



Interior architecture and its close relation to sustainable development health, environmental and social

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Abstract

One of the biggest challenges we face in our time, more than ever, is environmental pollution and the damage it causes to the environment, especially those that have a direct impact on the climate as well as on human life. So, organizations and societies strive to find ways to mitigate or eliminate these risks. Due to this, customers are increasingly incorporating environmentally friendly design rules into their home designs, and the demand has increased in recent years. As a result of the growing awareness of the public, the interior architecture has undergone a radical change in terms of creating qualitative strategies aimed at achieving healthy and environmentally sustainable spaces designs. This research focuses on developing the concept of green/sustainable interior architecture and the importance of adhering to its principles. Also, its impact on the health of our food and our healthy lifestyle. Thus, raising awareness of the negative health impact that a person is exposed to as a result of living in unhealthy spaces. We also raise the importance of the Minimalism approach in the design of spaces and its positive impact on human health and even on the economic aspect. Then, how does green architecture support the sustainable development goals? We also explain the importance of the engineer's role in creating a healthy environment. Then, the extent of the engineer's commitment to the principles of the sustainable development plan. In addition to the government's role in developing a tight plan related to the interior architecture, that would reduce health damage to humans, as well as support the reduction of environmental pollution, which also has a major share in meeting the sustainable development goals. This research aims to highlight the introduction of a set of measures that support sustainable interior design, in order to mitigate environmental pollution or possibly reduce risks related to human health. Then we highlight the Minimalism method system that would provide good criteria to promote the sustainable development of green architecture in minimizing the negative impacts. The formulation of this research was based on reviews of the latest research and literature related to contemporary issues faced by interior architecture in terms of applying the principles of sustainability. We also suggest drawing up plans to implement the rules in order to achieve these goals, based on the conclusions we have reached.

Keywords: Green architecture, Sustainable, Health, Design strategy, Mental, Psychology.

Introduction

Undoubtedly, that this era is facing one of the biggest challenges in the whole world, which is pollution resulting from various factors that are, either naturally and the largest proportion is, without a doubt, by man-made. It is very necessary to take into account the role of interior architecture as an integral part of sustainable development, in addition to its impact on our lives and environment. We noticed through our research that the interior architecture domain does not seriously seek to achieve the principles of sustainable development and apply them to achieve the goals of sustainability. This is with regard to indoor pollution related to design and construction materials, furniture,

inadequate ventilation, humidity, artificial lighting, smoking, and the use of chemical and synthetic products. At the level of individuals, the use of toxic products called volatile organic substances (VOS), in addition are other negative factors. This pollution, with other environmental factors, lead to serious diseases, including difficulty breathing, heart disease and cancers. What has been added to that in the recent period is the Corona epidemic, which has occupied and claimed millions of lives. From this point, people are more aware of adopting green spaces and the world is moving towards creating a clean green environment.

We note that in recent decades, the interior architecture has begun to move towards creating

clean spaces (Badawi, 2021), but most engineers lack a vision of strategic design criteria for the principles of the foundations of the sustainable environment, (Ragheb and Ragheb, 2016; Ghernaout, 2017). Since environmental pollution is related to the internal and external environment with energy, emissions, liquid and waste. It is a need to consider the field of interior architecture as one of the essential pillars of sustainable development.

In this paper, we will discuss the strategies of sustainable interior architecture, and we will also propose "the criteria of the minimalism approach or the art of minimalism, as this strategy is suitable tool for achieving sustainable development goals. Here we ask:

- 1- Does the interior architecture in our Arab region meet the standards required to achieve the goals of sustainable development?
- 2- Is there enough societal awareness to achieve a sustainable green environment? There is no doubt that societal awareness is necessary and essential to educate individuals about the harms of an unhealthy environment and the negative consequences that result on health and the environment as a whole. It also illustrates the importance of adopting a pollution-free lifestyle approach in order to live in a clean and healthy environment.
- 3- What is the role of the engineer in the green interior architecture?
- 4- What are the barriers faced by sustainable interior architecture?
- 5- Does monitoring exist to achieve the sustainable development goals in the Arab countries?
- 6- The challenges faced by the Arab countries in achieving sustainable development.

