle model

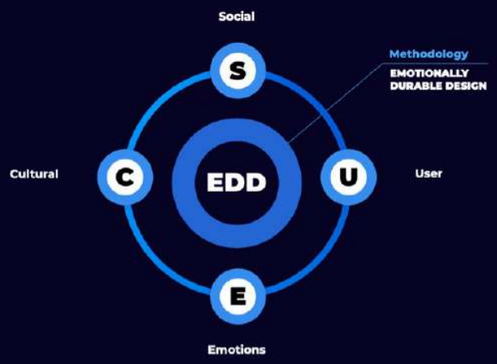


Figure 77: Emotionally durable design

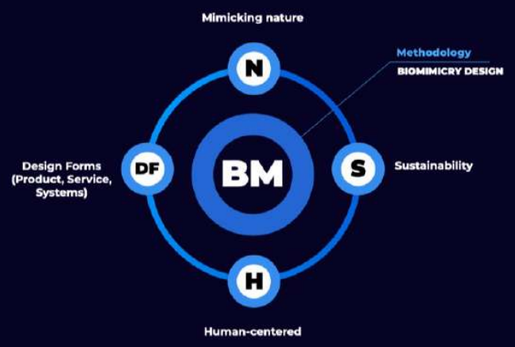


Figure 78: Biomimicry design

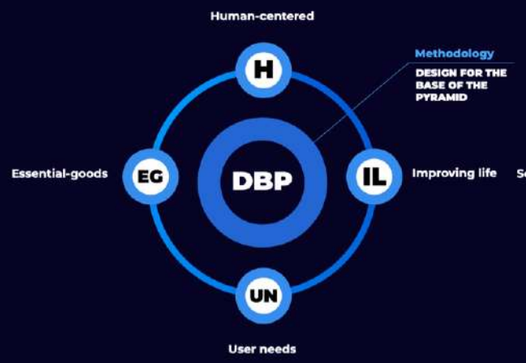


Figure 79: Design for the base of the pyramid model

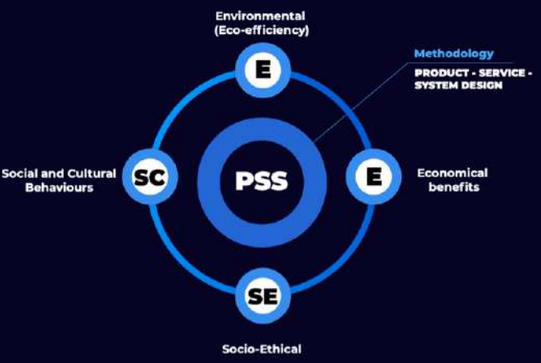


Figure 80: System design model

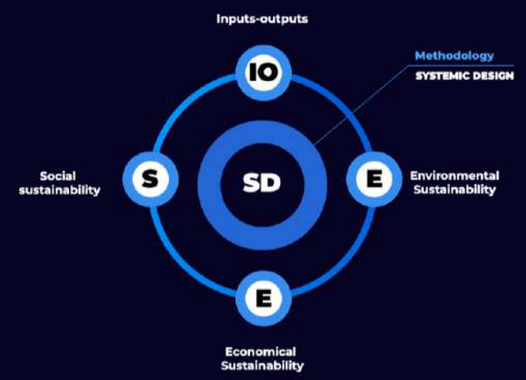


Figure 81: Systemic design model

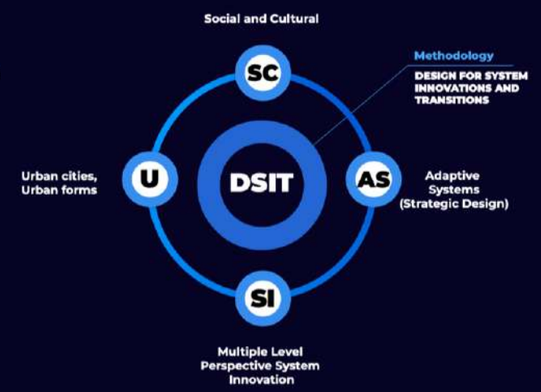


Figure 82: Design for system innovations and transitions model

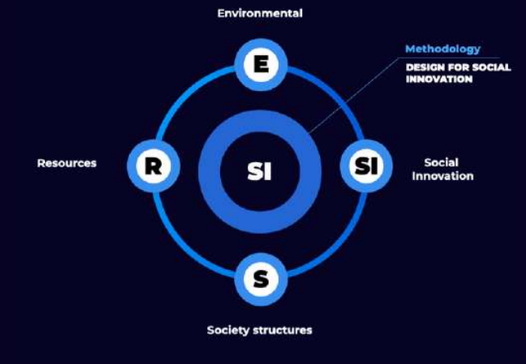


Figure 83: Design for social innovation

These schemes are the graphic visualization of some of the characteristics and concepts that determinate each one of the studied methodologies mentioned above.

Design and SDGs

In relation to sustainability aspects and current needs, the sustainable development objectives came out, with the objective of being fulfilled within a certain time frame.

There are three main characteristics of the Sustainable Development Goals that are the main drivers of the reinterpretation.
The first one is that they are formulated as objectives. The second one is the language used is general and objective that does not express the complexity that exists behind the problems it covers. Last but not least, in terms of design, the way they are written tends to guide people to obvious situations and does not allow them to explore the breadth of work possibilities and solutions.
One of the biggest drawbacks that were evidenced throughout the project's development, specifically with the process carried out by the World Design Organization to collect resources for the platform, was how the design continues to be seen as a final process, that is, a result, which leaves behind a lot of essential information that is experienced during the process.

The relationship with the Sustainable Development Goals and design projects is that the designers do not understand most of the raised objectives, turning them into an additional element at the end of the project instead of seeing them as its basis.

This, in addition to the situation expressed by the organization members, when receiving the resources sent by the different designers in different parts of the world, it was not easy to understand the magnitude of the projects and, in turn, justify the relationship with the Development Goals. Sustainable, found in situations where the direct relationship with one or more objectives was mentioned, and others in which, in contrast, information was not found or provided in this regard, which made the process something subjective from a person external to the project who does not know its complexity in evaluating the relationship with any of the 17 SDGs.

To develop the framework, it is crucial to identify the relevant elements to relate each of the sustainable development objectives, seeking to translate them into design languages.

What was mentioned becomes the essence of the creation of the framework and the platform, intending to help designers not only understand in their language what is proposed within the 169 targets but also to know references that help to understand the current status of the design in reaching the cause raised by 2030.

Design Lens

The elements that define sustainability were previously understood or related individually to the development of design projects.

Currently, the design processes and projects jointly take into account each of the aspects of sustainability in order to generate systematic solutions that generate positive impacts in each of their areas.

It is essential to understand the mode of action that design thinking has in projects, where how designers seek to arrive at solutions is evidenced, taking into account different aspects and various perspectives to contribute positively.

The designer not only looks for an easy solution; he looks for a solution that meets the user's needs but is also a solution that works with the context in which he interacts.
The design is responsible for evaluating the possible paths to reach a solution; this underscores the importance of the design process because there is not just one path to take, but infinite ones that can lead to different solutions.

We can say that currently, design lenses are mainly focused on finding solutions that go hand in hand with sustainability.

Previously, the concept of sustainability was understood as the individuality of the four aspects on which it was focused, giving importance only to the environmental aspect. Nowadays, sustainability from the design area is understood as a set of elements that affect the environment and society, the economy, and that are linked to culture.

The concept of sustainability as a system is also related to systematic thinking, which bases its perspective on the whole system and not its parts.

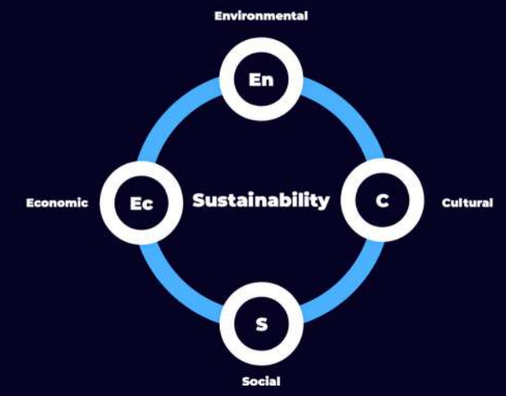


Figure 84: Circles or areas of sustainability

Reinterpretation of the SDGs

The research phase leads us to how important it is for designers to understand the world's problems. Therefore, within Agenda 2030 it is crucial to focus the projects on achieving those solutions by reframing the SDGs to understand them most efficiently.

For this, we as designers need to understand the parameters that define sustainability and show the relation of these factors with the process scheme.

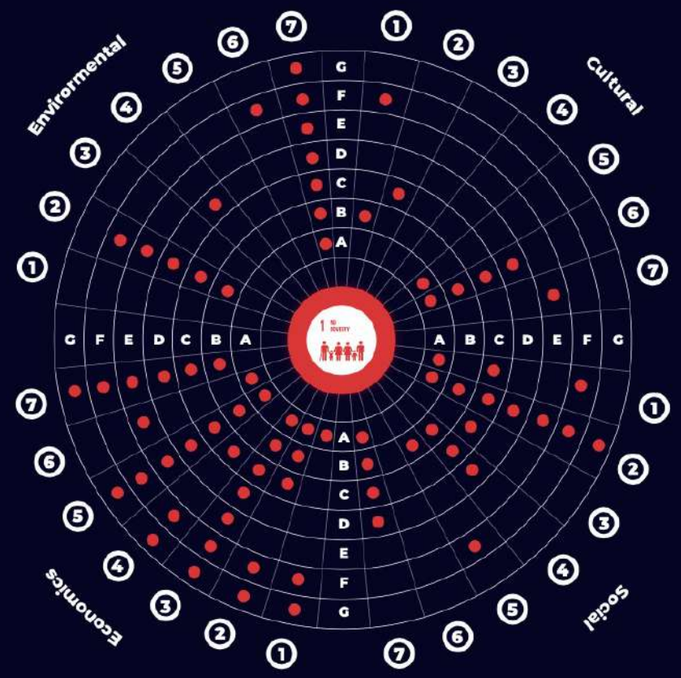
We should define and relate the factors to convert sustainable development objectives as sustainability parameters for design.

In addition, we can create and include factors that guide the motivation and focus inside the design process with the reinterpretation of how from the sustainable development goals and design.

For the reinterpretation of the 17 UN Sustainable Development Goals, we took the four pillars of sustainability and each of its aspects, and then evaluated the 17 SDGs taking into account the main objectives and the targets of each one.

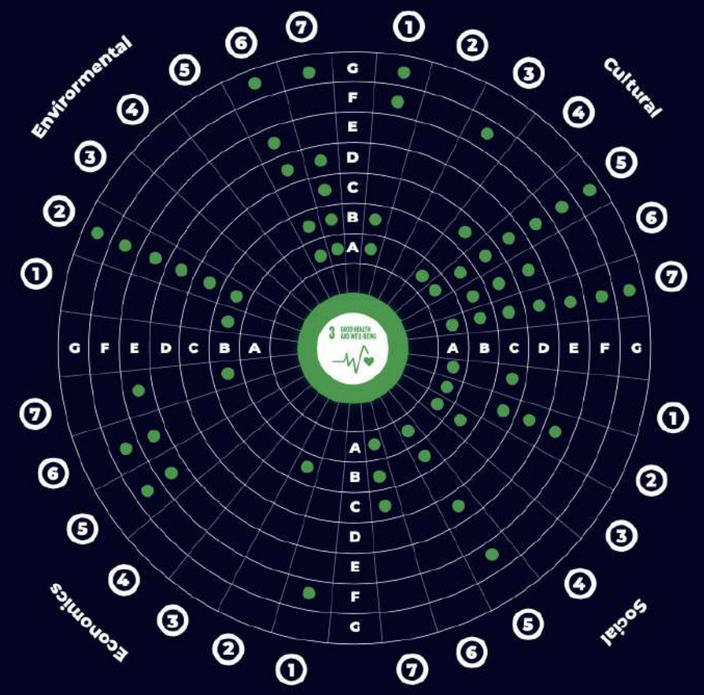
SDG 1

End poverty in all its forms everywhere



SDG 3

Ensure healthy lives and promote well-being for all at all ages

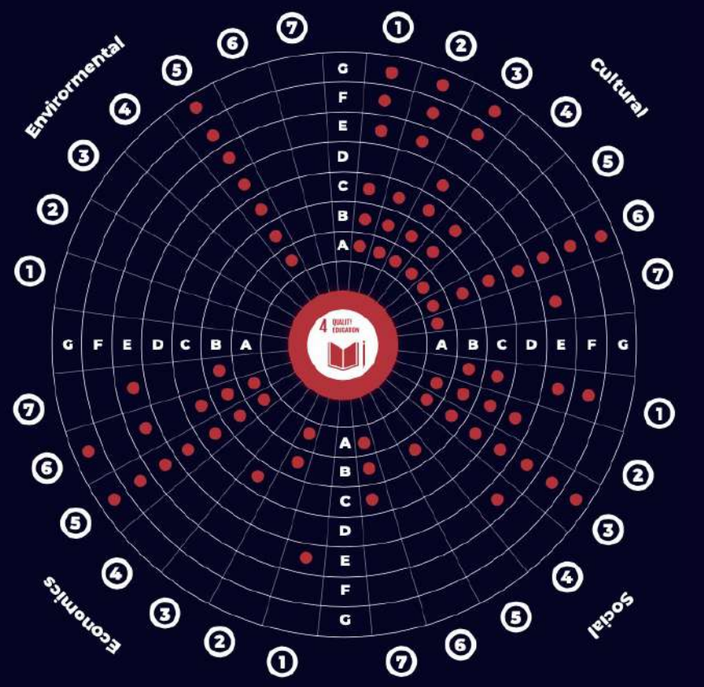


SDG 2

End hunger, achieve food security and improved nutrition and promote sustainable agriculture

SDG 4

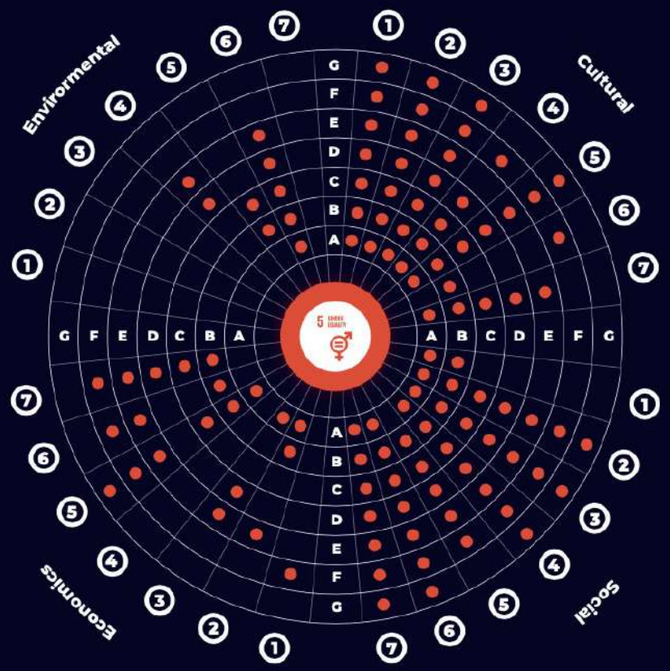
Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all



This evaluation allowed us to know the areas of inclination in each one of the Sustainable Development Goals.

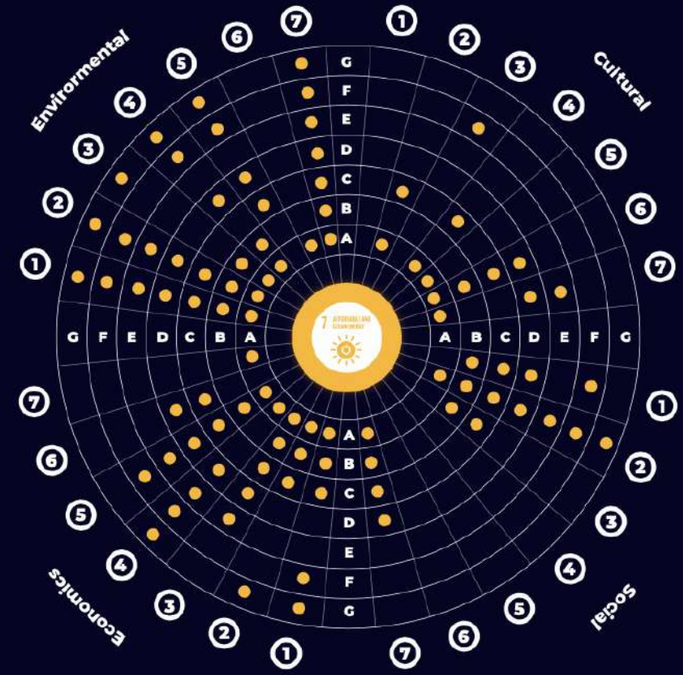
SDG 5

Achieve gender equality and empower all women and girls



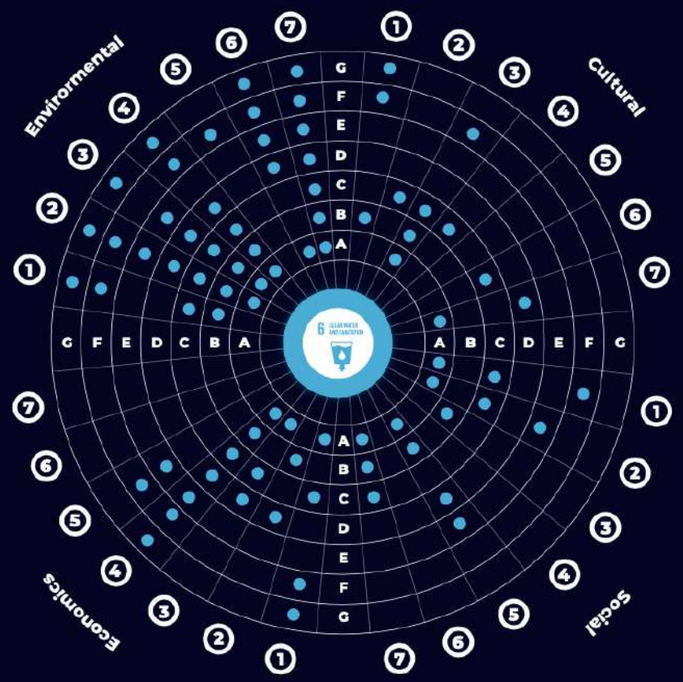
SDG 7

Ensure access to affordable, reliable, sustainable and modern energy for all



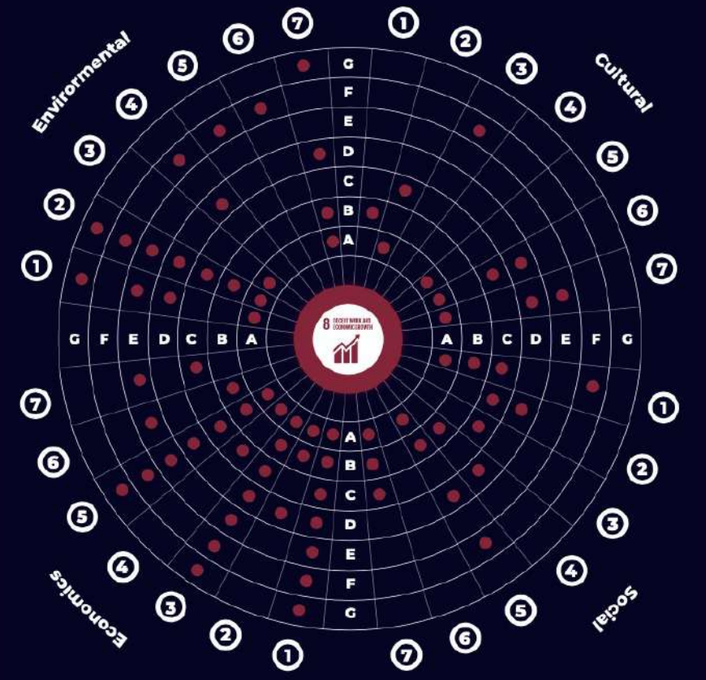
SDG 6

Ensure availability and sustainable management of water and sanitation for all



SDG 8

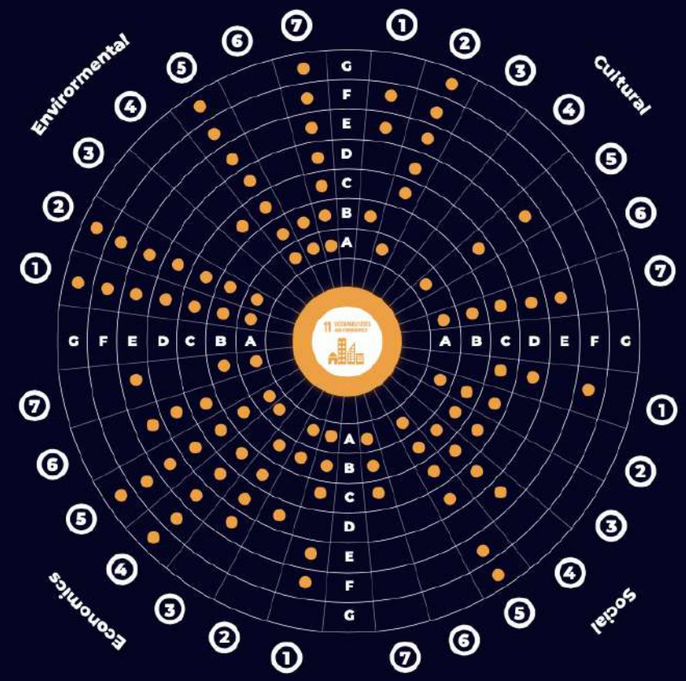
Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all



This evaluation allowed us to know the areas of inclination in each one of the Sustainable Development Goals.