Finally, we put forward some recommendations related to interior architecture that would lead to some solutions to mitigate or reduce the problem of environmental pollution, based on the conclusions.

Research problem: Pollution of the indoor environment is more harmful and has a significant impact on human health and livelihood, and this increases the rate of diseases and does not meet the criteria of sustainable development. On the other hand, the entire concept of sustainable development related to interior architecture is not clear and is not applied on the ground to achieve sustainability, as many engineers and individuals do not take the sustainable design approach, whether in external construction or internal implementation. The interior design process needs to take more careful

and serious steps to apply the principles of sustainable environment.

Research hypothesis: The hypothesis shows a clear neglect of meeting the sustainable development goals related to interior architecture, which leads to an increase in environmental pollution in addition to its negative impact on human health and life.

Research importance: Shedding light on the role of green interior architecture in creating a clean environment free of pollution while maintaining the artistic and aesthetic value in this field. As well as urging individuals to adopt a green lifestyle approach to mitigate diseases and support the sustainable development goals.

Research objectives: The aim of this research is to determine the cultural awareness of individuals and designers towards a pollution-free indoor environment. Thus, clarifying the concept and application of sustainable design strategies and adopt Minimalism Method, in order to protect and preserve human life and environment. Urging officials to develop a monitoring plan with the aim of achieving the design and creation of a sustainable indoor and surrounding environment free of pollution.

Materials and Methods

This research was prepared based on a descriptive-analytical approach based on the latest literature on contemporary issues related to interior architecture and design. Studying the concept and objectives of green/sustainable interior architecture, as well as guidelines and standards for sustainable interior design following the minimalist style.

sustainable design: The term sustainability means the preservation of the four resources: human, environmental, social and economic.

- 1- Human sustainability is the development of skills and human capacity to develop and support societies.
- 2- Social sustainability refers to preserving resources for future generations, as well as maintaining and improving the social quality of relations between people.
- 3- As for economic sustainability, it aims to improve the standard of living and social equality.
- 4- Therefore, environmental sustainability is raising the level of individual well-being by preserving natural resources without risking using the needs of future generations (Celadyn, 2019).

As for sustainable design, it is the pursuit of building healthier and more nutritious spaces for individuals,

taking into account the ability of nature to provide what is produced for the rest of the creatures and the future of future generations (Mohamed, 2015), nature is a source of health and nutritional life, where environmental awareness is the basis of the principles of sustainable development. Thus, there is a close interrelationship between sustainable architecture and sustainable interior architecture. Sustainable interior architecture is the process of building interior spaces responsibly for the environment, as we reduce emissions that harm the environment, go towards using recyclable environmentally friendly materials, go towards

renewable energy, reduce energy waste, and operate spaces with environmental treatments that provide comfort as they reduce damage. on consumers as well as on the environment (Konbr and Lebda, 2019), and the efficiency of water consumption. Sustainable architecture is green buildings that are designed and implemented with an approach that conforms to the principles of sustainable development, such as reducing environmentally harmful materials, which reduces the cost of construction, energy and operation, and improves the health of users and increases productivity (Habbak, 2020).