SDG 9

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

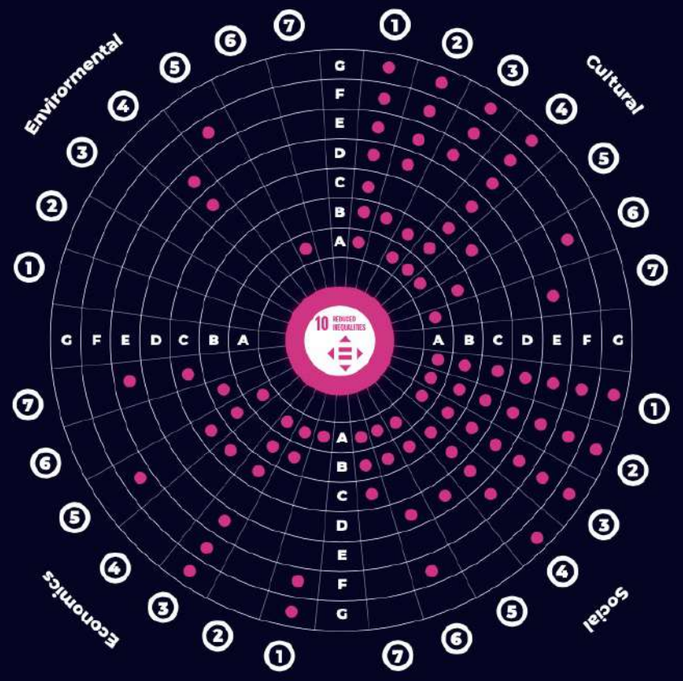


SDG 11

Make cities and human settlements inclusive, safe, resilient and sustainable

SDG 10

Reduce inequality within and among countries



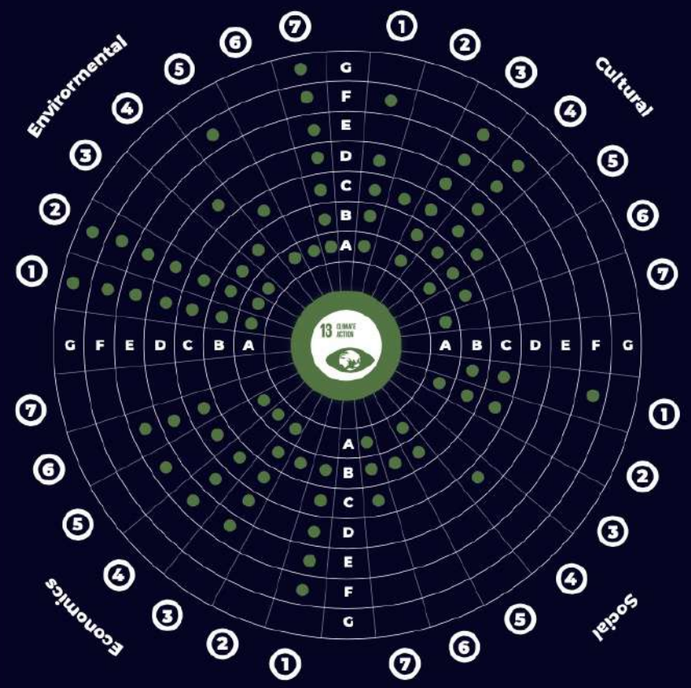
SDG 12

Ensure sustainable consumption and production patterns

This evaluation allowed us to know the areas of inclination in each one of the Sustainable Development Goals.

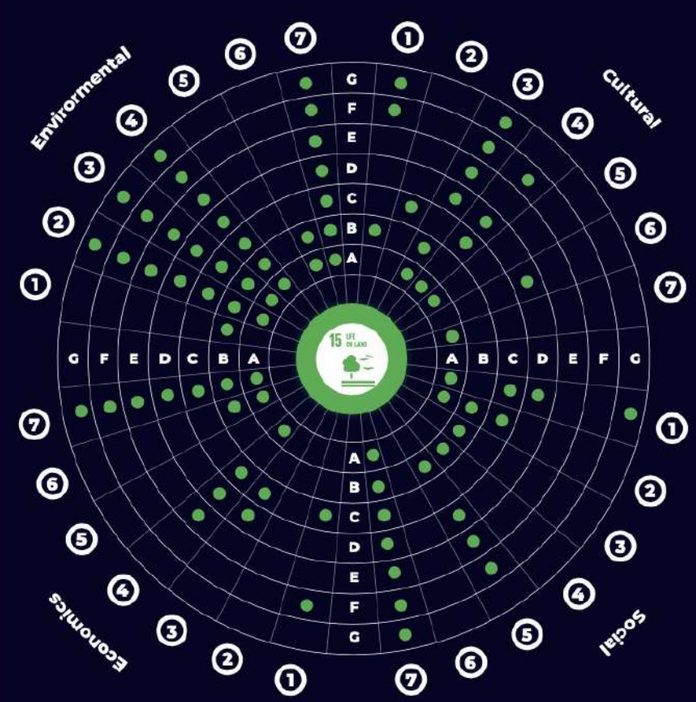
SDG 13

*Take urgent action to combat climate change and its impacts**



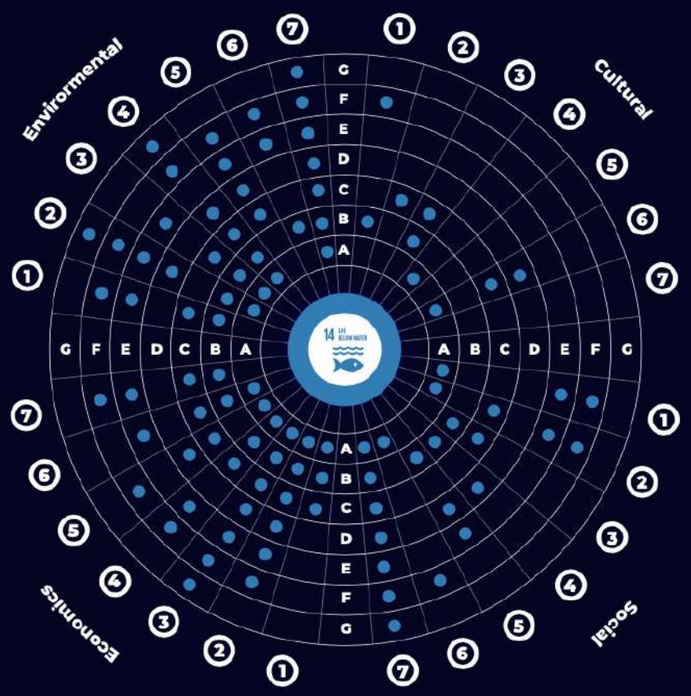
SDG 15

Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss



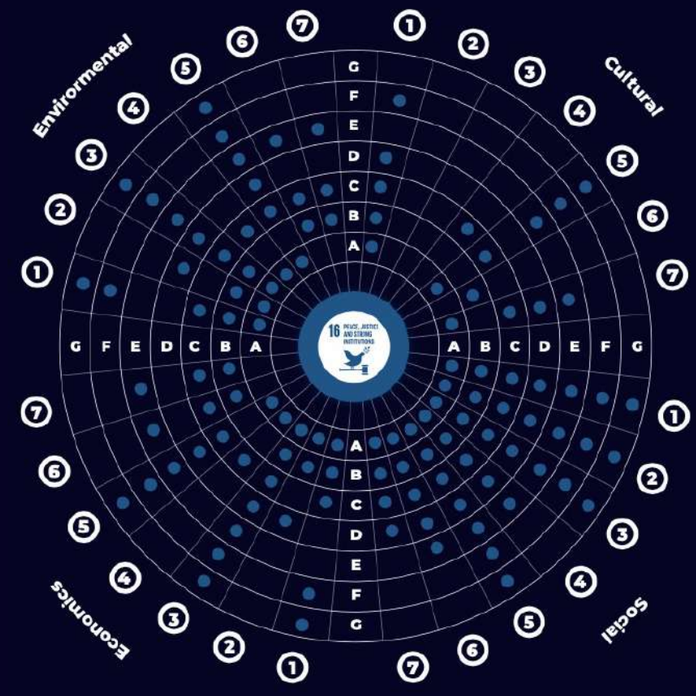
SDG 14

Conserve and sustainably use the oceans, seas and marine resources for sustainable development



SDG 16

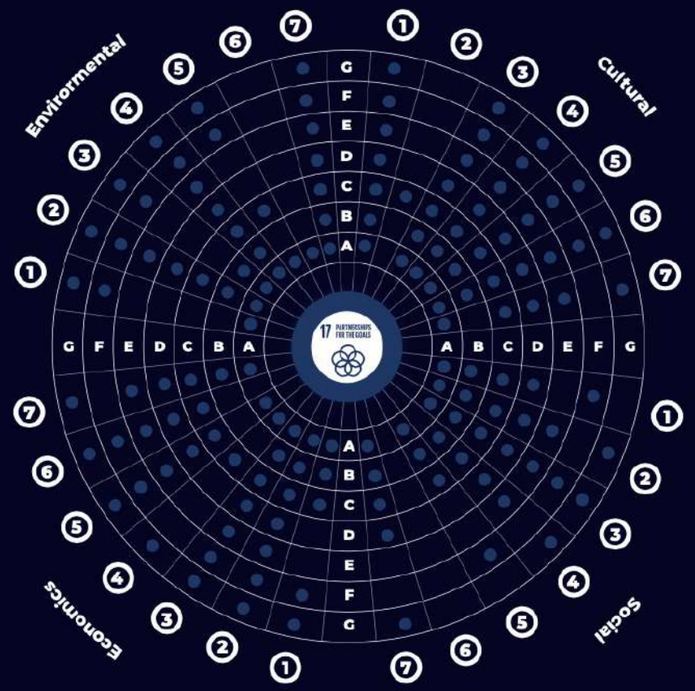
Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels



This evaluation allowed us to know the areas of inclination in each one of the Sustainable Development Goals.

SDG 17

Strengthen the means of implementation and revitalize the global partnership for sustainable development



Framework Development

This evaluation allowed us to know the areas of inclination in each one of the Sustainable Development Goals.

Understanding the definition of framework

We can define a framework as a standardized set of concepts, practices, and criteria to focus on a particular type of problem that serves as a reference, to face and solve new problems of a similar nature[107].

In short, a framework is a previous structure that can be used in a development project. The Framework is a template, a conceptual scheme, which simplifies the preparation of the task, because you only need to supplement it according to what you want to do.
The main objective of the processes is to offer a defined, self-contained functionality, being built using design patterns, and its main characteristic is its high cohesion and low coupling[108]. A process has a default behavior, which by default should be useful, defined, and identifiable.

The problem is very unstructured, there are many variables and interdependent factors, and the solutions are not clear, correct or incorrect, they are bad, good or better. Using a Framework can be a helpful process, with designing a simple diagram that organizes the dimensions of the project in a useful way; sometimes the framework still exists for a long time after the end of the project.

A framework represents not only the architecture of the information that is sought to communicate, but the interaction and processes that are desired to follow, data can be handled, and it depends on each one how to interpret and handle that data, for this, the needs of the system with the functionality that it provides[109].

Structure

To achieve a structure in accordance with the project, you must have clear ideas and objectives that are raised to face the problem or need to solve.

107. Riehle, Dirk (2000), *Framework Design: A Role Modeling Approach, Swiss Federal Institute of Technology*. Retrieved from http://www.riehle.org/computer-science/research/dissertation/diss-a4.pdf on Dic 2020.

109. Johnson, R E (1992), "*Documenting frameworks using patterns", Proceedings of the Conference on Object Oriented Programming Systems Languages and Applications*, ACM Press: 63–76.

108. Gachet, A (2003), "Software Frameworks for Developing Decision Support Systems – A New Component in the Classification of DSS Development Tools", *Journal of Decision Systems,* 12 (3): 271–281, doi:10.3166/jds.12.271-280, S2CID 29690836.

To develop an appropriate Framework, each of the elements that interact in the project system must be taken into account, that is, the people for whom the project is intended to be developed (the actors), the work team, the resources, the clients, context and other elements that manage to provide most of the clear information about the project.

Subsequently, it is necessary to categorize the information, in order to grant hierarchies and priorities of the information collected and analyzed about the project.

Each project presents its essence, the categories of the framework will not only depend on the information collected but also on the approach sought in the project, that is, some may focus on the users and their needs, others may instead have as a priority the industry, production or service, which, according to the direction that you want to generate with the framework, will also show the processes to reach the solutions based on the approach presented.

The visualization of the information is undoubtedly one of the key points of the framework, it is important to create a visualization that is understandable, concise, readable, and that communicates the main objectives for which it was generated.

It is important to recognize the information, to understand the categories, subcategories, the data related to the framework and their interactions or relationships with different categories, the hierarchies, the sequences or directions that help those who are developing the project, follow step by step the framework as it was raised or designed.
Organizing a framework visually provides a more attractive way for others to understand and follow the content.

As mentioned above, the main objective of a framework is to describe the problem in order to open different perspectives to generate a solution, based on the approach or areas previously raised. Providing a specific framework helps others to quickly understand the nuances of the problem.

Cases of study

Stockholm Resilience Center Framework

The Stockholm Resilience Center (SRC) is an international research center for the science of resilience and sustainability.
It was founded in 2007; it has become the world's leading scientific center for solving the complex challenges facing humanity.

The center is a joint initiative of Stockholm University and the Beijer Institute for Eco Economics of the Royal Swedish Academy of Sciences.
A board of directors manages it, and two independent advisory committees provide additional strategic advice.

They believe in the importance of reconnecting with the biosphere and stop seeing nature as separate from society because human beings and nature are truly intertwined in what we call the social ecosystem. Without a deeper understanding of nature's role in our survival and well-being, there will be no further development.

Due to the trade-offs between the ever-increasing world population and higher living standards and the management of the impact of production and consumption on the global environment, socio-economic development and global sustainability are often seen as conflicting.

They established an evidence-based framework for new goals and objectives. Based on the six sustainable development goals that take development and the environment into consideration, they formulated a comprehensive goal and related goal framework, indicating

that it is possible to formulate broad goals related to food, energy, water, and food goals. In addition, ecosystem services are necessary, thus providing a neutral, evidence-based approach to support the specific discussion of the Sustainable Development Goals[110].

Global analysis using the integrated global goal equation is close to providing indicators for these goals. Together with development goals and environmental goals, these broad goals will ensure maximum synergy and manage trade-offs in implementing the Sustainable Development Goals.

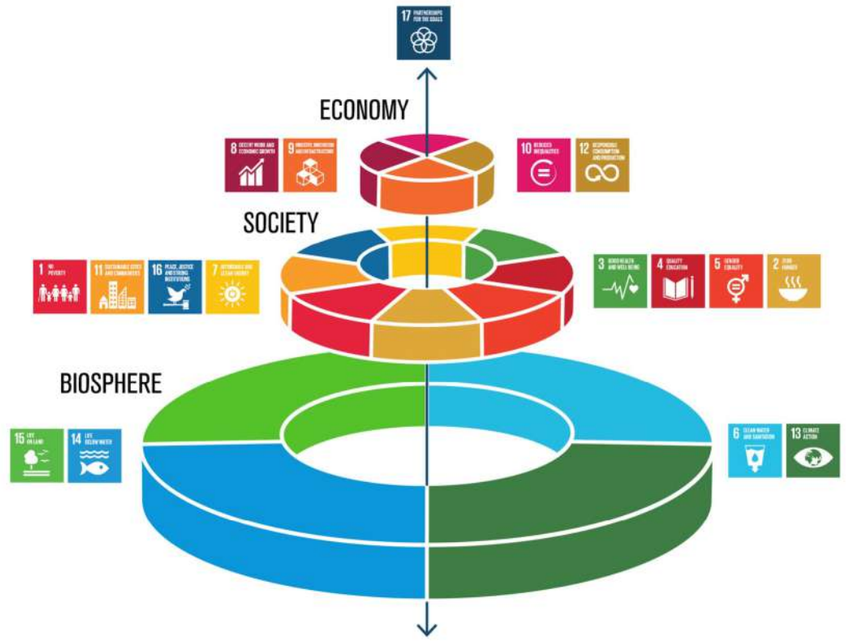


Figure 85: Stockhol Resilience Center. Framework to contribute with the 2030 Agenda. Retrieved from: https://www.stockholmresilience.org/research/research-news/2017-02-28-contributions-to-agenda-2030.html

IBM Framework

The framework was created by IBM, which is based on design thinking methodology to solve user problems with the speed and scale of modern businesses.

The framework is divided into three categories; The first is the principle of guiding users to discover problems and find solutions, focusing on user results helping them achieve their goals, treating everything as a prototype and empowering the driving team to act.

The second one is the loop, where through observation immersed in the real world, gathering, and the continuous cycle of abstraction in ideas, the present and the future are understood.

Finally, the last category is the key to guiding the team to use the framework by adjusting solutions that are meaningful to users, exchanging feedback, and inviting others to participate in their projects.

110. Griggs, D., M. Stafford Smith, J. Rockström, M. C. Öhman, O. Gaffney, G. Glaser, N. Kanie, I. Noble, W. Steffen, and P. Shyamsundar. 2014. An integrated framework for sustainable development goals. Ecology and Society 19(4): 49.

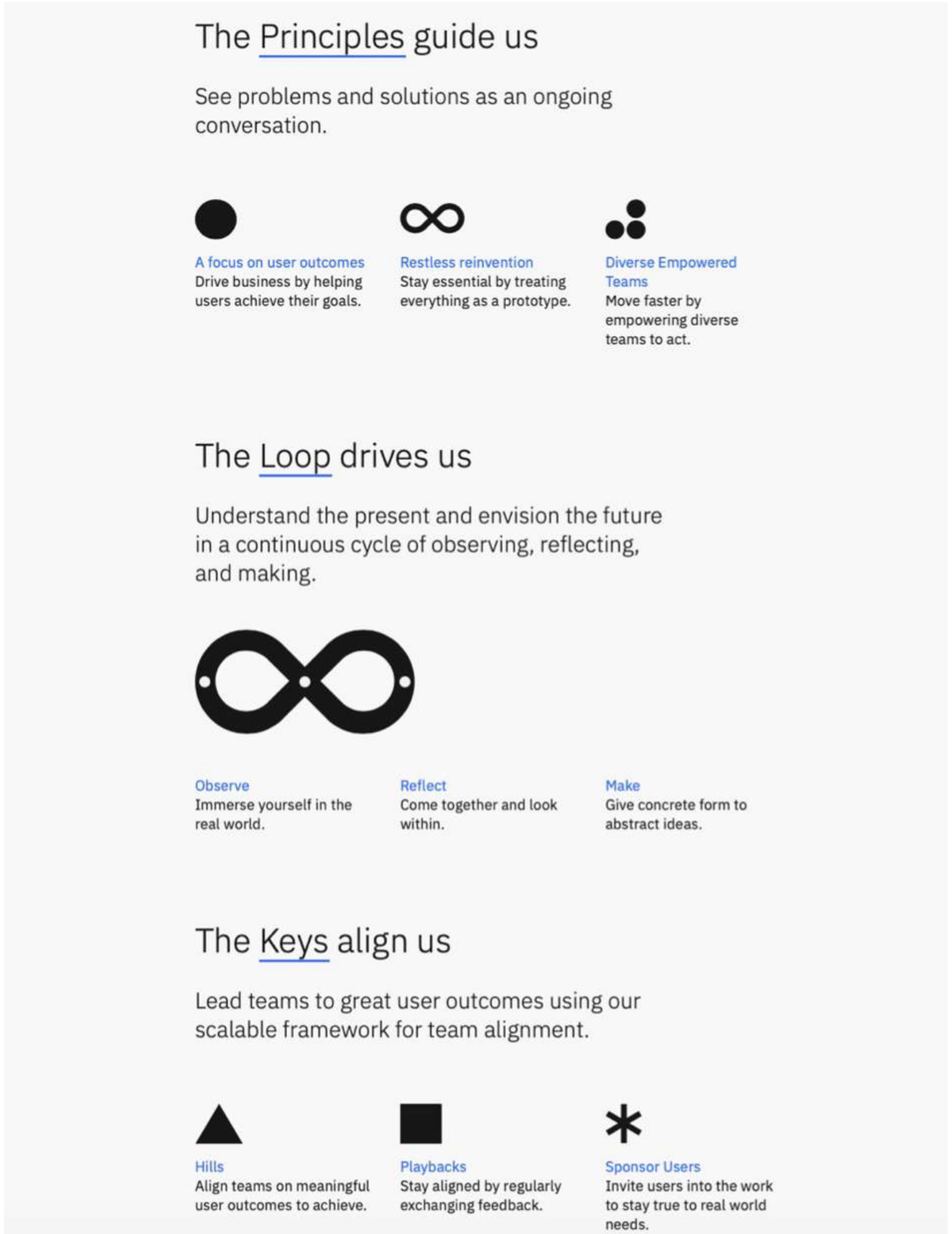


Figure 86 IBM. Framework to solve users' problems at the speed and scale of the modern enterprise. https://www.ibm.com/design/thinking/page/framework

IDEO Toolkit

The toolkit created by IDEO is a complete book that not only presents visually but describes an infinite type of tool that designers can use during the development of a project, but it also describes each one of the elements and asks questions in order to get as much information as possible.

The toolkit is divided into three main categories, inspiration, ideation, and implementation, where designers can find different types of examples procedures to take in order to follow up within the development of project, some examples of those tools are simple tasks as how to elaborate the desk research, how to do an interview, how to do a journey map, how to create a prototype, how to define the audience, how to create a framework for the specific project, and many others.

Designers can also search by questions related to the project, for example, where to start, what tools are suggested to use, how to categorize information, how to come up with ideas, how to prepare for a launch, etc.

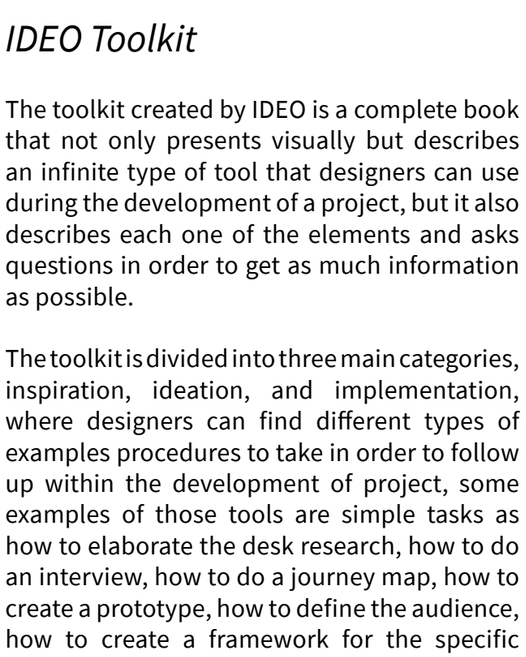


Figure 87: IDEO. Design tool kit, that helps designers to develop the methodology with specific processes to work on https://www.designkit.org/methods#filter

Systemic Design Toolkit

The Systemic Design Toolkit helps designers to co-create interventions to tackle organizational and societal complexity.

It describes seven steps to tackle complex issues were developing a project and following the systemic thinking methodology.

The system design toolkit is conceived by designers and change agents who are willing to start the system transformation process. These tools are designed to be used to collaborate and co-create meetings.

This booklet will guide designers into choosing eight kit technologies. These are classified according to different stages of the design process, but this does not mean that they cannot use them in different ways. Designers can be creative, use them and adapt them to their projects.

This toolkit also provides the description of each one of the steps to follow during the process, and also some blank forms to fill depending on the project in order to translate the information and get insights from it.

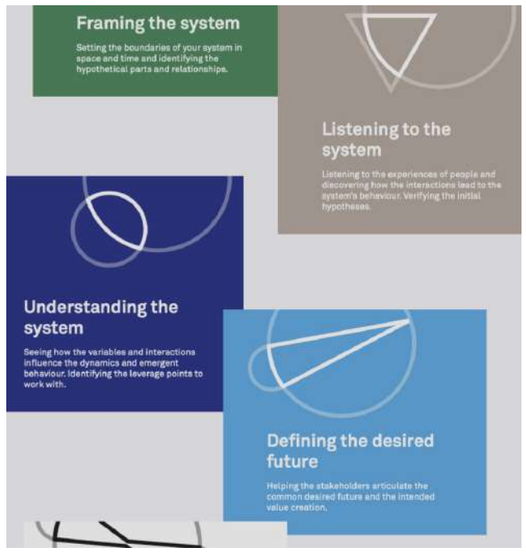


Figure 88: SYSTEMIC DESIGN TOOLKIT. Guide to help designer follow the methodology and tools in the project https://www.systemicdesigntoolkit.org/methodology

The Circular Design Guide

The guide follows designers to design for Users, Stakeholders and Systems. It guides designers for developing a project based on the circular economy shows how a new kind of business thinking is emerging. It is worth approximately US $ 1 trillion and will drive future company innovation and reshape all aspects of our lives.

That's why the guide was created: To help innovators create more elegant, effective, and creative solutions for the circular economy. Solutions that are invaluable to people give businesses a competitive advantage and bring feedback to our world.

The design has always been ambiguous exploration and hands-on learning, so this site's method is biased towards action. They will guide you when you take the first step towards building a new future.

Regarding the future, we have no answer: nobody knows. But the aim of this guide is to help designers to readjust their mindset, ask the right questions, take on projects, and start exploring extraordinary possibilities.

Traditional manufacturing is wasteful because it only focuses on the end-user. The circular economy way of thinking seems to be much broader, taking into account everyone who extracts, builds, uses, and disposes of things.

By narrowing the reach of users and considering a broader network of stakeholders, we can unlock value at every stage of the process. As a designer, this includes creating a feedback loop on your work; understand the life cycle of the materials you use; collaborate with other industry stakeholders, and consider the unintended consequences.

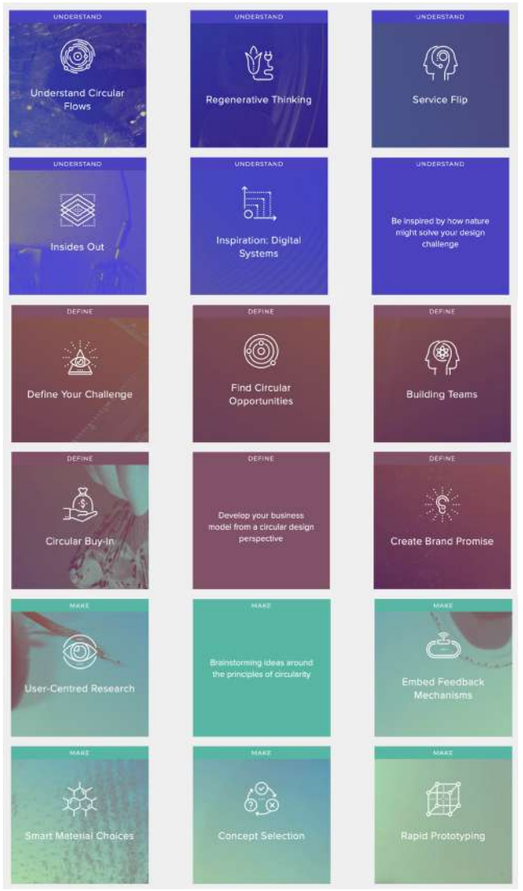


Figure 89: THE CIRCULAR DESIGN GUIDE. Toolkit that help designers find different types of methodologies to use in their projects focused on circular design https://www.circulardesignguide.com/methods

Project Framework

One of the main problems of design nowadays is that we are still focusing our communication only on the solution of a project, and for designers is difficult to found a complete description of the whole project in order to get as much information as possible, to understand and empathize with the decision making process, the selection of focus, the people that were involved in the project, etc.

The main statement with the project is that in design, we need to stop focusing on the solution or the result itself. Instead, we need to focus on how a solution was generated, why it was created, conceived like that, and why it was reached in that specific way.

People only see the product as a result, and it continues to make it difficult not only for designers to explain how that product was designed and why a product has more design than others, but also for others to understand the main reasons why designers work like they do, and develop a project with a different mindset.

We must go to the bottom of the process to find what differentiates one product from another.

According to the methodology carried out for the project's development, four important processes are presented within it; the first was the breakdown of the design in general and the definition, intending to understand the bases of the profession and approaches that are currently being used.

The second was the impact of design on sustainability, to understand the participation that these two areas currently have and the importance they have in the decisions taken not only within large companies but also within the development of each of the projects of designers around the world.

The third, to understand the goals set by the United Nations with the Sustainable Development Goals of the 2030 Agenda, to find references, resources, and information that allow us to see what the field of work has been in the last five years, evidence the change from presenting sustainability as an added value at the end of the projects to starting to carry out the projects starting from a sustainable base.

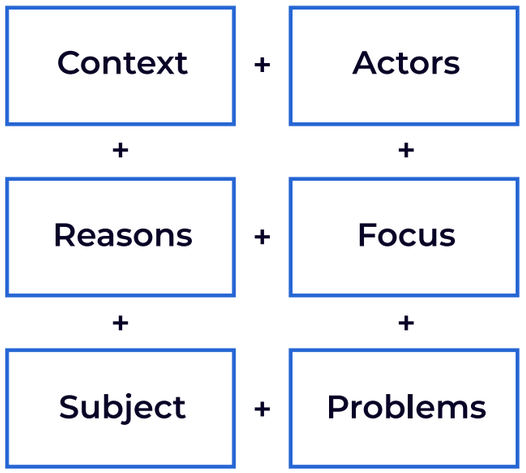
Finally, the last step to be carried out is the development of the framework as part of the project, where through the relationship

between people, the objectives to be communicated, the importance of highlighting the relevant information to turn it into a future tool for designers who directly impact the proposed objectives and the possibility of allowing access to information around the world.

The key elements to consider to understand and demonstrate the process developed for the implementation of the framework as a degree project are explained below.

This toolkit serves as an instrument for the interpretation and formulation of problems, which serve as the basis for the development of sustainable design projects focused on the SDGs with a registration or monitoring system that facilitates the identification and monitoring of the multiple factors that are part of the design process for proper evaluation.

This toolkit is a complement to the WDO platform, which works together with the database, and seeks to provide guidelines and help on how sustainable practices can be developed.



1

Understanding Design

Definition of design, the process and metodology, how is design being developed nowadays

2

Impact of Design and Sustainability

Why is so important, how it's being related to design, what comes first design or sustainability?

3

Understanding the SDG's

The objectives, actual projects, and references, how to approach a solution by design

4

Development of the Project

Development of the framework and practical ways to use it

Approaches

Considering the design process by reframing the SDGs, there are two possibilities, on the one hand, adapting what is currently being done to more sustainable activities, or on the other hand, adding from the beginning of a project the sustainability aspect/focus.

The simplicity of the relationship of each of the sustainable development goals proposed by the United Nations organization is combined with the complexity of the four pillars of sustainability. This to achieve a framework that serves as a tool with two possible approaches for a designer and a non-designer who seeks to tackle projects that directly impact the SDGs.

The first of the possible paths that arise within the framework is to start a sustainable project, that is to say, starting from a basic idea to create a project.

Starting a sustainable design project

Change a project or design process to a more sustainable model

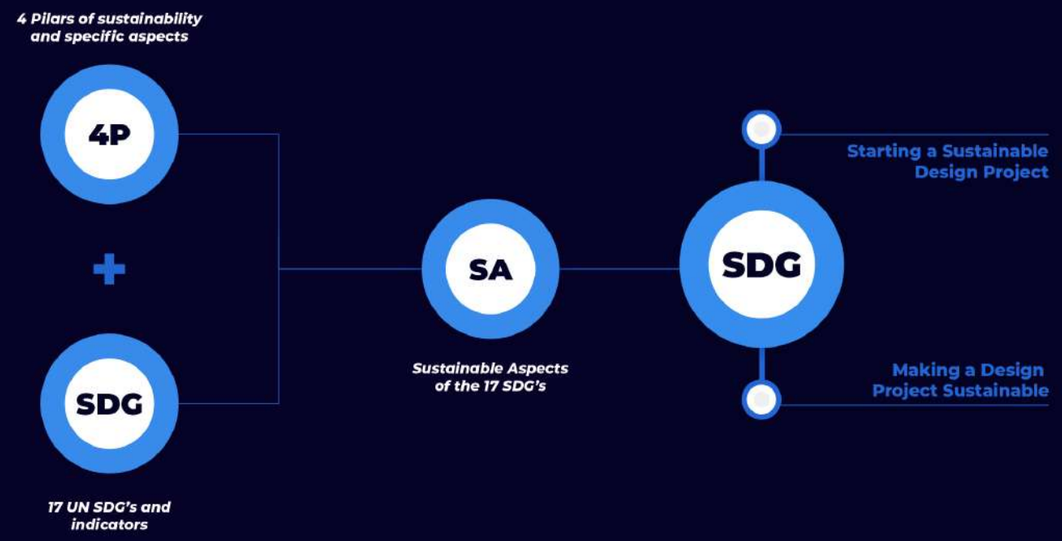


Figure 90: Diagram representing the conection between the SDGs and the two approaches

This framework is divided into four main steps; the first is to define the Sustainable Development Goals with which the designer would like or have in mind to relate to the project.

The second step is to analyze and select the aspects of the Sustainable Development Goal. The designer or the team would like to have the main focus to focus the project on an immediate objective and guide the process to solutions that directly impact the aspect selected.

The third step is to formulate and analyze the problem to develop the project, with the selected aspects focused on the Sustainable Development Goal.

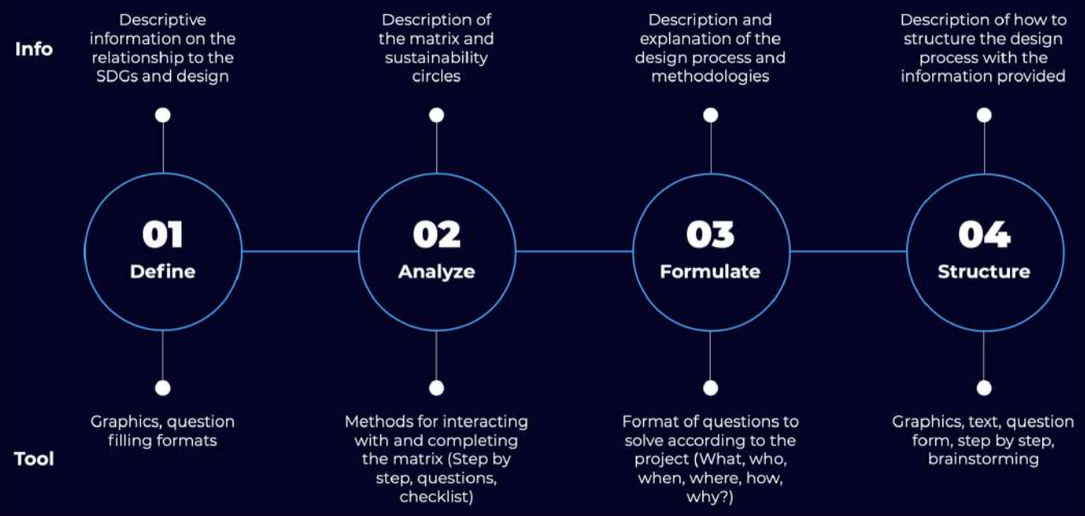
Finally, the fourth step is to continue with the development and structure of the design process that the team or designer deems pertinent for the development of the project, taking into account the analysis carried out with the problem and the sustainability base as a guide.

Design interpretation of the SDG'S

This approach refers to commercial, industrial, and professional activities that seek a change into sustainable models, that implies:

- The approach to new sustainable projects (New products, services, or systems that in the long term will replace the current ones.
- Projects that modify current practices to achieve negative impacts or generate new positive impacts (Reaching points of balance between what is currently being done and sustainability).

In this case, it is necessary to evaluate and identify the current impacts and the structures of the design process implemented so far (Methodologies).

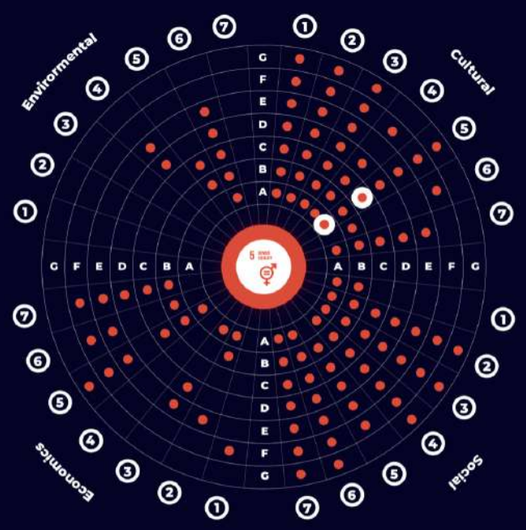


We will continue to explain the use of the framework through fictitious examples, to present more clearly each of its steps to follow and the processes that arise within the team to approach the number one path of starting a design project for sustainability.

In the first step, the process carried out in the team can be evidenced by choosing the Sustainable Development Objective to work on, which in the case of the example is objective number 5, thus a comparison is made with the graphs made which were previously presented. Then, it selects one or those necessary aspects that the designer or the team considers pertinent to focus on your project. (In the example, 5.A and 5.C. is selected as the primary focus).

SDG 5

5.A. Equality and respect
5.C. Family and kinship



Through this process, the designer would be carrying out steps one and two of the framework, the next to be carried out would be step number three, which proposes to formulate and further analyze the problem posed as a starting point for the project.

The third step, as mentioned above, raises the use of questions to get as deep as possible in understanding the problem and obtaining information that serves to complement the development of the project.

Some of the questions to be asked are raised fundamentally as a starting point, with the aim that the framework works not only for designers but for people of different professions, so then it is essential to grant and present the information in a simple language that allows guiding to the user within the development of the project and how to obtain information about it.

For the process of answering the questions, the most critical areas to take into account are the definition of the problem itself, the subjects or actors who have a direct or indirect relationship with the problem, that is, which is affecting them, in what way is it affecting them, as they are involved with the problem raised above.

In the same way, the moments that is to say in which situation the problem is occurring or when it is happening, as well as the reasons why the designer could first-hand intuit why this situation occurs, in this specific case it is crucial the participation of the actors during the design process since they will clearly and concisely demonstrate, with the first-hand experience, the reasons why this situation is occurring.

The context is undoubtedly one of the essential areas to describe to understand and develop a design project. It is crucial to understand in which place or space the problem occurs to focus the solutions to an approach that works within it. Thus, directly impacting how the situation is presenting itself.

What? Definition

What is the problem?

Gender violence and mistreat at home

Who? Subjects

Who is being affected by the problem?
Who is involved in the problem?

Adult women living with a partner.

When? Moments

In which moments is the problem present?
When is this happening?

During quarantine home living situations.

Why? Reasons

What are the reasons of this problems?
Why is this problem happening?

Power culture towards male figures.
Anger issues.
Psycological issues generated by isolation.

Where? Context

Where is this problem happening?

Family homes in Bogotá, Colombia.

How? Ways

How is this problem being reflected in consequences?
In which way can we see this problem?

Increase in home violence during the periods of quarantine.

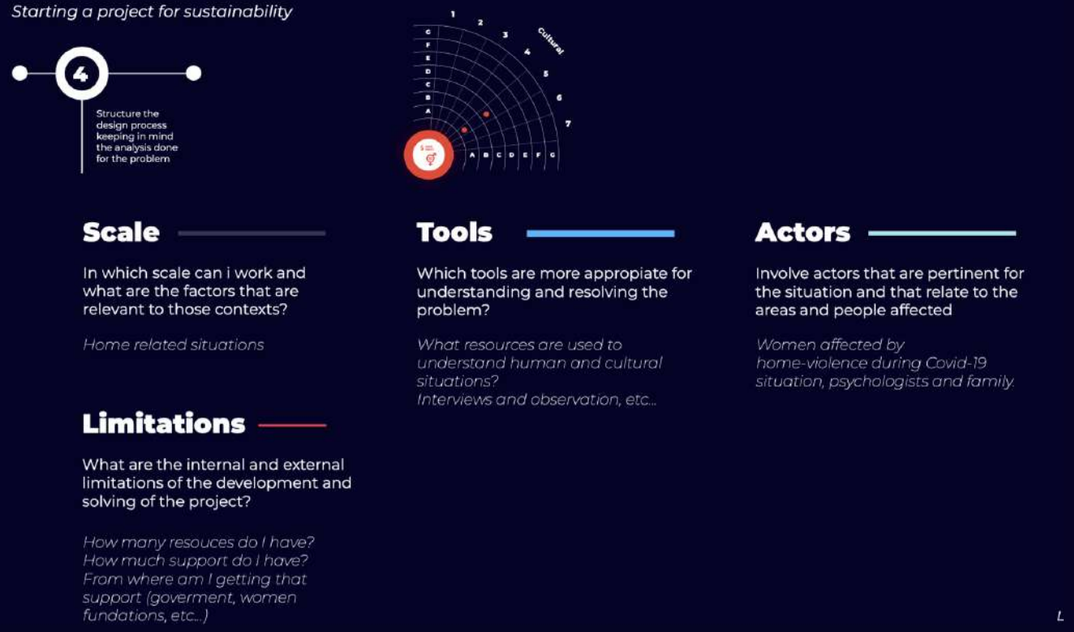
The fourth step is related to the structuring of the design process; for this, the framework is based on the development of the process with the elements present in the diagram presented above, which will function in the same way as a resource when the team develops or continues—the steps of the framework.

So then, the same dynamics of the previous step is proposed, this time taking into account aspects more typical of the design process, such as understanding the scale in which the problem is being presented, how relevant it is for the context, how it is impacting itself within the context, and what are the key factors to take into account during the development of the project.

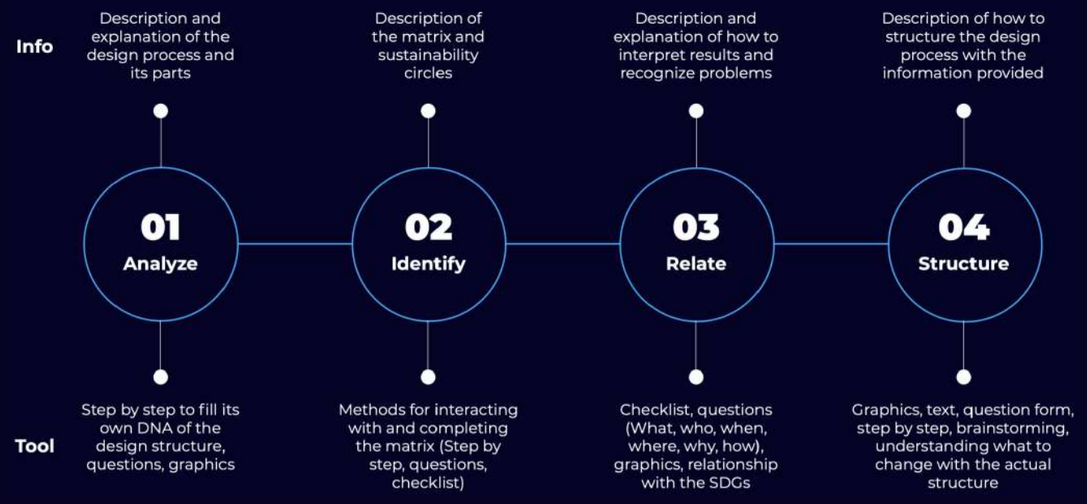
As we mentioned before, the designer has the freedom to choose the design methodology that he/she believes is pertinent for the project's development; thus, according to the decisions made, the tools to be used to obtain more information about the problem posed will be evidenced.

The actors involved must be understood in a deep and detailed way since they are the ones who will give the most information when seeking to understand the problem and deliver a solution.

The limitations, in the same way, must be clear to the team, since they will be those obstacles that will be found during the development of the project, which will modify in one way or another the path is taken, it is essential to understand the internal and external limitations that are They can present not only for the team but for the project itself.

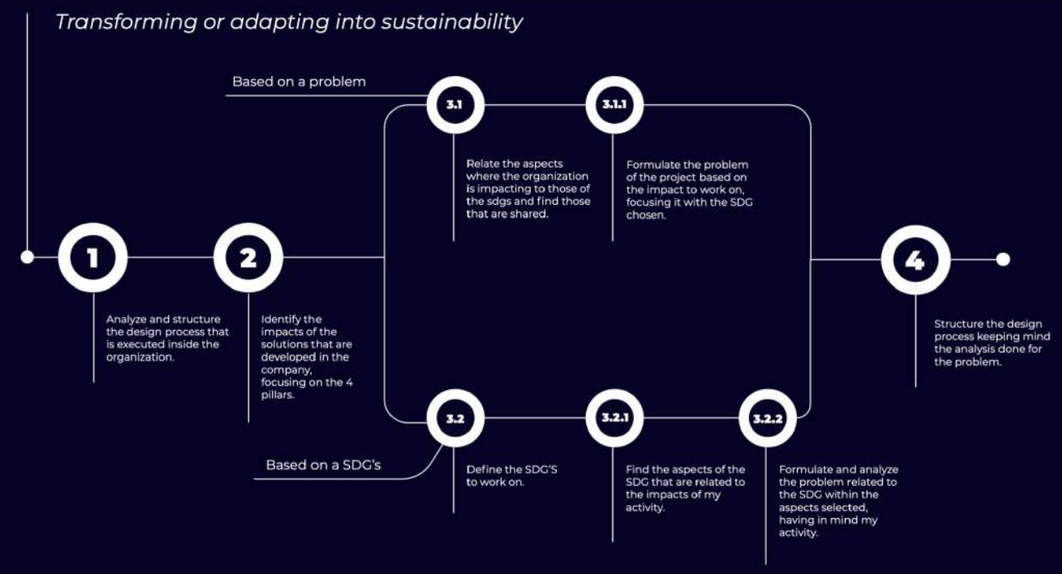


It is essential to focus on the project, focusing on a specific problem is decisive for the team or the designer when creating solutions that directly impact that and not getting lost in a very generic situation that possibly when looking for a way to solve it, will become evident many factors that cannot be controlled and will be ambiguous.