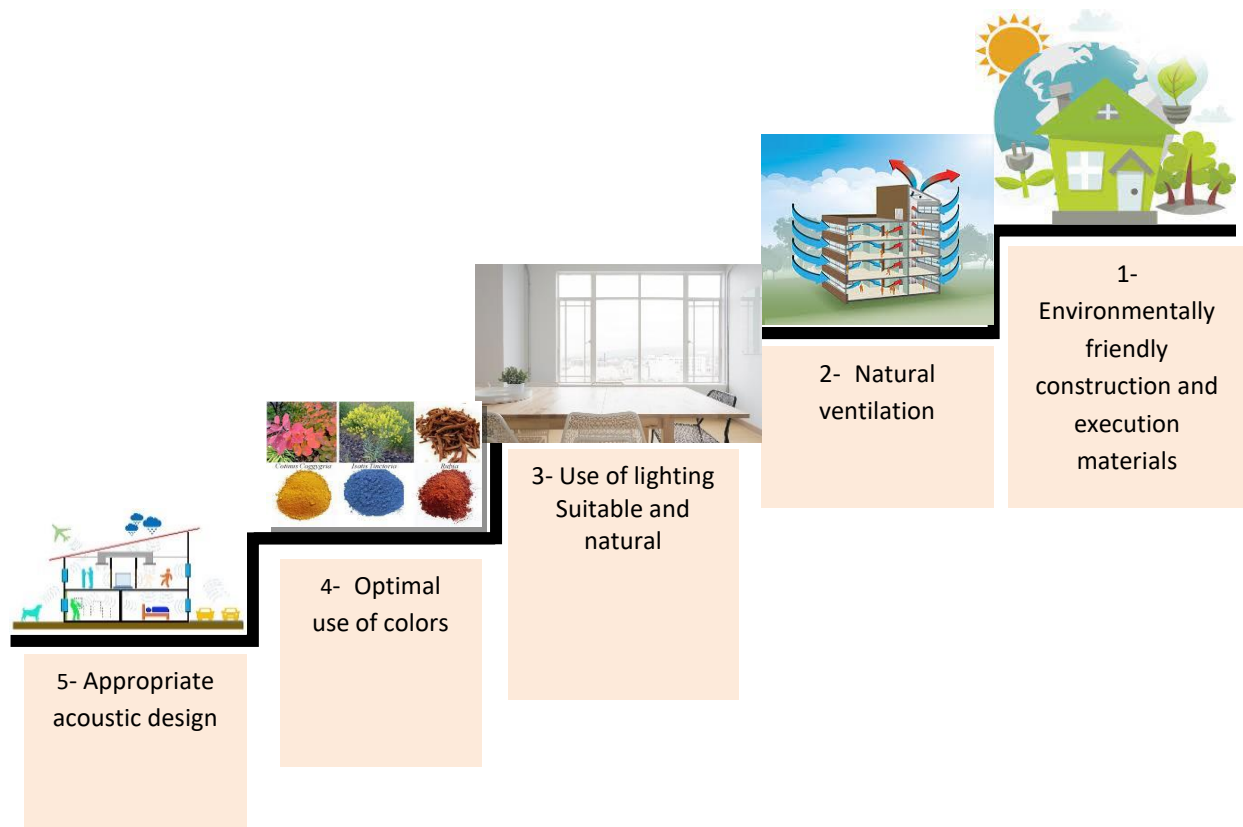


Figure (1): Green building specifications.

2- Principles of sustainable interior architecture: First, we often use the term green and sustainable in design without realizing the difference between these two terms. It is very important to distinguish between the two concepts “green design” and “sustainable design.” Green design includes the issues of people and their health, safety and well-being, while sustainable design is more inclusive, and focuses on the health, safety and well-being of the

planet (Hayles, 2015). The principles of sustainable interior architecture are based on recycled materials Recycling, such as wood, renewable energy, natural solar lighting, and materials used in homes aims at a healthy indoor environment. It focuses on the users' quality of life while at the same time applying the principles of sustainability to the environment.

3- Barriers faced by sustainable interior architecture: Although design engineers consider

sustainable environmental interior design to be of high value, they lack the incentive to search for sustainable materials and products due to insufficient material selection data (Hayles, 2015). In another research, it is clear that interior architecture designers choose materials based on customers' desires, needs and cost, without taking into account

sustainability criteria. Given that the selection of sustainable materials and products takes more time and effort, they considered that the data of materials and products are very necessary when presented (Moussatche et al., 2002), so that the interior designer can determine the products that achieve.