The second possible path that arises in the framework is to transform or adapt an existing project into a more sustainable one.

This is as important as the first since, unlike the opportunity presented with the possibility of starting from scratch, the development of a project heading towards sustainability can be transformed and adapted by correcting what has already been done. In an existing project, that is, to review in detail and with a sustainable perspective the decision-making and processes presented within a finished project, finding opportunities for improvement in it or changes that directly impact what was initially proposed.



This process is more complex than the first since we go to evaluate and observe in detail to understand the project as such, the decisions that were made, the reasons why the solution presented was reached.

In the same way, different steps are presented to follow to develop the framework from this perspective. The first step is to analyze the structure of the design process, and it should be noted that this second way to develop the framework can be fundamental not only for designers and academic projects but also for the most elaborate companies and projects in the social-industrial field.

The second step is to identify the impacts of the solutions that were generated after the project, taking into account what was proposed from the base of the team and what was at the time of conclusion, this it is important to take into account the approach with the pillars of sustainability previously presented.

At point number three, the path is divided into two possibilities; the first is reevaluating the existing project, continuing to be based on a problem; the problem should not necessarily be the one initially raised with the project. However, it can be in the same way one as the other. Finally, a launch and test moment has been created, that is, a consequence of the solution.

Thus, the affected or impacted by said consequence must be evaluated to relate them to the Sustainable Development Goals, where the problem is formulated again based on the selected approach and the negative impact to be corrected.

On the other hand, there is the possibility of going directly with the perspective of being based on the Sustainable Development Goals, where the objective to be focused on is defined as the first process, the respective aspects to be taken into account are related and which will be the basis for the evacuation of the existing process, and formulate again a problem related to the selected Sustainable Development Goal.

Finally, the fourth step to carry out is structuring the design process, taking into account the analysis of the previous problem and continuing with the methodology to be applied. The process is to be developed in the revaluation of the project.

The organization makes a deep analysis into the design procces and the methodologies used to develop projects, to understand the main components that define their activity.

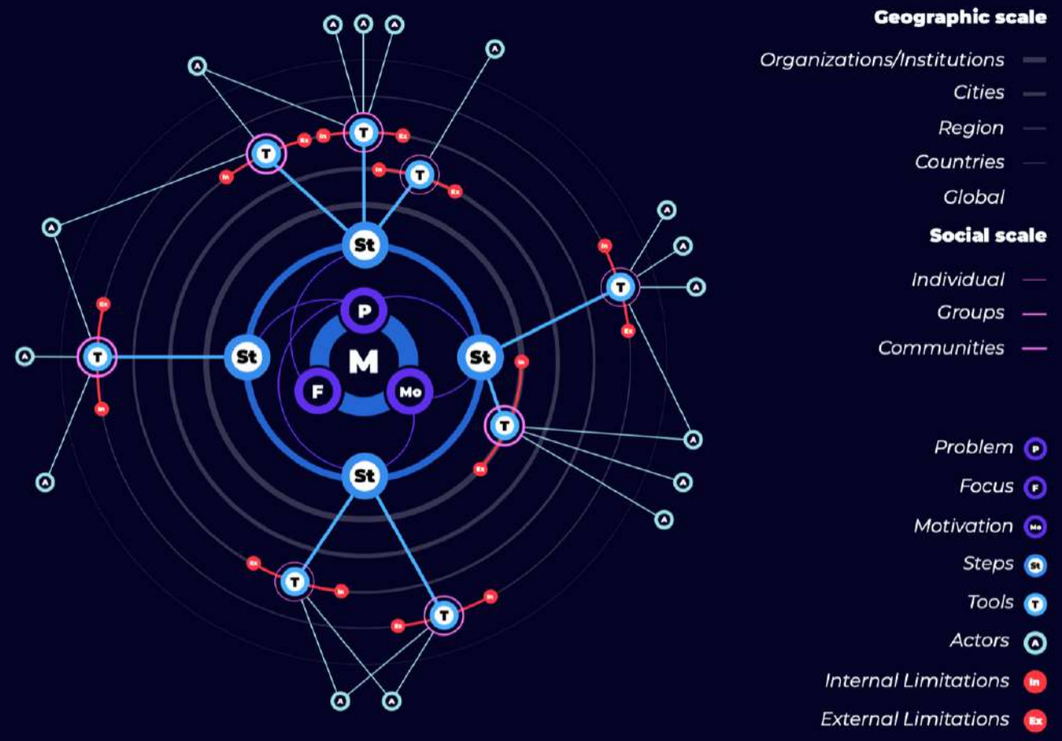
A national chair company “Chair World”, known for their excellent quality products, charactherized by design, aesthetichs and innovation in process, take a look into the methodologies used everytime they develop a new product.

Mainly they find that at the center of the process they are driven by the ambition of being a profitable and well known company inside of the furniture market, where they usually want to fullfill the desires of a public that want exclusive, well design in terms of aspects and of great quality, focusing then in ergonomics, innovative processes and aesthetics.

In the same way as the first path to take within the proposed framework, it is proposed to carry out a fictitious example that allows identifying in detail those aspects that must be taken into account to develop the evaluation and analysis of the project.

In this case, step number one is to analyze the structure already generated for the existing project. The example is based on a furniture organization that works on innovation and aesthetics in the market, offering added value for those who buy and market their products. The situation presented as a fictitious example is the intention of the company to focus its processes sustainably, that is, to evaluate the activities that are being taken and how they are being carried out to take into account the processes to be corrected and changes to be made internally.

Thus, different aspects mentioned within the design process are evaluated, such as the approach, the actors, the potentials that the company presents, the internal and external limitations, the scale in which the processes and activities are generated.



The second step is identifying both positive and negative impacts to find the focus and relationship with the four pillars of sustainability.

For this, an evaluation of the company and the activities is carried out concerning the aspects present within each of the four pillars. This process allows highlighting the strengths or threats that the company presents to select those negative impacts later and turn them into positive.

The company makes an analysisi of their products, services, systems and activities, placing their impacts in each pillar taking into account the multiple aspects that there are.

The company finds as expected by the pressures of the local goverment that they need to make more sustainable impacts that can meet the objectives planned by the country.

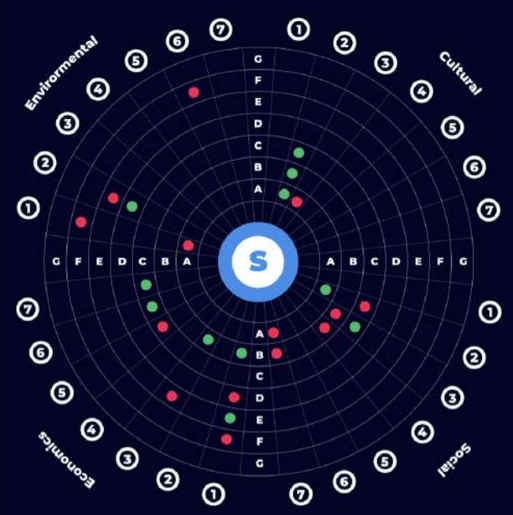
Example of impacts:

EC-1.B.

Manufacture and Fabrication
The manufacturing processes implemented are one of the most innovative in terms of machinery which are translating into more optimized and cheap processes.

EC-1.D. **CU-3.A.**

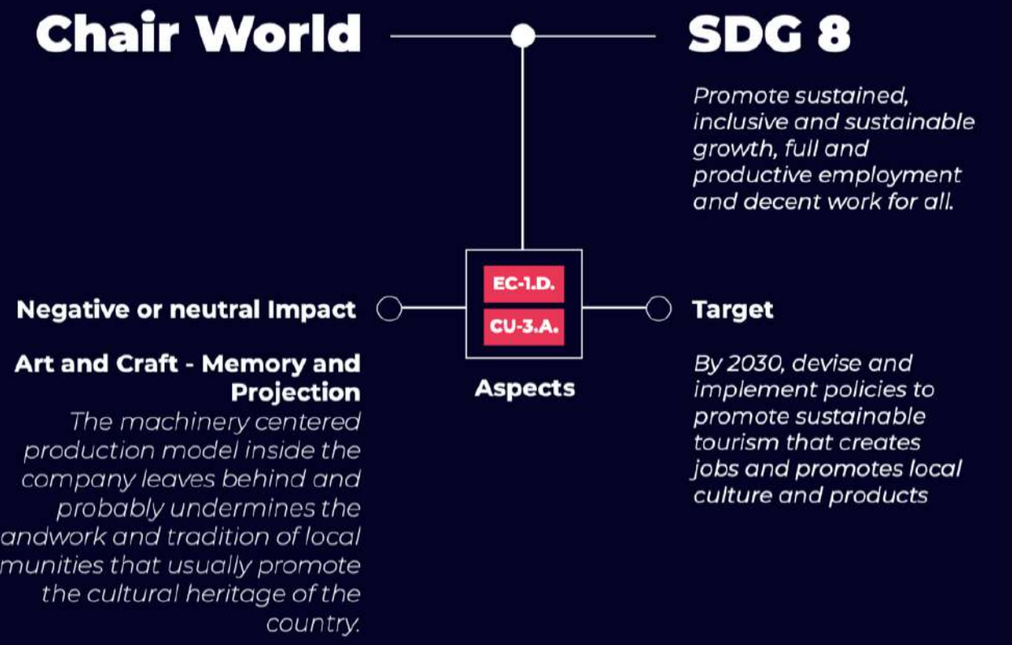
Art and Craft - Memory and Projection
The machinery centered production model inside the company leaves behind and probably undermines the handwork and tradition of local communities that usually promote the cultural heritage of the country.



After seing the impacts in each especific aspect of the 4 pillars, it is necessary to see wich SDGs share the same elements. This allows to frame and understand which sustainable goal the organization may impact and ultimately help achieve.

It is important to note that if a company it's not making an impact in a particular aspect, this could be an opportunity to enhanced the project by reaching to new possibilities.

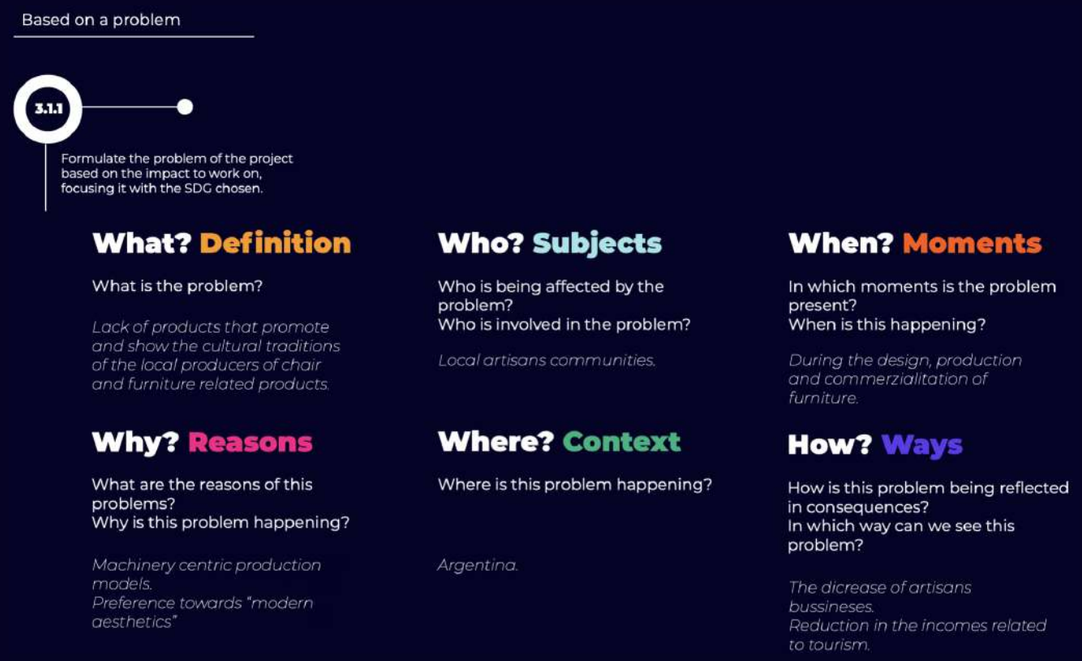
The company finds that one of their negative impacts may be related to the SDG number 8, which helps them understand that focusing on changing that negative impact they could at the same time help in the achievement of SDG number 8.



In this specific case, with the fictitious example of the furniture producing company, the path is taken to continue the framework process based on a problem.

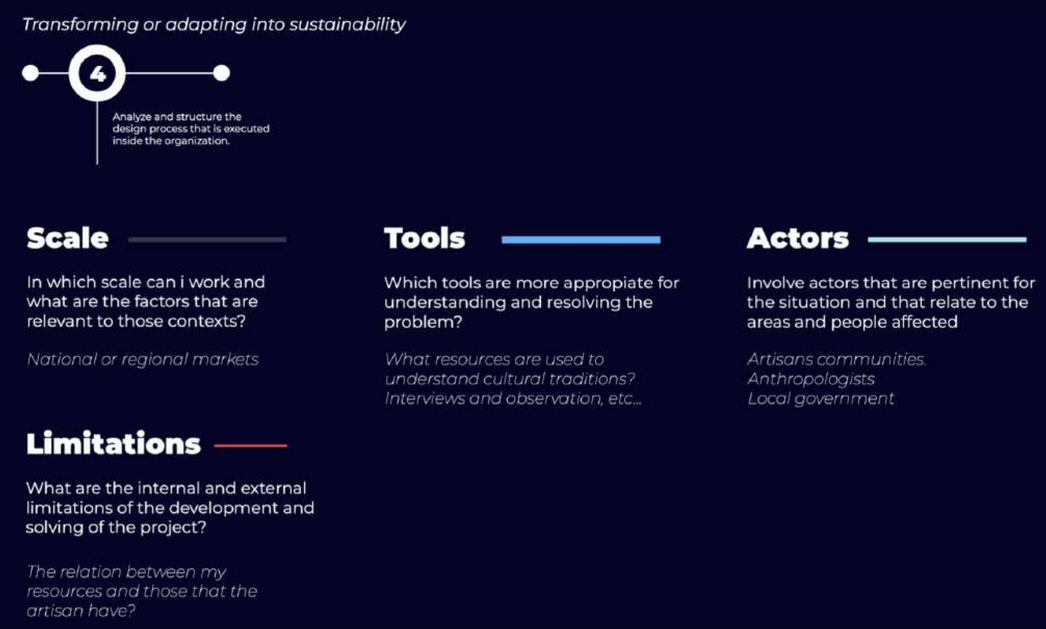
For this, the aspects of the company that are shared are related to the impact generated in some of the aspects of the Sustainable Development Goals previously evaluated, so than the direct relationship between the current situation of the company and the possible correlation with the pillars of sustainability.

It is essential to mention that when there is no evidence of any relationship with what the company is currently doing and the Sustainable Development Goals, they are also seen as a possibility since it is possible to start from that point and generate a positive impact that did not exist before.



Continuing with the process, the same procedure proposed with the previous framework is carried out to formulate the new problem posed and the relationship with the impacts to be worked on.

The questions are asked to obtain as much information as possible, to fully understand the problem to be solved and the factors that will influence future decisions.



Finally, like the procedure initially presented, we continue to obtain specific information related to the design process. We continue to implement the design methodology, which in this case will depend on what the designer has previously used in the process, or whatever is entirely following the thoughts, values, and ethics of the company with which you are working, intending to know again the scale, the tools, the related actors and the limitations that are seen the project again and recognize those changes or corrections that can be implemented by comparing how the design process was previously.

This toolkit does not guarantee or pretend to be the solution to sustainable problems, nor does it guarantee results that do not have negative impacts. However, it is a tool that can contribute to the identification and creation of best sustainable practices that help in the transformation process of current practices.

The development of this tool was born as a mechanism to broaden the interpretation of the SDGs and facilitate the identification of specific problems by showing the multiple areas of impact or approach that a single SDG can have.

Together with multiple questions, this tool is intended to help the designer identify an appropriate work path according to multiple factors (specific discipline, area of expertise, particular motivation, or proximity to a local problem).

Testing

When presenting to the committee of the World Design Organization in Canada the process to propose implementing a framework within the platform developed by them, there were already some of the resources provided by different designers, experts, companies, and others throughout the world.

To understand how the framework could hypothetically be implemented with a currently existing project, an example was made with one of the resources provided by an industrial designer from Colombia, where the problem of drought in the department was exposed from La Guajira to the north of the country.

The organization provided us with the documents delivered by the designer to evaluate it and carry out the dynamics of the examples with an actual project, which will be presented below.

The information presented is based on the documents provided by the designers who participated in the project's development.

First test

Taking this into account and trying to have a sustainable social, environmental, and economic impact, they created WÜIN (that means water in wayuú) to solve the problem of access to potable water by providing a better experience transporting water, it is simple and easy helping to reduce impacts at the time of its production and it also proposes the use of the bottles of single use that are too causing a contamination problem in their territory, to reduce the impact of plastic a little.

How? Ways

The project proposes an object to help the community transport water due to the problem of access to drinking water.

Why? Needs

More than 850 million people do not have access to drinking water, among them is the population of the desert of La Guajira, Colombia.

Who? Subjects

User: Wayuú community
Designers: Diego and Silvia.
Stakeholders: Foundations, goverment (not specified).

Where? Context

La Guajira, Colombia.
With the wayuú indigenous community.

When? Moments

The project seeks to impact and solve the current problem of access to drinking water (but we dont have the exact moment specified in the resource).

With? Relations

The project takes as input and is related to the use of plastic bottles that are currently polluting within the territory.

Problem:

1. The indigenous population, not having access to a source of drinking water, must walk approximately six (6) kilometers to reach the point where they can supply themselves with drinking water, pack it and transport it back.

2. Sometimes their children must accompany their mothers and/or fathers on the trip to collect drinking water, this prevents them from being present in schools and receiving academic training.

3. The population collects water with tools manufactured by themselves from sources of underground water flow, this generates that the water they are collecting is not 100% drinkable since it is filled with mud, when they return to their homes they filter the makeshift water.

4. There is excessive contamination of single-use plastics, such as plastic bags and bottles, which create paths full of waste within their territory.

Motivation:

Generate a direct impact on the sustainable development goals by creating solutions for the vulnerable population in the La Guajira desert.

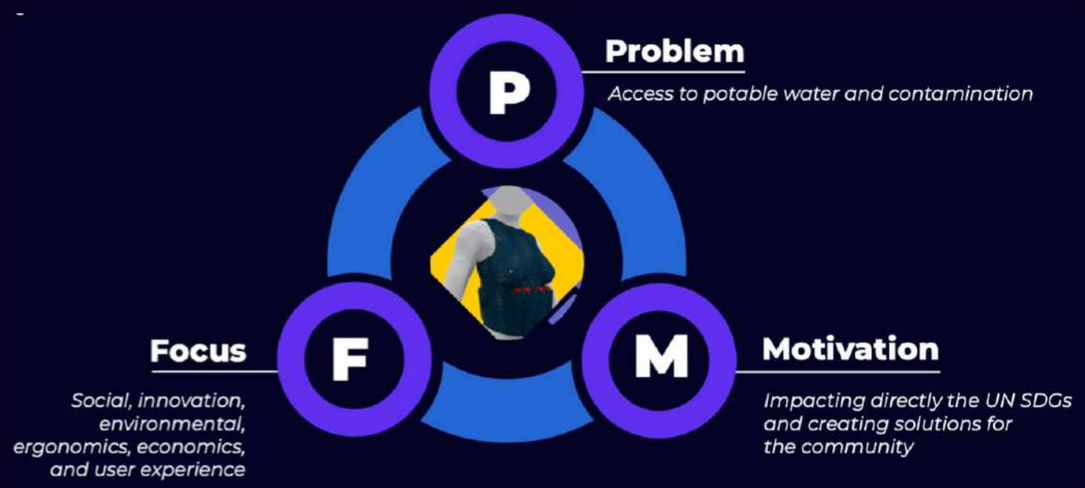
(This information is an assumption since the information provided is not specific, it must be taken into account in the same way that the project is based and raised from an academic environment, which influences the direction of the project).

Focus:

Social, environmental, ergonomics, physics, user experience, innovation, production processes, economics.

The Project:

Wüin aims to help the indigenous Wayuú community from accessing sources of drinking water, seeking to generate a solution in turn to the problem of plastic contamination in the territory.



Scale

The project handles a medium scale, as far as it impacts and is thought directly for the indigenous Wayuú community in La Guajira, Colombia.

Tools

Brainstorming, research, interviews, observation, focus groups, situation analysis, sketching, modeling, ergonomic analysis, prototyping.

Actors

Designers, Wayuu indigenous community, educators, teachers, producers, suppliers, foundations, marketing experts, volunteers, etc...

I. Limitations

Language of the indigenous community, communication, dialogue and language for explanation, acceptance and cultural appropriation of the product.

E. Limitations

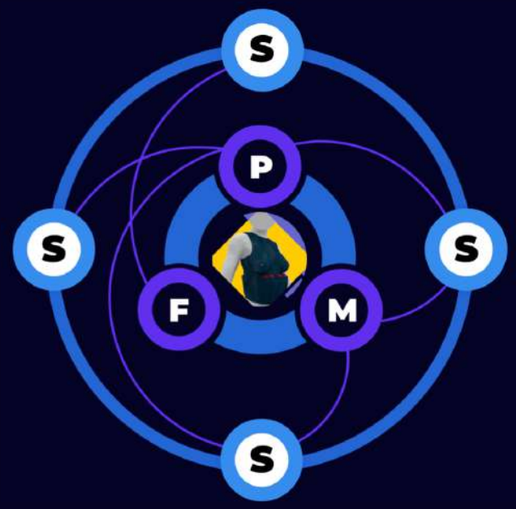
Expansion of the project to a larger scale, or loss of the focus raised by not taking into account the culture of the community.

Potentials

Possibility of duplicating and projecting the product on a larger scale and in different contexts, situations and needs.

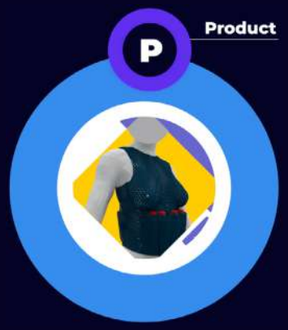
The design process:

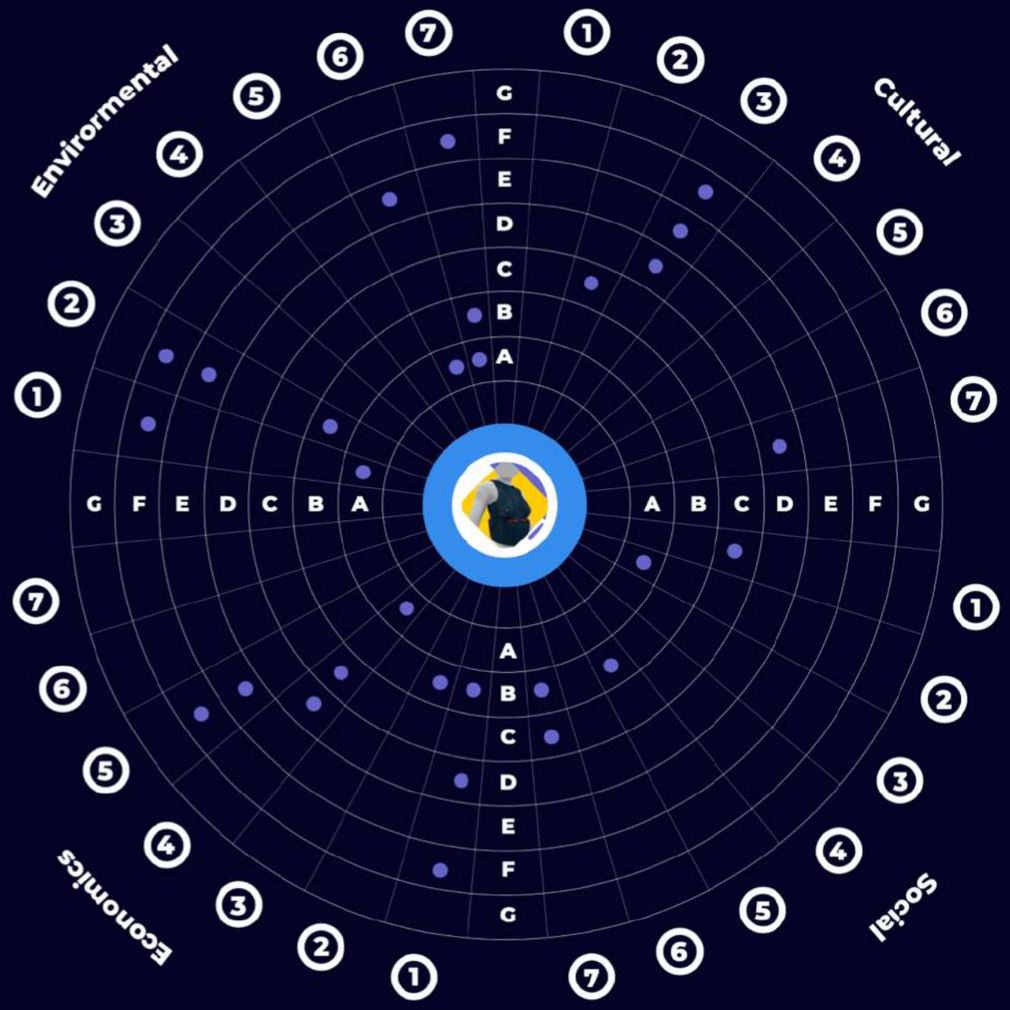
Since the detailed information is not available, it is not possible to generate the graph of the design structure, since by not knowing the in-depth details of the design process and the steps performed, it is not possible to relate the steps to the actors and in turn, know their limitations and tools used within the development of each stage of the process.



The solution:

The project has a product as a design solution (since according to the information received, it is based on satisfying a user need and offering this solution to the market). It is a tangible, physical product, but it should be mentioned that since not all the information is provided, it is not mentioned in the project about the products after the life cycle.





Second test

REFÉ is a product designed to supply the coffee harvesting activity, the project is focused on coffee growers on farms of 1 to 3 hectares. REFÉ proposes a sustainable design since it is designed to be manufactured with biodegradable or reusable material (fique, which is obtained from the fibers of a plant) however, the material for the fabrication of the piece does not need to be new, it can be from a coffee bag that is in good condition so that it can be transformed with the technical drawings in REFÉ.

For its manufacture, the fique fiber must first be obtained, then the industrial or artisanal process comes to give utilities to that fiber obtained, which through the technical drawings present in the document can be woven to give the shape to each piece.

How? Ways

The project proposes an product to help the community to recolet coffee.

Why? Needs

Ergonomics of people, the possibility of having access to a product that can be used to carry out their daily tasks.

Who? Subjects

User: Coffee farmers.
Designers: Johan and Diego.
Stakeholders: Families that depend on the cultivation of the raw material.

Where? Context

The resource mentioned the context of development but not the specific geographical area to impact.

When? Moments

The project seeks to impact and create a solution for the community when collecting the coffe, (but we dont have the exact moment specified in the resource).

With? Relations

The project takes as input and is related to the use of biodegradable materials, in order to develop a transformation of the raw material.

Problem:

1. The project does not have extensive information that allows identifying the problems on which the process was focused, this generates a subjective understanding of it.

2. The information provided in the resource is not clear, that is, it does not explain in detail the processes carried out during the development of the project.

3. The time-space variables are not evident, leaving aside the identification of the time of development of the project and the context in which it is carried out, this generates that the problem cannot be understood clearly.

4. The decision-making process that was carried out to reach the proposed solution is not evident.

Motivation:

Generate a product that supplies the coffee farmers to collect the coffee seeds on their everyday activities.

(This information is an assumption since the information provided is not specific, it must be taken into account in the same way that the project is based and raised from an academic environment, which influences the direction of the project).

Focus:

Environmental, ergonomics, social, physics, user experience, innovation, production processes, economics, product design.

The Project:

Refè aims to help the community from accessing into a innovative solution of biodegradable material transformation for their daily task when collecting the coffee seeds.

Scale

As mentioned above, the project does not mention the scale in which it is developed, it is supposed to be a process generated for a community.

Tools

The use of ergonomics for product development is mentioned within the document. (There is not much information available about it).

Actors

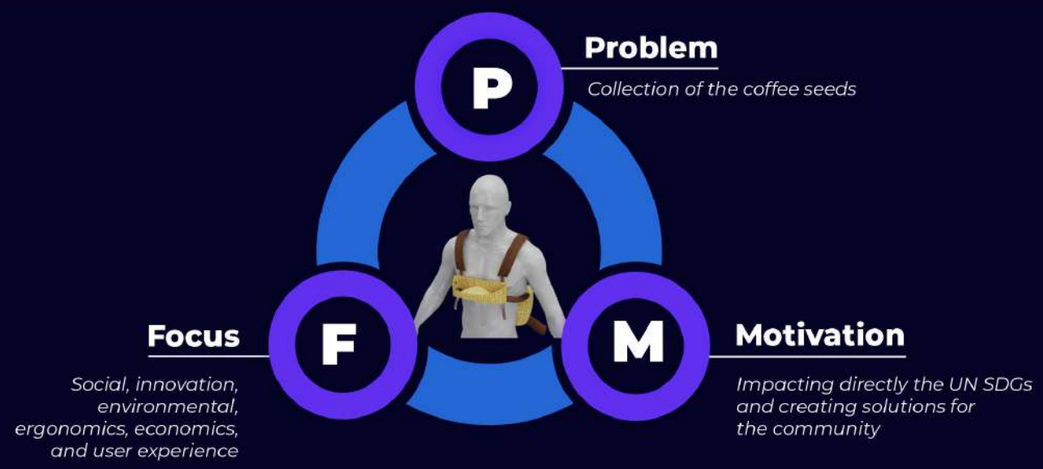
Designers, the community, educators, teachers, producers, suppliers, foundations, marketing experts, volunteers, artisants, etc...

I. Limitations

Processing of the raw material, collaboration with the artisans producers, approach with the community for the project.

E. Limitations

Access to economic resources for prototyping, development and ergonomic testing of the product with the community.



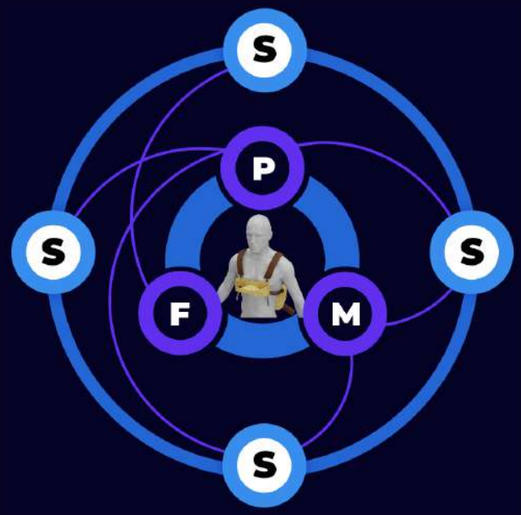
Potentials

Possibility of duplicating and projecting the product on a larger scale and in different contexts, situations and needs.

The design process:

Since the detailed information is not available, it is not possible to generate the graph of the design structure, since by not knowing the in-depth details of the design process and the steps performed, it is not possible to relate the steps to the actors and in turn, know their limitations and tools used within the development of each stage of the process.

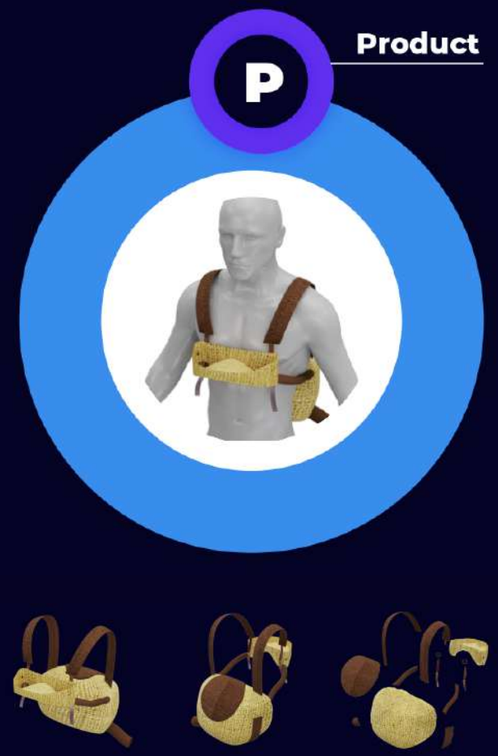
This becomes one of the main problems of the framework, where the designers do not currently provide the specific information to contribute as a reference for future projects.

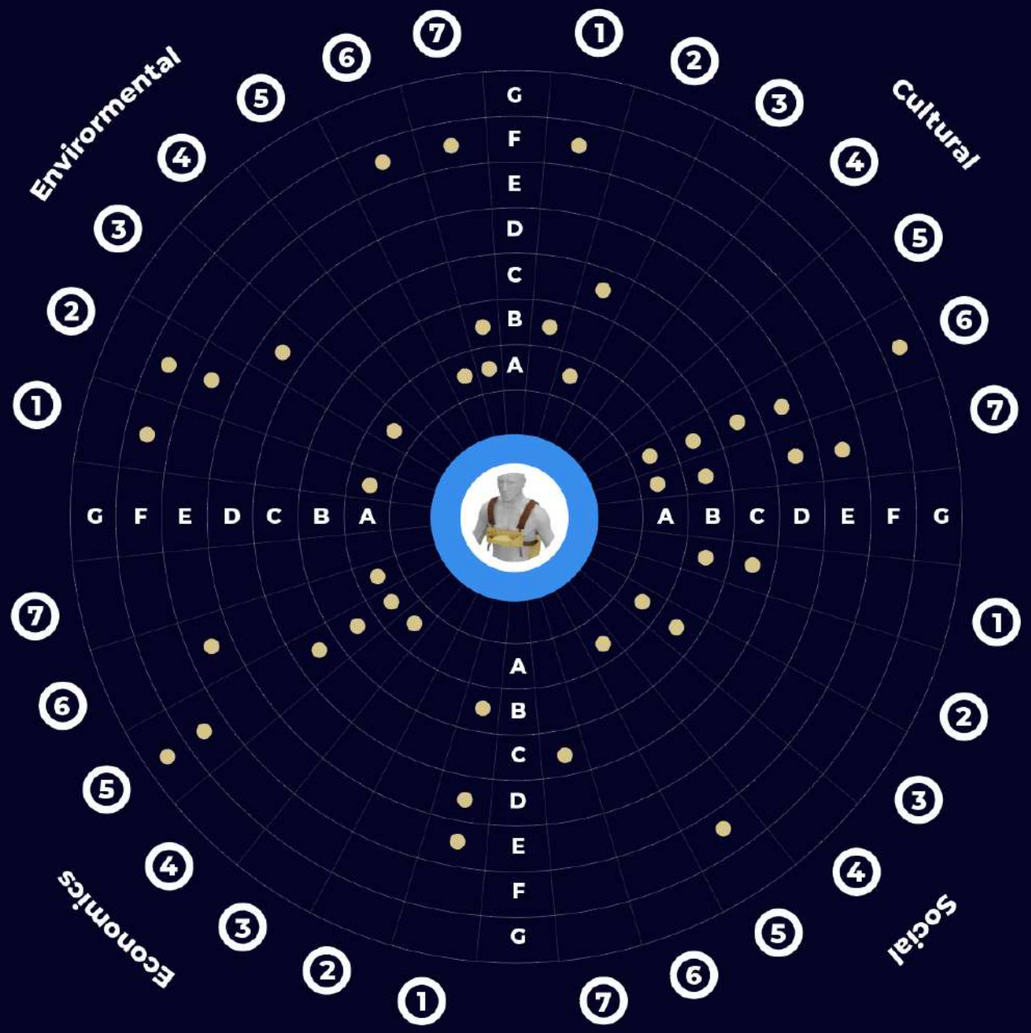


The solution:

The project has a product as a design solution (since according to the information received, it is based on satisfying a user need and offering this solution to the market). It is a tangible, physical product, but it should be mentioned that since not all the information is provided, it is not mentioned in the project about the products after the life cycle.

On the other hand, it will be impacting one of the Sustainable Development Goals such as number 12. ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS, since at present more than 70,000 families depend on the cultivation of fique, of which about 10,000 are between artisans and industrialists, while the rest of the people are dry fiber growers and producers. (Sopeña, 2014).





One of the difficulties encountered when carrying out the real example was that the information provided by the designers and the participants in the project was limited, that is to say, being a person external to the project who does not know the processes carried out. , the factors that were taken into account and the decisions made caused the evaluation to be ambiguous or subjective.

This difficulty corroborates in the same way with the project, the importance of delivering as much information as possible to people to achieve a deep understanding of the processes and not only focus on the object or the product developed as the final result, since behind in the processes hides much information that may be important for another designer in the future or to understand the same project from an external perspective or someone who never had a relationship during development.

Another critical point to mention is that the designer must-have importance during the evaluation process of existing projects. If the correct information is not provided, a

trustworthy source must evaluate how things were done and not assume how they believed they were made.

In conclusion, it is essential to know as much information as possible provided by the people involved in the project.
This refers to the relation to the creation of the platform is a crucial point since it will allow designers to reach a database where they have valuable information to take as a reference for their future projects.

They were evaluated in detail the decisions that were made, the people who were involved, the methods that were used, the tools that were used, the context in which both the problem and the solution are presented since any information is valuable to understand the reasons why a product was generated or why it was sought to impact a problem present in a specific geographical area.

Guide Development

Cases of study

For the development of the guide, as well as the references and case studies carried out for the development of the framework, in this case, some examples of toolkits and design guides were taken into account that served as a reference to understand the elements to take into account the moment to communicate and make the user understand the steps to follow.

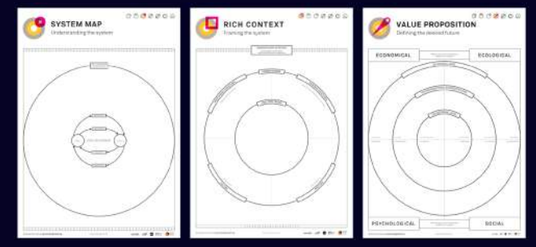
To understand the possible ways of transforming the information raised in the development of the framework, a search for references was carried out to find examples of tools used in this area to guide the user in a specific procedure.

The practicality of the instruments and tools presented in the different guides was taken into account, taking into account their origin, if it was a result of an academic project or if instead it was created by a specific company.

The first of the references found was the systematic design toolkit launched at the RSD7 Conference in Turin, Italy, in 2018.

This guide aims to present the methodology of systematic design, including different tools, to understand the system and its key elements. It also has maps, diagrams, and graphs that allow the user or the designer to follow a practical path to develop this methodology.

It is essential to recognize the tools that allow guiding the user along a specific path, which will be taken into account for the development of the guide, which will be consigned on the platform.



SYSTEMIC DESIGN TOOLKIT. Guide to help designer follow the methodology and tools in the project https://www.systemicdesigntoolkit.org/methodology

As a second example, we find it pertinent to mention again the design kit created by IDEO, where through a book they explain different characteristics about human-centered design.

The guide explains through steps and chapter divisions how a designer can use this methodology, and it is worth highlighting the importance of making understood from the research base what the user will find in the guide.

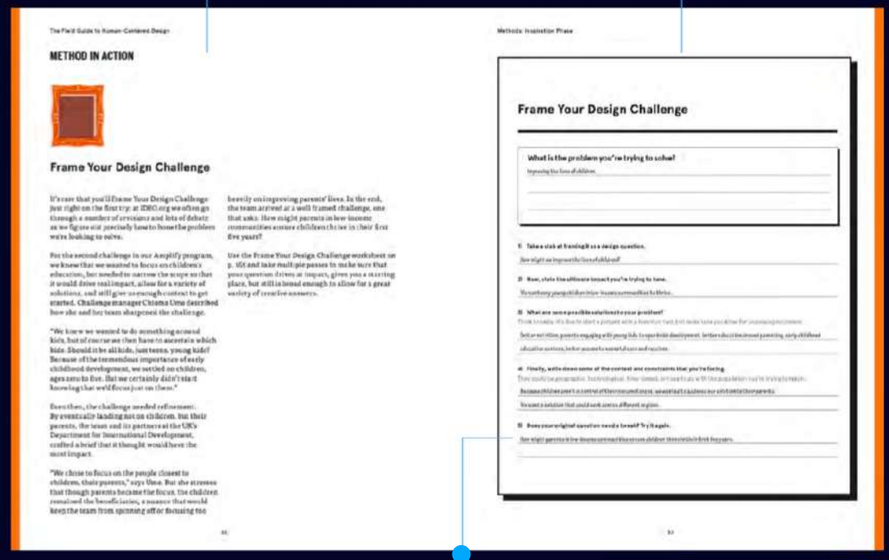
In the same way, it presents some forms to fill in, which work the same as the previous example where the designer can sit down with his team and solve some questions to find the most information about the project.

An important element about this example is the possibility of displaying a description of the activity to be carried out and information about it, such as the time it will take to develop it, the elements that are needed, the participation of people if necessary, among others.

Introduction and information about the toolkit

Description of the activity to develop

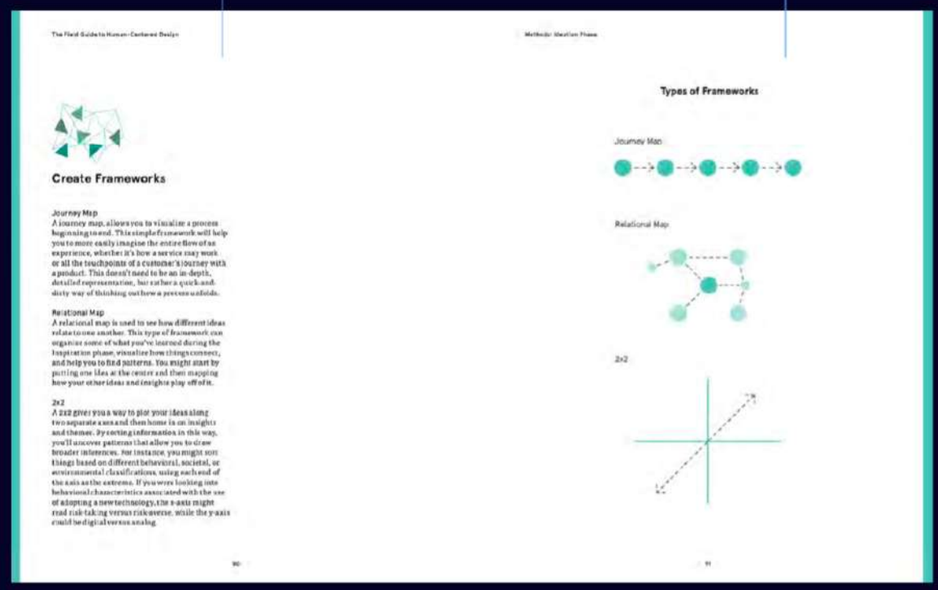
Development of the activity through questions answered by the user



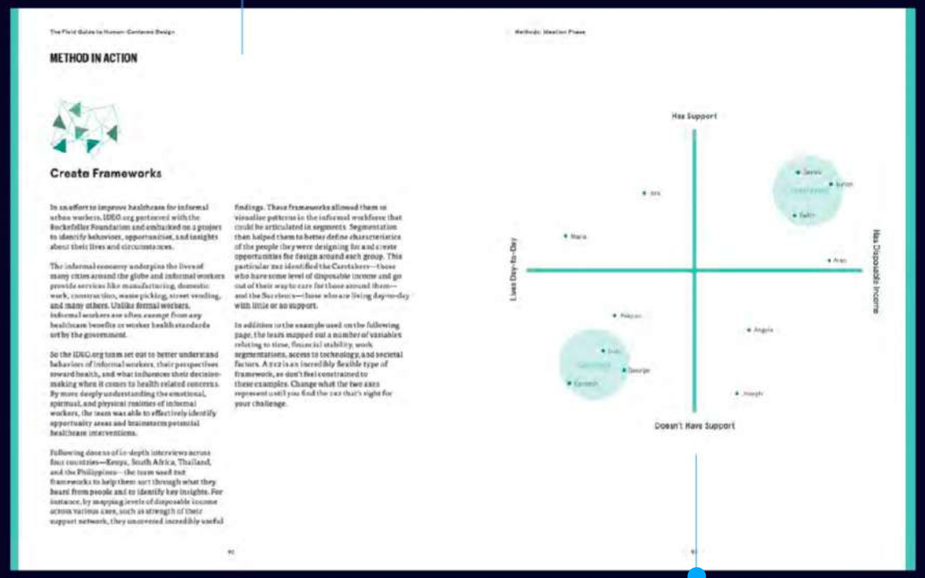
Questions resolved as an example to help the user understand how to develop the activity

Description of possible tools to use within the toolkit

Graphics

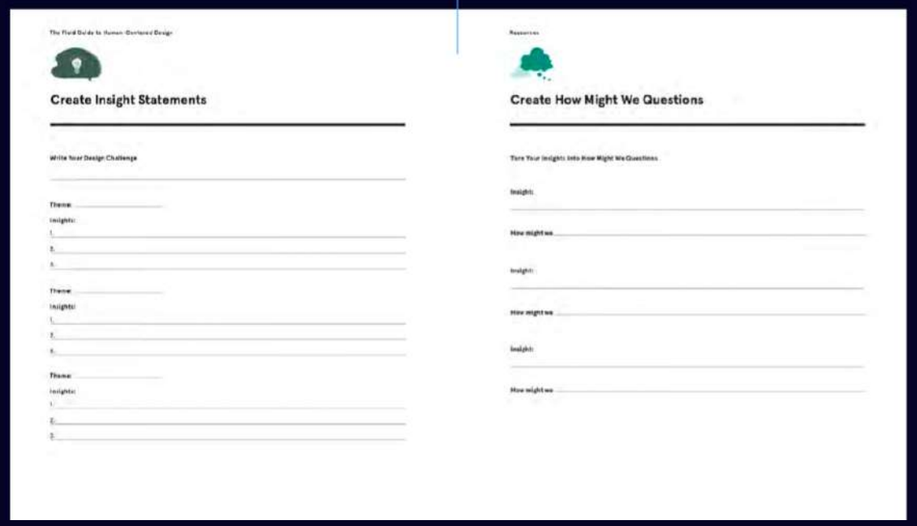


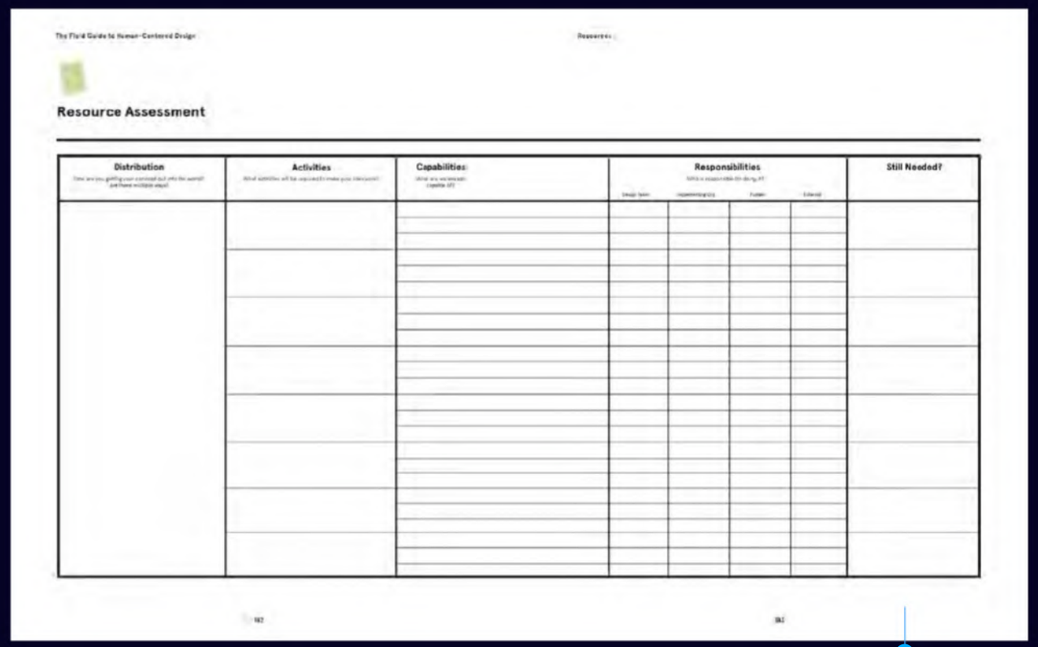
Explanation of concepts mentioned within the toolkit to take into account to understand how to solve the activity



Graphic examples of how to solve the activity other than the question form

Blank pages with the formats previously explained to be resolved by the user who follows the guide





Information to complete and small notes that help the user to better solve the questions and write whatever is necessary

Brief description of the activities to follow, the user will reach the toolkit through the platform where they will find all the information in greater detail to the toolkit

Description of the steps to take into account to understand more easily the activity to develop

It is important to highlight for the user issues such as the difficulty, the time necessary to carry out the activity, the people involved and the tools they will need

Toolkit: Builing Trust. https://www.behance.net/gallery/100614263/Building-Trust

Another critical example is a kit called Building Confidence, which presents the same elements using cards to guide the user when carrying out the activity and providing simple information for its fulfillment.

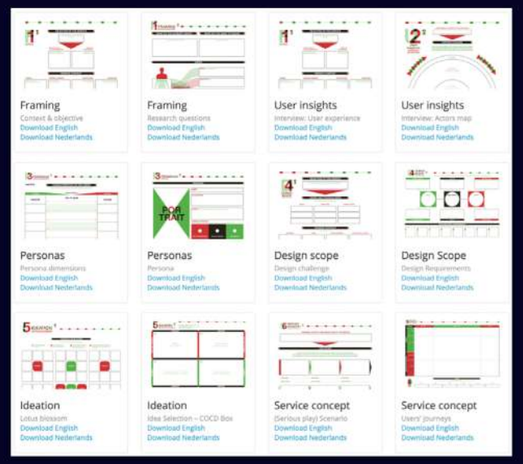
We can also mention the Service Design Toolkit, which guides the user in different activities through different elements, using dividers such as a manual, a poster, technical cards, and materials.

For the project's development, it was essential to look for references that had digital media, information from guides, or toolkits that could be found and, if so, used through different devices.

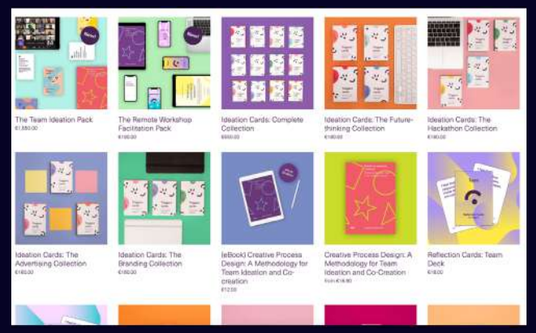
In this case, two examples were found; the first is called Triggers, which has an extensive database that addresses different guides and tools that work as a toolkit for the user to download on their computer and use it anywhere in the world and from any digital device.

Triggers focus mainly on the design area and present in the same way information consigned within the web page that serves as a reference to understand what is consigned in each of the guides, so the user while navigating the platform, will be able to answer their questions or doubts regarding the guide to be developed.

Finally, as a digital example, there is the Board of Innovation page, which includes a vast

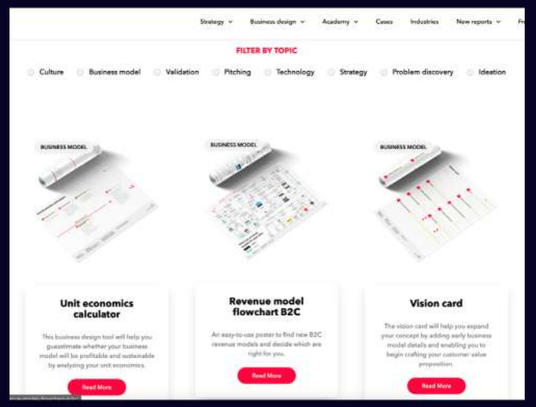


Service Design Toolkit. http://circulardesigneurope.eu/oer/service-design-toolkit/



Trytrigger Cards. https://www.trytriggers.com

database concerning innovation topics, where different formats, tools, guides, fillable formats are consigned to develop any activity that may be a method. Innovative.
Some examples are economic models, forms to complete in excel concerning the companies' profits, finances, and budget, among others.



Board of Innovation. https://www.boardofinnovation.com

Analysis of targets

To identify the project's targets, the information presented by the World Design Organization in brief delivered for the project's development was taken into account, where the different targets that the organization has as its objective are mentioned.

To carry out this process, those as mentioned above in the previous chapter were surveyed. However, a key aspect is a knowledge that people would have about the design since the proposed targets had some relationship; others were part of the design guild, while others were not. They would never have had a direct relationship with design in their activities.

Federico

Marco

Gabrielle

Christina

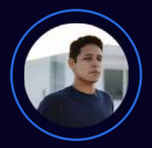
Design Factory

Level of knowledge about design from each potencial user

Gabrielle

This user does not know much about design but is interested to know more about it and understand its purpose. This user is probably looking for information that lets her get a general context of this discipline and then go deeper into how it relates to sustainability.

Federico



This user knows the basis of what design is and has a deeper understanding of his focus as a professional. He is interested to know more about how does design connects with sustainability and find ways to support it through his discipline.

Marco

This user knows the basis of what design is and has a deeper understanding of his focus as a professional, but he might be less connected with the trends of design due to being close to his job. He is looking for information that helps him understand the connections between design and sustainability but especially to the SDG'S.

Design Factory

Because of the context where these users are, they usually are more informed about the trends of design and are curious about the new information that could be used in their day to day work. Regarding sustainability, they are looking for more ways to approach different problems and that can help them be more innovative.

Christina

Probably one of the most informed users, its job is based on finding more information that could help them elaborate and multiply that information and ultimately reach the main goal of sustainability. They are looking for more precise, scientific, and detailed information related to design and sustainability with a particular focus on the SDG'S.

There are different types of tools related to the user to communicate the information and engage them in the platform.

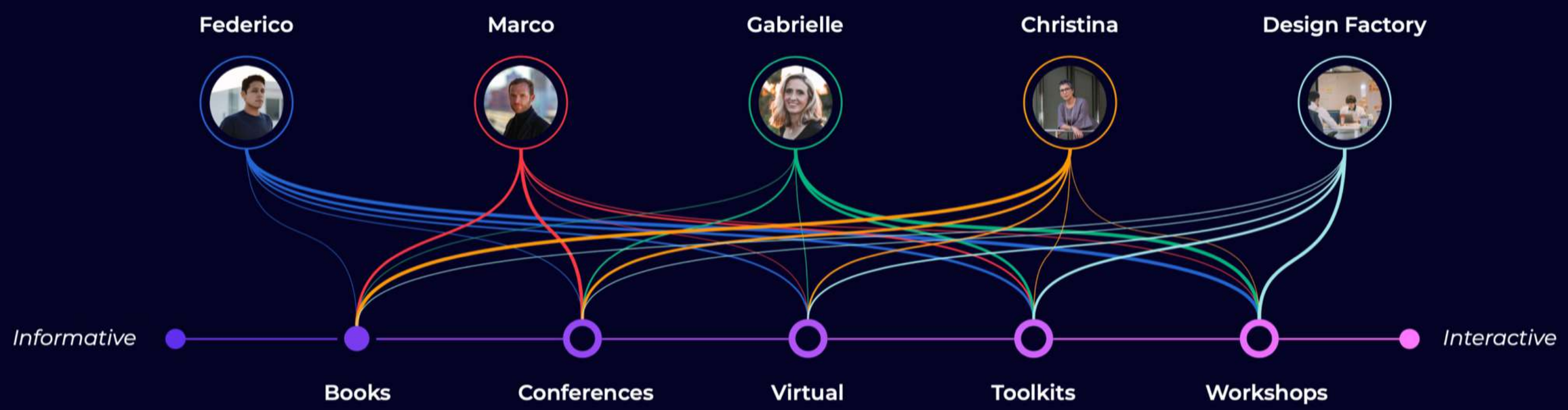
Books work as a way in which methodologies and processes are explained descriptively and technically. The primary purpose of this tool is to present information formally based on the fundaments of research. In addition, it usually shows the reasoning and thinking behind what is presented.

Conferences are a tool commonly used to give information to a specific audience in a direct way. In addition, conferences allow the presenter to have a more engaging relationship with the public.
They provide a learning environment with multiple opportunities to learn and engage, but space limitation is one of the downsides.

Virtual tools can be software, online courses, or an interactive platform.
Nowadays, these tools are one of the most used by different audiences thanks to their accessibility. It tends to be a unique tool that can be more collaborative, but it is limited due to the hardware.

A seminar or workshop is a discussion or practical work on a specific topic in which a group of people shares their knowledge or experiences. Furthermore, generally short intensive education programs for relatively small groups focus primarily on technologies and skills in specific areas.

The toolkit is a set of authoritative and customizable resources for front-line personnel to understand the problem and determine the method to solve the problem. Toolkits can help translate theory into practice and are usually targeted at a topic or audience. The toolkit helps users establish paths in the innovation process.



The selection of the methods to be carried out depends on the nature of the person or user with whom you are working.

Each person and each user has their characteristics that show their inclination towards a specific methodology or tool.

Each tool accompanies the user to clarify and evidence their needs and where they want to arrive during the development of their project.

Marco

Executive director at Alessi.

Age: 46 years old.
Nationality: Italian.

Marco is the director of the design area at Alessi in Italy, he has advanced studies and has collaborated throughout his career with different designers and recognized companies.

Physical environment:

He currently lives in Milan, has work experiences abroad and his physical environment is based on his work colleagues and the universities where he gives lectures.

Social environment:

His work is mainly his social environment, he has two children and he takes advantage of his free time to be with his family, he attends various design events such as (Il salone del mobile) and gives lectures at universities.

Technological environment:

His digital work ecosystem is his email, his cell phone and video calls with his colleagues, his most important application is the calendar, he uses his computer as a research tool.

Goals and objectives:

He is in charge of developing new projects in the Alessi company with the aim of including sustainable practices based on the UN's sustainable development goals.

Frustrations:

Time is very important to him and he must find an efficient and fast method to carry out his research to achieve his objectives of developing sustainable practices in corporate environments, most of the projects he finds are based on the SDGs as a starting point but not how to include them in an activity already developed.

Design Factory

Duoc Design Factory (DDF), of the Professional Institute Duoc UC.

Location: Chile.

Born in November 2012, it is a Collaborative Innovation Space based on the Design Factory model of the Aalto University (Finland).

Physical environment:

The Factories are designed to facilitate new forms of collaboration in an environment in which teams of students, academics, entrepreneurs, innovators, and other experts work together with companies and communities under one roof.

Social environment:

Duoc Design Factory is an open space for the collaboration and meeting people, their social environment composed by students, teachers and companies around creativity and innovation.

Technological environment:

Their technological environment is based on the tools they use for the creation, prototyping and testing of their projects, such as 3D printers, laser cutters, computers, cell phones, and virtual reality equipment.

Goals and objectives:

The aim of the center is to stimulate creativity in teaching Duoc students as a fundamental component of competencies to innovate, through the development of skills, knowledge and attitudes for the development of collaborative and interdisciplinary work.

Frustrations:

They're looking for a tool that can help them to develope the interdisciplinary elective course that they teach every semester at Sede San Joaquín. Also experts that can approach the work team so that they can guide students about the projects, activities, and possibilities of collaborations with companies.

Federico

Professional Product Designer

Age: 27 years old.
Nationality: Colombian.

Federico is a product designer in a design studio in Colombia, he studied at Pontificia Universidad Javeriana an Industrial Design Bachelor.

Physical environment: He has lived all his life in Bogota, he studied in a school near his home and one of the most popular universities in the country, he works in a design studio and lives alone.

Social environment: He is single, he has no children, his social environment is based on his friends from college and his co-workers, he likes to read about innovation topics in design and participate in design events, he does sports to stay in shape.

Technological environment: Its digital ecosystem focuses on its work tools (Adobe set), and social networks such as behance, instagram, youtube and vimeo for inspiration, and twitch, facebook and twitter for leisure, its digital environment is its computer, its cell phone, a tablet , and his apple watch to exercise.

Goals and objectives: For its design study and for him is important to take the sustainable development goals as a reference for the realization of sustainable practices, its objective is to find methods and/or references of how projects are currently being developed that impact these problems.

Frustrations: He does not find detailed information to know how sustainable practices are developed in the field of design, the information is also scattered in different platforms and the direct relationship with the SDGs is not clear to him.

Federico's Journey Map

	1	2	3	4	5	6	7	7.1	7.2
Thoughts	How interesting to start new projects with different approaches).	I have seen images in different places about the sustainable development goals but I am not sure what they are.	I understand them a little more, but it is still not clear to me how to achieve the objectives from the design.	I find multiple resources and sources that mention the SDGs but based only on solutions and the processes are not explained.	What is this paltform developed by the WDO - Can it help me.	How this platform work - Where is the explanation? How can i use it?	Where should i go to start using the platform? Should i start from the SDG or from the projects?	How can we start projects from the SDG?	
Emotions	Excited	Determined / Happy	Confusion	Frustration	Curiosity	Curiosity/Hopeful Excited	Curiosity/Excited	Curiosity	
Steps	It is suggested that it is necessary to implement sustainable projects as part of a strategy within the company.	Designers are tasked with recounting or researching projects and methods to impact sustainable development goals.	Start the investigation to know in depth what the sustainable development goals are.	An investigation of design projects related to sustainable development goals is carried out.	First contact with the platform and the WDO.	Going in to the platform.	Explore the platform.	SDG	Project
								Curiosity	
								How different projects can impact the SDG's?	
Touch Points	Someone from the company talks about starting a sustainable approach	The first interaction (online investigation)	ONU 17 SDGs, websites of different resources	Found an advertisement of the platform (cookies)	First interaction with the WDO platform	Interaction and understanding of the platform	Exploring the platform (guide - path)	Insights of two approaches	
Canals	Reunion, voice to voice communication	E-mails, reunions	Website, videos, images, social media, newspapper, google	Websites, images, videos, reports, social media, different resources	Website of WDO (platform)	Videos or images	Question path? Categories on the website	Website checklist?	

Gabrielle

Founder of a startup

Age: 48 years old.
Nationality: French.

Gabrielle is the CEO and founder of a startup, which focuses on strengthening relationships between recent graduates and companies.

Physical environment: She currently lives in Paris, France. Her personal environment focuses on her home and her work environment on the office and places of the companies with which she relates.

Social environment: Her work is mainly her social environment, she has three children, and being with her family is a very special time, she also interacts with the people of the companies with which she collaborates with her startup.

Technological environment: Her digital work ecosystem is the web platform of her startup, her e-mail, and cell phone, applications such as zoom, google meets, Microsoft teams, her most important application is the calendar.

Goals and objectives: She is looking for information to expand her company with designer profiles to help her carry out sustainable projects.

Frustrations: She does not understand much about the development of sustainable projects and does not know someone within your company who can help you create that area, looking for that type of profession or discipline can help develop sustainable projects as a business opportunity.

Gabrielle's Journey Map

	1	2	3	4	5	6	7	7.1	7.2
Thoughts	How can we start new projects with a sustainable approach?	I don't understand anything, they don't explain how they focus on sustainable areas.	I know a designer who is a consultant for sustainable projects and relies on the 17 SDGs to do his projects.	I don't understand, I don't know if it's my company is not related to design, what can I do?	I am looking for profiles in my company that help me better understand how to relate sustainability	How this platform work - How can i use it? - Where should i go to start to understand the platform?	What is this whole information about? How can I relate this with what I do in my company?	How can we start projects from the SDG?	
Emotions	Confusion	Worried	Discouraged	Curiosity/Confusion	Hopeful / Exited	Curiosity/Hopeful Excited	Confusion	Curiosity	I've hear something about the SDGs
Steps	Wonder if it is necessary to implement sustainable projects as part of a strategy in the company.	Look for references of companies that carry out projects focused on the sustainable field.	Talks with his colleagues to expose the idea and express his frustration at not finding information	Found information about the sustainable development goals and the WDO platform	First contact with the designer that works with the platform of the WDO, and invites him to a meeting.	Exploring the platform, and the resouces of the website	She wonders how she can relate all the information on the platform to what her company does.	Curiosity	I don't know anything about the SDGs
								What are the 17 ONU SDGs and how are related to what I do?	
Touch Points	Hear in another company how they're changing to a sustainable approach	Online investigation, websites of different resources	ONU 17 SDGs, and WDO platform	First interaction with the WDO platform	First interaction with the WDO platform	Interaction and understanding of the platform, exploring the website	Interaction with the platform and the resources	Understanding of the framework and relation with her company	
Canals	Reunion, voice to voice communication	Websites, linkedIn	Reunion, voice to voice communication, website, linkedIn	Website of WDO (platform) videos, images	Website of WDO (platform), voice to voice communication	Question path? Categories, resources, videos, images	Website of the WDO platform	Website guide path? Framework, resources, examples, videos, images	

Christina

Professor of sustainable and circular design at the UNAM.

Age: 49 years old.
Nationality: Mexican.

Christina is a teacher of undergraduate courses of design that focuses on sustainable production, consumption and circular economy.

Physical environment: She currently lives in Mexico City, she has work experiences abroad and her physical environment is basically the universities where she gives lectures.

Social environment: Her social environment is his family, she has three children and profits her free time to be with his family, she attends various design conferences and gives lectures at universities.

Technological environment: Her digital work ecosystem is the mail, the university platform, her cell phone and she uses his computer as a research and creation tool for the lectures.
Goals and objectives: She has presented to the university's career direction, the proposal to develop new projects during the academic year 2021 with the aim of including sustainable practices based on the UN sustainable development goals.

Frustrations: She is looking for a tool that guides not only her structure for the studies plan, but also the design process of the students during the development of their design projects in the academic year, offering them references and possible methodologies to encompass a sustainable approach.

Christina's and Design Factory Journey Map

	1.1	1.2	2	3	4	5	6	7	8
Thoughts	Let's seek to expand creativity by collaborating with actors in Latin America	How interesting an alliance with industrial design students in Mexico	How we can structure the project, and relate it to the SDGs?	Starting from the SDGs, how could one innovate from industrial design?	Based on the SDGs, we can take these aspects into account	This tool was useful to monitor the students project, and present it to the third company	What an interesting collaboration and opportunity with the students!	This reference will serve to collaborate with more students and companies in the future!	This tool will give us recognition to collaborate with more people in design
Emotions	Curious / Excited		Confusion / Excited	Excited	Excited	Excited / Determined	Happy / Excited	Excited / Blissful	Curiosity / Excitement / Proud
Steps	Academic project proposal for 2021	Collaboration with the design factory and third recycling company	Meeting to organize the project and establish the participation of the parties	Another meeting is held to learn about the objectives of the external recycling company	The project development phase begins	The project and the respective progress are presented to those involved	The project is tested and produced with the Design Factory tools	The project is delivered and it is proposed to publish it on the WDO platform	The design process carried out on the project is published on the WDO platform
Touch Points	The University of Mexico is part of the members of the WDO		The university being a member of the WDO is aware of the recently launched platform	The use of the WDO platform as a design reference is presented to the company	The framework and resources of the platform are used for the development of the project	The company knows the WDO platform and its resources by voice to voice	The final part of the project is presented, with the results obtained	The entire process carried out within the platform is delivered to function as a reference	Recognition of the platform with different actors
Canals	Institutional communication (Emails), advertising, WDO platform		Social networks, voice to voice communication, conferences, advertising	Voice to voice communication, WDO platform, website	Referents, WDO platform, website, images, videos, mediacards	Voice to voice communication, WDO platform, website, images, resources, advertising	Videos, images, graphics	PDFs, images, videos, design processes, graphic pieces	Publications, voice-to-voice communication, advertising, mediacards

Claudia

Executive Director of Productive Chains.

Age: 35 years old.
Nationality: Colombian.

Claudia is the executive director of the production chain of the most famous and largest carbonated beverage and bottled production company in the country.

Physical environment: She lives in Bogotá, D.C, her physical environment is basically the office, the city where her company has the warehouses and the production plant, the office of her clients and allies.

Social environment: Her work and her family is mainly the social environment, the people she works with, such as plant workers, her colleagues, her clients, and her suppliers.

Technological environment: Her digital work ecosystem is the network of the company, some social media such as LinkedIn, Twitter and Facebook. Apps like the calendar, e-mail, and zoom for work reunions.

Goals and objectives: She is looking for new sustainable methods to include within her company, due to the new legislation of the country that seeks to eliminate and significantly reduce the production and consumption of single-use plastics.

Frustrations: She cannot find information about practices that are being carried out in companies similar to hers, or within the country. Seeks to position the company as the first to take action in the new legislation.

Claudia's Journey Map

	1	2	3	4	5	6	7	8
Thoughts	What is the new legislation?	This will change a lot inside our productive chain and the company	How are we going to procede with this changes?	I don't understand, I don't know if it's my company is not related to design, what can I do?	I am looking for references arround sustainable practices in my country related to sustainability	How this platform work - How can i use it? - How does the resources work, can I upload new information?	This is an incredible opportunity for us to show internationally our company and the change to sustainable practices	This can be an opportunity of collaboration
Emotions	Confusion	Worried	Confused	Curiosity/Confusion	Hopeful / Exited	Confused/Hopeful Excited	Excited	Curiosity
Steps	The government enacts the new legislation to eliminate the use of single-use plastic.	Look for references of the information inside the legislation	Proposes an internal meeting within the company to discuss the changes to be made	Search information about the sustainable practices related to the new legislation	First contact with the platform of the WDO, and the references of the resources arround design and SDGs	Exploring the platform, and the resouces of the website (does not find colombian resources)	She wonders how she can shown all the information on the platform to what her company wants to change	Wonders if she can collaborate with the WDO to have a corporative consulting to develope those changes inside the company
Touch Points	Connect those situations with the presentation of the WDO platform	Online investigation, websites of different resources	Publicity and possible to know the WDO platform	First interaction with the WDO platform	First interaction with the WDO platform	Interaction and understanding of the platform, exploring the website	Interaction with the platform and the resources	Understanding of the framework, the relation with her company, the toolkit?
Canals	News cannals and information voice to voice	Websites	Reunion, voice to voice communication, website	Website of WDO (platform) videos, images	Website of WDO (platform), voice to voice communication	Categories, resources, videos, images	Website of the WDO platform	Website guide path? Framework, resources, examples, videos, images, toolkit, etc..

Proposal of the Guide

As an extension of the WDO platform, this guide is meant to be a tool that allows designers to identify the challenges related to realizing the UN's Sustainable Development Goals (SDGs) by 2030. This guide aims to help understand and contextualize these challenges through the design process, and facilitate opportunities for the development of sustainable projects.

As sustainability becomes a critical consideration across all design disciplines, multiple projects, methodologies, practices and approaches have been developed in recent years to provide designers with the necessary tools and insight to generate impactful solutions.

Together with the WDO platform, this guide aims to provide resources that can help you and your team develop and structure a sustainable project according to the situation that you may might find yourself in: either willing to start a new sustainable project motivated by many of the problems described in the SDGs or looking to change the way projects are framed within your company, adopt sustainable practices and/or position yourself in a new market.

This guide does not claim to be the solution to sustainable problems, nor does it guarantee results that do not generate negative impacts. It is to be understood as a tool that can contribute to identifying, creating and transitioning towards best sustainable practices.The idea behind the creation of this guide is not based on identifying a particular SDG to a specific project, but on providing the tools to identify, understand, formulate and develop a project that impacts the SDGs more broadly.

To continue using this guide, we recommend taking a moment to visit the Bility platform, where we provide more insight into the intersection between design, the four areas of sustainability and the SDGs. This information will help you effectively understand and follow the steps presented in this guide.

The Two Approaches

One of the main components of the design process is motivation: the reasons why designers are doing what they are doing, and the processes that activate creativity and innovation to develop unique solutions to the problems we face. The motivation must be clear to the designer since it will influence each step made throughout the iteration phase and be reflected in the final design output.

When approaching a sustainable project, it is important to be motivated by the desire to generate change, to find solutions in alignment with other disciplines, to not to fear failure, to consider new points of view, and to look towards generating long-term impacts.

That motivation for approaching a new project that is mainly framed by sustainability may put you and your team in two different positions

- each one having a different approach suited to its particular conditions (objectives, stakeholders or contexts).

The two approaches are:

- **Starting a sustainable project:** This refers to the idea of carrying out a project, from ideation to implementation, that incorporates sustainability best practices and addresses one or more key challenge(s) as presented in the 17 SDGs. This approach is for those designers or teams that are driven by the idea of generating change and positive impact through the conception and development of solutions that can target many of the problems that we are facing right now.

You might be:

1. A student or a group of students looking to start a project focused on sustainability, or come up with solutions that tackle a particular real-world problem.
2. A teacher looking for new methods to share with your students as a way to develop more projects focused on sustainability and generate change at an academic level.
3. A researcher exploring new frameworks of how sustainable problems can be turned into opportunities for new projects that can generate knowledge and positive impacts.
4. A studio looking into starting sustainable projects aligned with the needs of an evolving business environment that may foster new work opportunities.
5. A design lab looking to start sustainable projects to achieve innovative solutions to key, real-world problems.
6. A company that is looking to develop innovative, sustainable projects as a way of expanding into new markets and attracting capital from the private and public sector.

- **Transforming an existing design project or process to become more sustainable:** This approach aims to commercial, industrial, and professional activities that seek to shift towards sustainable models. This approach is thought to obtain new sustainable projects that will either replace or modify existing practices and generate new positive impacts. This approach is for those designers or teams that are driven by the idea of generating change and positive impact through their professional/corporate activities.

You might find yourself in this scenario:

1. You and your team have already developed a project that has faced challenges relating to sustainable factors and want to find new ways to improve your process.
2. You and your company are looking for a way to identify how your activities are impacting sustainability efforts and find a way to transform existing negative impacts into positive ones.
3. You and your company are trying to adopt sustainable practices as a way of keeping yourself relevant in a changing market and be able to make a meaningful impact in society.

To make effective use of this guide, it is essential to identify which approach is most relevant for your scenario.

Choosing the Right Approach

Below are some questions to help you and your team decide which approach is best suited for your situation.

- Do you and your team want to look for new solutions that tackle any of the 17 SDGs?
- Do you and your team want to explore multiple processes and methodologies to find key elements that would help create innovative and creative solutions?
- Are you and your team inspired to take action on a particular issue related to the

SDGs?
- Are you free to explore new frameworks and solutions that may tackle that problem?

If you answered yes to at least 3 of the of the above questions, we recommend following the first approach: *starting a sustainable project.*

- Are you trying to adopt sustainable practices as part of your commercial and professional activities within an established company?
- Are there specific goals tied to the activities developed within your organization, like revenue?
- Are you limited by a set budget or available resources?
- Are there any negative sustainable impacts related to existing company practices that you would be looking to change?

If you answered yes to most of the above questions, we recommend following the second approach: transform an existing design process.

Approach 1 Transforming an Existing Design Process

This approach is designed to help an organization or company identify the impacts that their project has on the four areas of sustainability, and the key points of contact with the SDGs. Observing, in particular, the aspects where this commercial, professional or industrial activity has contact.

By identifying these impacts, you and your team will be able to formulate and develop a sustainable project and/or practices that align with the goals and targets delineated in the UN SDGs.

Process

1. **Analyze:** Identify and map out your current design process to understand the current state of your practices.

2. **Identify/evaluate:** Identify the impacts of your activities either positive or negative and connect them with your current process to find the key relations between what is happening and why it is happening.

3. **Relate:** Connect and find the connection between your impacts and the issues described in the SDGs so you can have a clear understanding of which SDG you might work on.

4. **Define:** Choose and select the SDG to work on and frame your project within the aspects and targets that your activity is most related to.

5. **Formulate:** Investigate and define the problem or question you are trying to answer within the SDG chosen and the aspects of your practices that you are trying to change.

6. **Structure:** Structure your design process according to the needs and aspects of your problem, assessing the weak points found in the second step.

7. **Evaluate:** Analyze the results of your project and identify the new impacts of it, negative and positive.

Analyze

The objective of this step is to establish the current design processes of your company, identify the relevant stakeholders, the scale in which your company works, the external and internal limitations and the elements that compose the design process. This will help you and the team have a clear overview of your current situation.

As part of this analysis, it is necessary to gather relevant information on company projects developed in the past and to connect with different actors that were present in these processes. Here you will start to see how important it is to understand the relationships between actors and systems and how they influence the way a project is developed.

To understand what we mean with the design process, we encourage you to visit our website where you will find the main components that define a design process.

To start, you'll need to define the 3 core areas of your design process:

- **Problem:** What are the common problems that your company tackles when creating a solution (products, services, experiences, systems)?

- **Motivation:** What drives you as problem solvers to approach the projects that the company usually develops?

- **Focus:** What are the focuses in which you approach a problem? Is there a particular factor that defines the way you want to approach a project?

Example: Technology, ergonomics, Behavioural change, graphics, etc.

This part defines the values and focus of your company, the ways in which you see the world and therefore the problems of the people you are trying to reach. These three components will later define the shape of your processes and influence the project decision making.

The next step will be to define the methodologies that you and your team usually follow to develop a project. These can be established methodologies (design thinking, human-centered design etc.) or methodologies that were created as part of company practices.

As these methodologies are defined, you and your team will determine the corresponding tools - make sure that you can list and describe the way you execute and use these tools as it is important to understand how these tools are being applied.

After you and your team have defined your process, you will need to identify the scale in which your project is framed, the actors that are involved in the various steps and the internal and external limitations that you find while executing each step and using each tool.

- Scale: At which scale do we and our company work? At which scale are we using our tools?

A project can be projected at a national level but the research phase is focused only in one city or community.
- Actors: Who are our stakeholders? Who are we targeting? Who is helping us? Who are we trying to help? In which steps of the process are they being included?

- Limitations: What are the limitations of our team in each step? Are there external factors that influence the execution of each step? What are the weaknesses of the tools that we use? Which of the limitations are internal or external?

During a prototyping phase the machinery and resources available influence the decision making process of solution building.

You have now defined the system of your design process which becomes the DNA of your products and services. The next step will be to see the relationships that exist within that system and relate it back to your impacts.

Identify

The objective of this step is to define the positive and negative impacts that you, your team and your company are having in any of the four areas of sustainability. These impacts can come from the activities you execute and the context in which these products are being produced, distributed, used and disposed. Once identified, you can start making connections between those impacts and your design process.

For this step we will be using the matrix of the circles of sustainability to help keep track of the impacts. It is also important for you and your team to be as precise as possible on the nature of the impact - i.e. describing what is happening and how it is happening.

Identification of Impacts

Now you will carry out an exercise to evaluate company activities, processes, and solutions (Products, Services, Experiences, Systems) to determine their impact and/or relationship with the particular aspects of each area of the circles of sustainability. The team will then utilize this information to complete the matrix.

For this, the team must fill out the matrix that accompanies this step, marking those aspects that the company has impacts or influences. To fill out this matrix there are a series of questions that could help the team understand these relationships:

- Which of the following areas or aspects are considered vis a vis the development of your products, services, experiences or systems? And how?

- In which of the following areas or aspects does your activity as a company have the most influence? And how?

- In which of the following areas or aspects do our company processes influence society? And how?

Note that the evaluation can relate to the four pillars and multiple aspects simultaneously through both positive and negative impacts. The depth to which these impacts are established will depend on the company's level of commitment and self-analysis.

Example

Chair World, as a company focused on the design, development, and production of furniture, is deeply connected to the environmental pillar, more particularly in the materials and energy category relating to:

- ***Abundance and availability:*** *General consideration: There is a direct impact on the amount and availability of material(s) used in furniture production, whether that be wood, metal, plastic products ect.*

Specific evaluation: The company focuses its production on wooden materials derived from a tree type in a specific region. However, the increase in production, coupled with the appearance of other companies that use the same type of wood has led to high deforestation affecting the environmental conditions of surrounding areas and a general shortage of material for future product development.

- ***Electricity and gas:*** *General consideration: The correlation between energy resources used during the production and commercialization of company products.*

Specific evaluation: The company utilizes outdated machinery and technology designed to treat and transform production materials. As a result, existing processes are not energy efficient and result in higher use of electricity use in the long run.

- ***Oil and biofuels:*** *General consideration: The amount of oil or fuels used in the production, distribution, and marketing processes of company products.*

Specific evaluation: In the same way that the commercialization of company products has sought to generate differentiation and added value to beat out relevant competitors, the company promised customers fast delivery of products and has not prioritized sustainability. The vehicles used to transport the company's merchandise do not use sustainable fuels.

- ***Renewable and recyclable:*** *General consideration: The company produces products from renewable and/or recyclable materials OR uses materials from these same origins within industrial and professional activities.*

Specific evaluation: Internally, the company is working to incorporate renewable and recyclable materials for its administrative activities, but its production activities remain strongly dependent on the wooden materials used for many years in its products.

Connect

This step consists of overlapping the impacts of the company, its activities and solutions with each matrix of the 17 SDGs. At this point, the team will start to see how its work can have a positive impact on the SDGs and understand the specific aspects in which projects can be framed to tackle problems related to sustainability and existing design processes can be restructured to support more sustainable practices.

Examining the SDG cue cards available on the site, you and your team should try to overlap your matrix and identify the matching points. You might find yourself having all the SDGs with at least one point in common - but the idea of this step is for you to see how your work may have an impact or influence in multiple issues related to the SDGs. This should be interpreted as a huge opportunity for you and your company to develop multiple projects that are aligned with emerging areas of sustainability and the objectives of current governments and international organizations.

Define

This step consists of selecting the SDG on which you and your team want to focus, which will ultimately form the basis for identifying the problem to be addressed through a sustainable project. For this decision process the team needs to ask questions that help them find the appropriate SDG to start working on, these questions can be focused in multiple aspects that can be directed either to the expertise in your commercial and professional activity or the context you work on.

At the end of this step, you and your team will have an SDG as the main objective for the project and understand the main reasons why you are motivated to carry it out.

There are multiple global targets delineated by the 17 SDGs that, according to the UN, represent the main sustainable objectives for 2030. Each of these objectives is complex due to the nature of the factors that influence them.

For this you will need the results of the previous step, where you have each SDG with the specific aspects that match with your impacts.

Three sets of questions are provided below that might help the team choose the SDG to focus on.

Questions to consider

In connection to the companies work, knowledge and/or experience:

- Are there any particular SDGs that directly relate to your work or what you do every day as a team?

If you work in the education sector you might find that the most suitable SDG to be SDG 4: Quality Education, but you might also want to explore the impacts you have on other Goals. This can be a great opportunity for your company to expand market reach and generate positive impact.

- Have you encountered problems throughout your work that relate to any of the SDGs?

For example, if your company has a production line that uses a specific kind of machinery that is obsolete and inefficient, this might be the opportunity to explore new affordable and clean energy, in alignment with SDG 7: Affordable and Clean Energy.

- Understanding your workplace practices and processes, is there a way your work could meaningfully approach any of the SDGs?

In relation to the regional context:

- Is your country, region, or city facing a challenge explicitly outlined in any of the 17 SDGs?

In connection with stakeholder(s) perspective:

- Do any of the SDGs connect with you on a level that motivates impactful action?

- Do you have a direct connection to any of the challenges outlined in the SDGs?

- Are any of the company stakeholders directly connected to one or more SDG?

In connection to company processes:

- Are there any SDGs impacted by the production processes handled internally by the company?

In connection to company mission and vision:

- Are any of the SDGs related to company objectives, as described in the guiding mission/vision statements?

Formulate

Once you have established which SDG(s) to focus on, the next step will be investigating and formulating the problem that will become the core of your design process and your project.

Having all the information collected from the previous steps, the task will be to formulate the design problem by responding to six series of questions which will allow for a first investigation and analysis of the problem. As you go on in the process of developing your project, we encourage you to revisit these questions. It is important to remember that these processes work as an iterative system, which requires consistent updating as new considerations arise.

What? Definition
- What is the problem?

- Which impacts identified in the matrix that are related to the chosen SDG will you work on?

Who? Subjects
- Who is being affected by the problem? And at what level (directly or indirectly)?

- Who is involved in the problem? Who are the relevant stakeholders?

When? Moments
- In which moment(s) or situation(s) is the problem present?

Why? Reasons
- Why is this happening?

- What are the reasons behind this issue?

Where? Context
- Where is this problem happening?

- What are the contexts where you see this problem?

- What is the scale of the situation?

- What environments are being affected by this problem?

How? Ways
- How is this problem being reflected?

- What are the consequences of this situation?

Questions

At this point, the team should have zeroed in on a sustainability issue, which will allow for the development of an impactful project. The objective is now to structure the design process according to the different factors related to the issue. The team has two paths:

1. **Adapt the Company's Design Process:** The team should take the design process identified in the first step and do a thorough review of every component and adapt them to the needs of the new problem.

2. **Structure a New Design Process:** The team should research potential methodologies that can respond to the needs of the problem. In this scenario, the team will take components of multiple methodologies and adapt them into one that fits the needs of the project. We recommend you explore the different resources available on our site.

Next are a series of questions that can help you and your team in the structuring process.

Focus:
- Is the focus that we have been using the right one for this problem?

- Are there any new upgrades available in terms of sustainability? And how can we adopt them?

- Are there other focuses that can generate new opportunities to approach the problem?

- From a design perspective, are there new focuses that are being adopted to solve sustainability problems?

Methodology:
- Which steps within the methodology of the company should we improve or add to approach this problem?

- Are there new upgrades and additions to the methodology we use that we can adopt in this project?

- Can we use different activities or tools from other sustainable methodologies or practices to find a solution that is better suited to our problem?

- Are we properly executing the different stages of the project?

- Are there any changes that could improve existing processes and help us achieve the objective of this new project?

Scale:
- Is the scale defined in our process the right one to approach the problem?

- Is our analysis, investigation and application

of tools consistent with the scale of our problem?

- Are we aware of the complexity and the limitations between the different actors on the geographic scale (a city in comparison with a country) and the social scale (an individual in comparison with a community) in our project?

- Do we have the pertinent tools that allow us to understand the social and geographic relationships of our project?

Actors:
- Are we involving all the necessary actors related to the problem?

- Are we considering the different needs of the actors that will be influenced by our project?

- Have we identified every actor and their level of internal/external influence on the project?

- In what ways are we involving the different actors of the project in the process?

- Does our process accurately represent the heterogeneity that we find in the actors impacted by the project?

- Who are we bringing from other areas of expertise to expand our vision on the problem?

Limitations:
- How are we responding to the limitations already identified to achieve results that are better suited to our project?

- Are we setting clear expectations that are reasonable and consistent with our resources and capabilities?

- What resources can be used during the design process to respond to these limitations?

- How can the team and the process adapt itself to these limitations?

We recommend exploring different resources from our site and encourage external research to better structure and develop your project. There is no unique solution or methodology that could respond to every need or project, but rather a constantly changing system that needs to adapt to every circumstance.

Monitoring and keeping a record of the process will allow you to respond in an appropriate way to the different scenarios and be able to improve in future iterations. Do not forget to find support in different areas of knowledge and work to expand the points of view on the problem and increase your chances of success.

Evaluate

As with any process, it is important to evaluate the results and compare them to initial expectations and objectives and to identify relevant weaknesses and strengths. This will enable you to approach future projects in a more efficient and sustainable way. Understanding that the nature of every project is different, methods of evaluation and monitoring are equally different, so teams are encouraged to seek out diverse resources.

Approach 2 Starting a New Project

This approach is designed to help those who wish to tackle problems related to the SDGs through design.. This tool also strives to challenge the idea that sustainability can only be achieved through existing strategies, like recycling packages and the use of different materials.

Process

1. **Analyze:** Investigate and understand the nature of the SDGs, their targets and the specific aspects within each one.

2. **Define:** Choose and select one SDG to work on and frame your project within the aspects and targets that you want to focus on.

3. **Formulate:** Investigate and define the problem or question you are trying to answer and the aspects of your practices that you are trying to change.

4. **Structure:** Structure your design process according to the needs and aspects of your problem.

5. **Evaluate:** Analyze the results of your project and identify new impacts, both negative and positive.

Analyze

As you enter in this process of finding opportunities to develop sustainable projects focused on any of the 17 SDGs, the first step is to understand the nature of these objectives and where they came from. We first recommend visiting the United Nations website dedicated to the SDGs for background on the goals and their specific targets. We then suggest exploring our take on the SDGs, to see how they connect with the specific aspects of the four areas of sustainability.

In addition, you and your team should identify how the SDGs relate to you on a professional and personal level - in your house, your neighborhood, your city or your country. This will help you have a clear motivation for your design process.

Define

This step consists of selecting the SDG you and your team want to focus on, which will ultimately form the basis for identifying the problem to be addressed through your sustainable project. To do so, the team needs to consider relevant questions either to the expertise in your commercial and professional activity or the context you work on.There are multiple global targets delineated by the 17 SDGs that, according to the United Nations, represent the main sustainable objectives for 2030. Each of these objectives is complex due to the nature of the factors that influence them.

Three sets of questions are provided below that might help the team choose the most appropriate SDG to focus on.

In connection to the teams' work, knowledge and/or experience:

- Are there any particular SDGs that directly relate to your work or what you do every day as a team?

- Can your work, knowledge or expertise be applied to any particular SDGs to create innovative solutions?

- Are there new applications in your area of expertise that could meaningfully impact any particular SDG?

- In your line of work, have you encountered

a situation that directly relates to any of the SDGs?

In relation to the regional context:

- Is your country, region, or city facing a challenge explicitly outlined in any of the 17 SDGs?

In relation to a personal situation:

- Do you personally have any situation that connects you with any of the SDGs?
- Have you worked on any organization or project that may be connected to any of the SDGs?
- Are you personally motivated to work on any of the 17 SDGs?
- Do you know people that are affected by any of the situations mentioned on the SDGs?

Formulate

Once you have established which SDG(s) to focus on, the next step will be investigating and formulating the problem that will become the core of your design process and your project.

Having all the information collected from the previous steps, the task will be to formulate the design problem by responding to six series of questions which will allow for a first investigation and analysis of the problem. As you go on in the process of developing your project, we encourage you to revisit these questions. It is important to remember that these processes work as an iterative system, which requires consistent updating as new considerations arise.

Questions

What? Definition

- What is the problem?
- Which impacts identified in the matrix that are related to the chosen SDG will you work on?

Who? Subjects

- Who is being affected by the problem? And at what level (directly or indirectly)?
- Who is involved in the problem? Who are the relevant stakeholders?

When? Moments

- In which moment(s) or situation(s) is the problem present?

Why? Reasons

- Why is this happening?
- What are the reasons behind this issue?

Where? Context

- Where is this problem happening?
- What are the contexts where you see this problem?
- What is the scale of the situation
- What environments are being affected by this problem?

How? Ways

- How is this problem being reflected?
- What are the consequences of this situation?

Structure

The objective is now to structure your design process keeping in mind the particular factors that come with your problem. As part of this step, we recommend reviewing the different components that make part of the design process.

The team will have to carry out a more extensive investigation to assess different methodologies that respond to the needs of the project's problem. In this scenario, the team will probably need to take elements and components of different processes and try to integrate them. Referring to our resources may be helpful in this instance.

As the structuring process will require constant research and exploration of resources, case studies, practices, and projects of a sustainable nature, we have put together a series of questions as a jumping off point.

Focus:

- Can the focus of our work be used to approach the identified problem?
- Are there new practices or focuses within our sector that would help create a meaningful impact on our problem?
- What focuses are being taken to approach sustainable problems and which ones can be applied as part of our project?
- Are there multiple focuses that can work together to bring innovative solutions to the problem we are addressing?

Methodologies:

- Which methodology is better suited to approach this project?
- Are any of the methodologies that the team has used suitable to bring new solutions for this problem?
- What tools can the team use from different methodologies that could help achieve project objectives?
- Which methodologies are framed within the aspects identified in our problem and can be used to solve it?
- How can we adapt current practices and existing challenges as part of our approach?

Scale:

- Are we working on a scale that is realistic with the resources that we have?
- Which scale would better let the team understand the needs of the actors and context mentioned in the problem?
- Have we defined the geographic presence of our problem?
- Are we aware of the complexity and the limitations between the actors in the geographic scale (a city in comparison from a country) and the social scale (an individual in comparison from a community) vis a vis our project?

Actors

- Are we involving every actor that is affected by our problem?
- Are we considering the different needs of the actors of the project?
- Have we identified the actors and their level of internal/external influence?
- How are we involving the different actors in the design process?
- Does our process represent the diverse nature of the different actors impacted by our project?

Limitations:

- Have we identified our internal and external limitations?
- How many resources do we have available to respond to the needs of our project?
- How can we adapt our team and process to the external limitations of the project?
- Have we measured our expectations against relevant limitations?
- How is our methodology limited and how can we respond to that?

We recommend exploring different resources from our site and encourage external research

to better structure and develop your project. There is no unique solution or methodology that could respond to every need or project, but rather a constantly changing system that needs to adapt to every circumstance.

Monitoring and keeping a record of the process will allow you to respond in an appropriate way to the different scenarios and be able to improve in future iterations. Do not forget to find support in different areas of knowledge and work to expand the points of view on the problem and increase your chances of success.

Evaluate

As with any process, it is important to evaluate the results and compare them to initial expectations and objectives and to identify relevant weaknesses and strengths. This will allow you to approach future projects in a more efficient, sustainable way.

Connection to the platform

For the platform's development, a joint work was carried out with the Algonquin University of Canada, where the wireframe of the page to be developed was developed based on the research carried out by the Politecnico di Torino team.

Different factors were taken into account, such as the importance of the targets to which the page would help, who its users would be, and the communication and promotion methods relevant to each specific target.

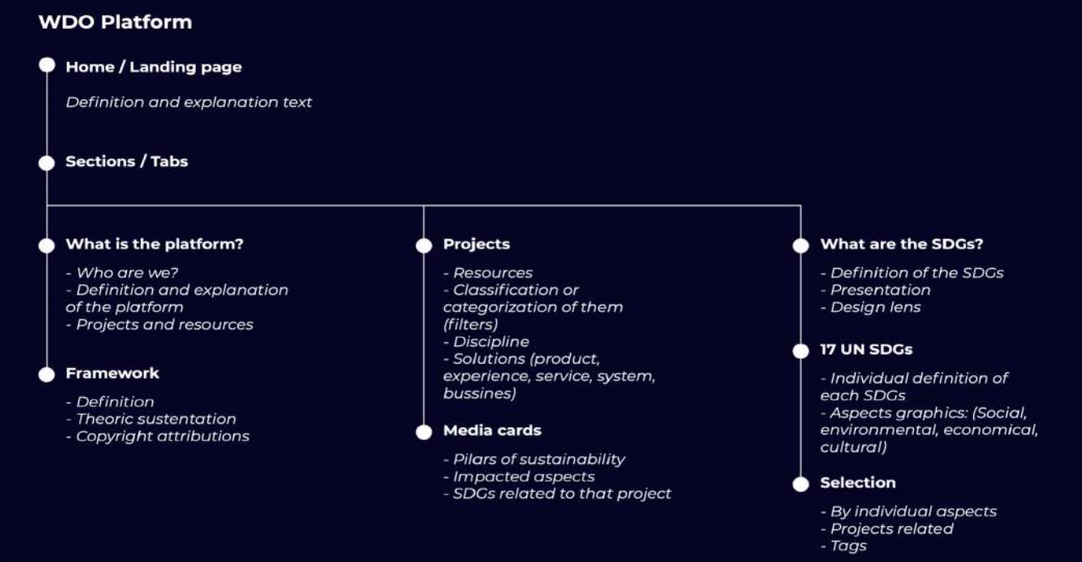
In the case of journey Maps, the navigation situation within the page was taken into account, that is, how the user will have their first approach and what will be the means that will make that person know, hear or see advertising about the platform to be launched by the World Design Organization.

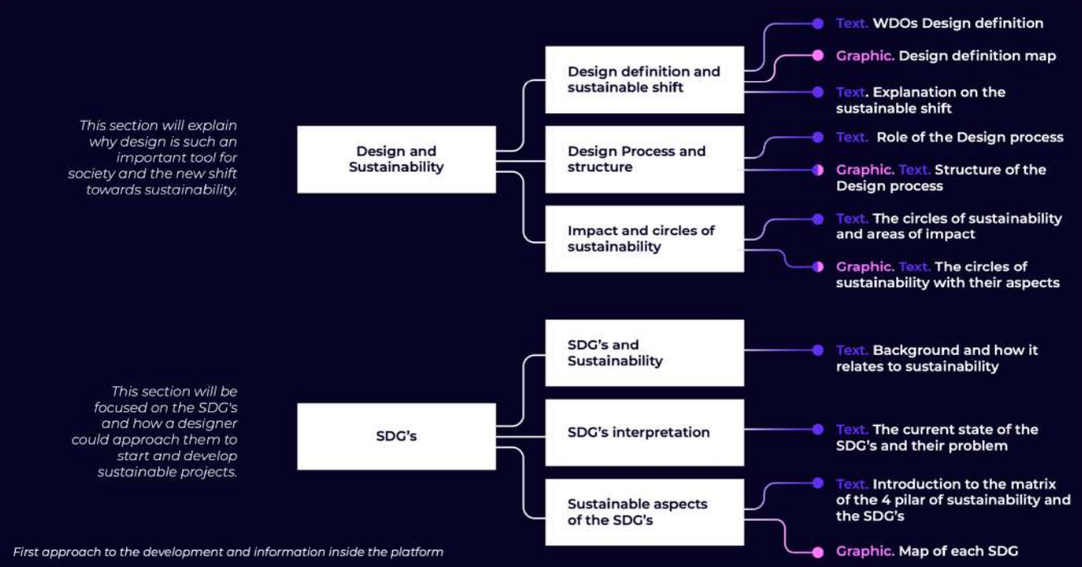
So then, they continued to make a basic information scheme. Through the meetings held throughout the project's development, the key points to consider when arriving and finding information within the website were exposed.

Information that governs the layout of the data and graphic elements to be included within the page was provided in the same way to the web design team of the University of Canada.

The project will have all the information consigned both in the research process and in the framework development proposals, including data related to the process carried out since August 2020 with the respective project teams.

The graphics made by the Politecnico di Torino team, such as the framework diagrams, expose the relationship of the Sustainable Development Goals with the pillars of sustainability, which will be explained through videos that contain the information.





First approach to the development and information inside the platform

WDO WORLD DESIGN ORGANIZATION

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ABOUT THE SUSTAINABLE DEVELOPMENT GOALS

The United Nation Sustainable Development Goals (UN SDGs) are universal set of 17 goals compromising of 169 corresponding targets that aspire towards a sustainable world through social, economic and environmental development. The UN SDGs have been implemented by many as measurable tool for addressing global barriers in hopes of achieving a better and sustainable future. Similarly, the UN SDGs have become integral part of the World Design Organization (WDO) ®. By utilizing design as an ingeniously carved tool on the international development agenda, WDO aligns itself to address the SDGs and their respective targets by positioning design as a catalyst for accessibility, affordability, reliability and sustainability changes.




- NO POVERTY
- ZERO HUNGER
- GOOD HEALTH & WELL-BEING
- QUALITY EDUCATION




- GENDER EQUALITY
- CLEAN WATER & SANTITATION
- AFFORDABLE & CLEAN ENERGY
- DECENT WORK & ECONOMIC GROWTH




- INDUSTRY, INNOVATION & INFRASTRUCTURE
- REDUCED INEQUALITIES
- SUSTAINABLE CITIES & COMMUNITIES
- RESPONSIBLE CONSUMPTION & PRODUCTION




WDO WORLD DESIGN ORGANIZATION

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SUBMIT YOUR RESOURCE(S)

Use the form below to submit your resource(s). Please make sure to specify document type, and provide any relevant links and/or information. WDO carefully reviews each submission.

CONTACT INFORMATION

Name *

First **Last**

Email *

RESOURCE(S) INFORMATION

Resource Name *

Resource Type *

App

File Upload

Drop files here or

Select files

Max. file size: 384 MB.

Which SDG(s) does your submission relate to?

Note that submissions can relate to more than one SDG at a time.

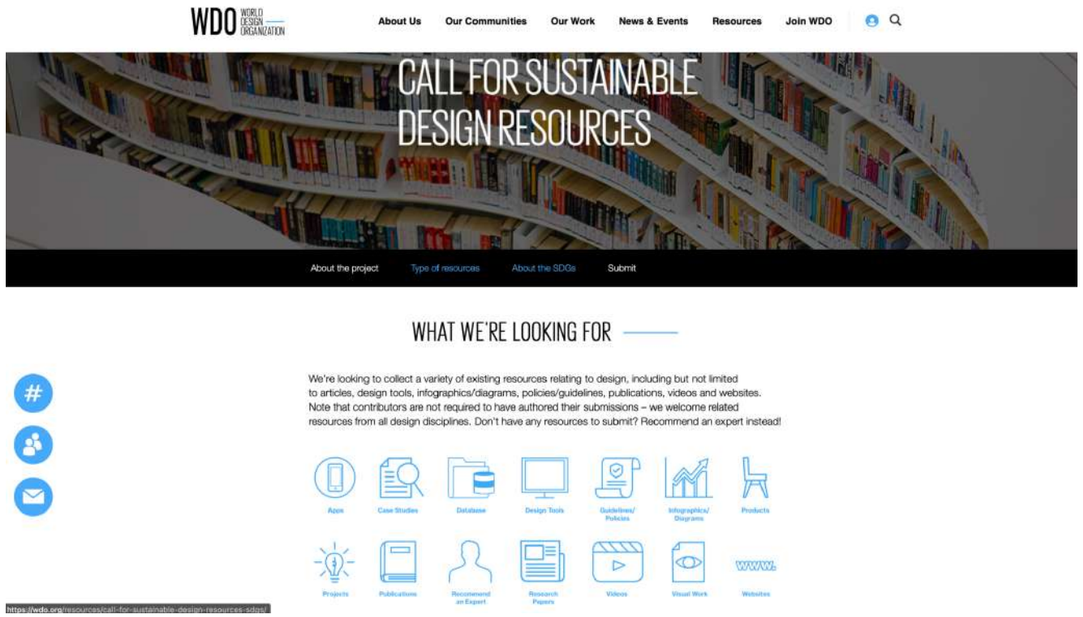
- **SDG 1: No Poverty**
- **SDG 2: Zero Hunger**
- **SDG 3: Good Health & Well-Being**
- **SDG 4: Quality Education**
- **SDG 5: Gender Equality**
- **SDG 6: Clean Water & Sanitation**
- **SDG 7: Affordable & Clean Energy**
- **SDG 8: Decent Work & Economic Growth**
- **SDG 9: Industry, Innovation & Infrastructure**
- **SDG 10: Reduced Inequalities**
- **SDG 11: Sustainable Cities & Communities**
- **SDG 12: Responsible Consumption & Production**
- **SDG 13: Climate Action**
- **SDG 14: Life Below Water**
- **SDG 15: Life on Land**
- **SDG 16: Peace, Justice & Strong Institutions**
- **SDG 17: Partnerships for the Goals**

Also, a space will be provided within the platform to expose the framework and the developed guide, where each of the steps to follow and the elements, tools, and others to take into account will be explained to take either of the two paths and develop a project that is based on sustainability.

Media Cards were also made to translate the Sustainable Development Goals into a more straightforward and more understandable language for different professions.

A database of the resources collected in the first International Call that was carried out in February 2021 will be consigned within the platform that lists the projects of different designers throughout the world that directly or indirectly impact any of the Objectives of Sustainable Development proposed by the UN, this in addition to a space that will always remain within the platform to continue to receive said resources and expand the database of design projects that are related to sustainability.

On the other hand, the World Design Organization is currently working on the final elements of the platform, intending to launch it in mid-October.



Conclusions

Conclusions

At the end of the project, we carry out a series of considerations that allow us to analyze the results critically, starting with the final state of the project.

All the material and work carried out will remain in the hands of the WDO while progress is made in the development and publication of the platform that is projected for October of this year; these dates are still subject to any modification, similar to what happened. In addition, throughout the year, as the team within the organization advances and advances the other tasks that make up the project, our work will change to one of support and support less actively, based on sharing feedback on the results obtained around the platform and final version of the project.

Now, as a final step, we have decided to carry out two critical analyzes of the entire project, starting with what was found in the process of carrying out the project, exposing the limits seen by ourselves as a team and by the organization as the central interested in the results and who provided the primary resources and feedback as each step of the project progressed.

Initially, it is essential to mention that when referring to an organization not present in the Italian territory, we are faced with problems related to remote work that were even more evidenced by the current situation related to the pandemic, despite this. Therefore, at the beginning of this document, weekly meetings were scheduled to constantly monitor the project's progress, which allows us to maintain constant and clear communication. Still, in moments of testing or involvement of external agents, it represented a significant effort to contact people, professionals, and experts who serve as a point of support and external analysis of the results obtained.

With the launch of the platform, it is expected that there will be greater external participation to continue with the process of improvement and evolution of the framework, obtaining more significant insights and coverage of the weak points found in work.

Another of the evidenced limits was mainly in the testing phase, which was projected to be carried out with some of the projects presented in the call by the WDO. Still, as this stage was carried out at a very premature moment of the project, We were faced with different groups of information that varied according to the individual interests of the applicants,

which made the testing limited to incomplete information or, in many cases superficial. Nevertheless, it is essential to say that this situation helped us to understand even more the current problem about how sustainable projects are being approached, showing a superficiality or generality in consideration of the different factors present in them, pushing us even more to find a model that would allow to the designers and the WDO community to see the complexities and opportunities of each of the SDGs.

Despite these difficulties encountered, working together with the WDO team represented an excellent opportunity for us to expose the strengths of systemic design in developing a project that sought to expose the urgency in changing paradigms applied when approaching sustainable projects, at the same time involving it in an accurate and international environment focused on our community, which represents an immense opportunity to keep the framework alive as a natural and evolving system, which is not only proposed for the SDGs of 2030 but also to be applied in the challenges that will come in the future.

The second group of considerations was related to the problems and limits that still have to be solved with the project.

Our main observation is that this framework serves as an initial model to respond to the difficulties of approaching a project focused on sustainability and SDGs, providing tools that allow the formulation of projects and development opportunities focused on the multiple factors present within the company, each objective in the four main areas of sustainability (Environmental, Economic, Cultural and Social) but which does not have a robust system established to test the results in a quantitative way of each of the projects that may arise from it.

It is essential to work together with the community, which, thanks to the WDO, exists to find the tools that can quantitatively evaluate these results, achieving an even more robust model based on values that represent all stakeholders' interests outside the discipline of design.

In the same way, it is essential to mention that by understanding the weaknesses of the project, we do not intend to say that this framework is the answer to all the problems surrounding sustainability. Still, it can be a starting point to establish a constant conversation between design and institutions interested in meeting and achieving the objectives set out with the SDGs, to find and develop better solutions that allow achieving a substantial impact on the current models of our society.

As a final point, we want to consider that working on this project leaves us related to the design and what we believe is necessary to achieve significant impacts.

A designer's role in developing a project is crucial to guide the process or methodology implemented throughout the activities.

Give as much information as possible when you discuss design processes, about the products created, when you notice innovation, or when you address changes. Then, other people will obtain a crucial source of details to evaluate existing projects and implement a different perspective in those that will be new or future design projects.

We mentioned that the DNA of design is the process itself, when a person outside a project evaluates the process, understands, and understands why the decisions were made the way they were made because the project was dissected towards that solution.

It is also crucial to understand the errors of past processes, that is, to improve existing projects from a critical eye towards sustainability, understanding sustainability as a set of aspects and not only as of the environmental, productive, or material part of the stuff.

Suppose a designer understands the errors and shortcomings that occurred throughout a design process as a reference. In that case, he will evaluate his process and avoid falling into common mistakes, such as taking for granted the participation of certain actors throughout the project process.

It is essential to highlight that each decision made within the project's development will be reflected in an infinity of possible ways to complete the solution. For this reason, it is mentioned at the beginning of this thesis work how important it is that for the design team or the company, the focus is always as a point of view on the horizon, since when the objective with which the project was started is lost, project, impacts of different factors are generated that possibly create a change and later be an effect of a solution that does not replace what was initially proposed, or a real problem.

Carrying out this type of process is not something unusual or new for designers, since, for each process that is carried out, each step and each tool used is monitored, each actor involved, since this later becomes the justification of the process and the solution that was reached from the design. Thus, it is information that exists and that the designer performs; the critical point is not to give prominence to the end, but understanding the process in more detail can improve future design projects.

Currently, information is crucial for any profession; for anyone developing an investigation, it is vital to change the design perspective of showing only the final product; as a result, leaving behind all the crucial parts of the project, its process.

This related in the same way of how systemic design shows us how currently design methodologies are changing compared to those that were used a decade ago, where now the problem is taken into account in a transversal way, the meeting points with different aspects that may influence it, and it seeks to obtain a 360-degree perspective to know the totality of the whole and its interactions, and not the individuality of the parts.

In the same way with sustainability, the sustainable aspects impact different areas, as mentioned in the respective research chapter, there is social, economic, cultural, and environmental sustainability, this must be understood not only by designers but by all people as a set of elements that must be related to each other since having a positive impact in one area does not ensure that the effect is in the same positive way in the others.

The greatest challenge is undoubtedly the quantification of the information concerning the sustainability aspects. Unlike projects of different areas, the quantification of the effects can be based on mathematics or measurable variables that allow evidence of change or development in both negative or positive impact.

Another aspect that was evidenced as one of the problems, but that throughout the project became an opportunity was to be based on the Sustainable Development Goals proposed in the 2030 Agenda since, at the time of reaching that date, there is the possibility that these objectives no longer exist, that new problems are created and that changes are generated.

For this, the project took into account the way of impacting the problems, but not the problem as a starting point, since possibly in the future, the Sustainable Development Goals will evolve to new situations, the aspects to be taken into account will change, the priorities and possibly the environmental problems and areas to be solved will be increased, such as what happened with the Millennium Goals.

Providing complete information is not only crucial for the people who come across the project in the future but for the designers themselves or for the same team that participated in the solution; this makes it more

obvious to recognize errors, recognize failures that no matter how minimal they are, they have a giant impact on the result.

The platform seeks to take as a starting point the possibility of offering information to designers about projects carried out around the world, taking into account the environmental perspective as the center of the project. However, it is proposed in the same way that said platform becomes the primary reference, at least in the design profession, for the development of sustainable projects.

It is an opportunity for our generation of designers and other professions that do not know how to consider a design process or a methodology. In addition, this would make it easier for non-design professions to understand the projects and results being carried out.

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