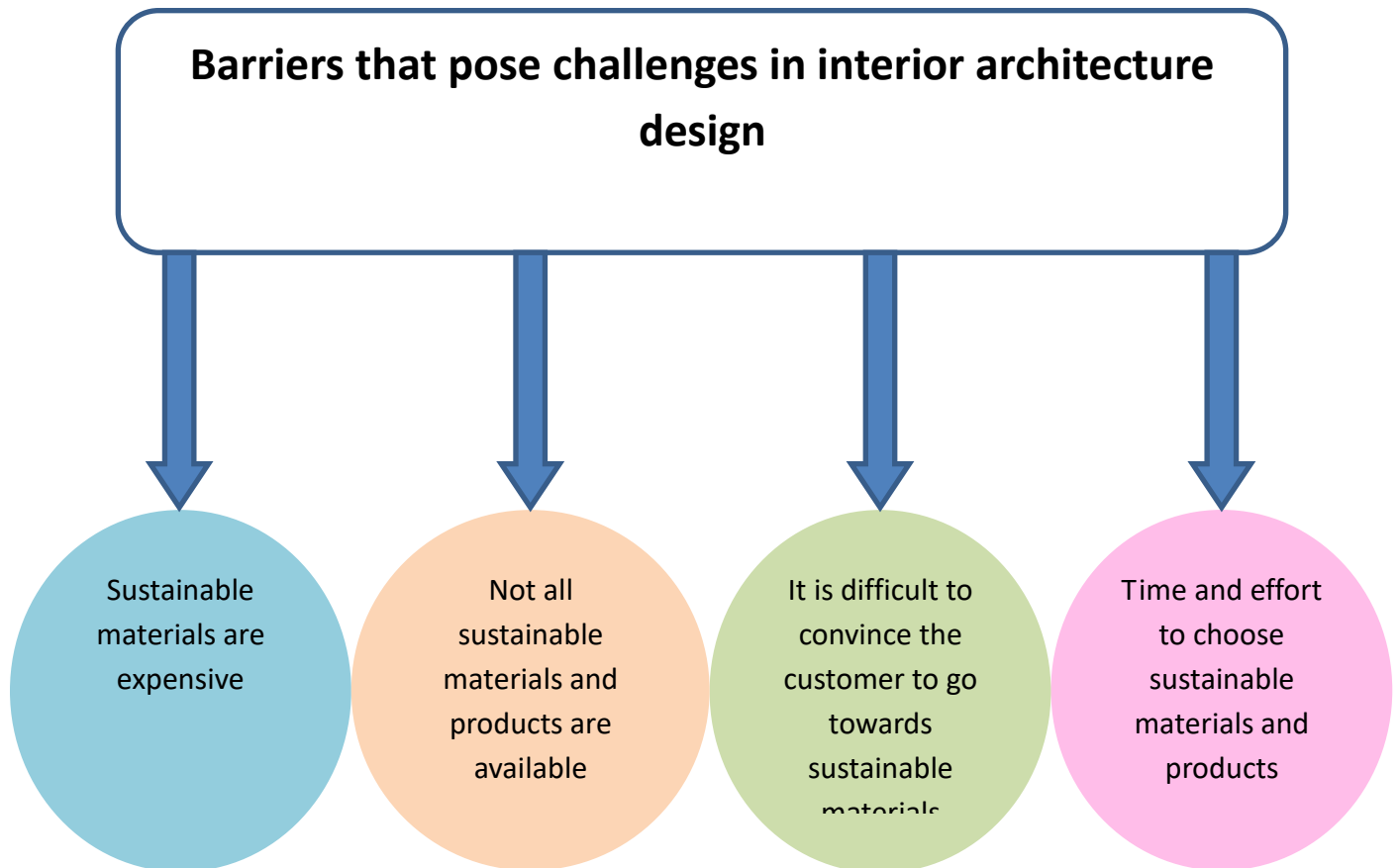


Figure (2): Sustainability with the least time and effort.

3- Sustainable interior design standards: Since interior designers have a great awareness of the principles of sustainable development, they can apply these principles when implementing and when selecting materials and products that comply with sustainability criteria.

It is required to build healthy spaces by choosing sustainable materials and products. They also have to choose the appropriate solutions to create a practical, comfortable and healthy interior environment with the presence of aesthetic factors that meet the requirements of the consumer, and taking into account the budget that also affects the

customer's decisions. On the other hand, clarifying and convincing the client of the positives of sustainability through healthy design and the selection of healthy materials that ensure a quality indoor environment and air free of pollution. In addition, providing smart solutions for interior design related to energy and water. Here are some suggestions that support interior designers to create healthy spaces.

3.1- Selection and evaluation of sustainable manufacturers: Find companies that manufacture on the basis of sustainability, and ensure their commitment to these principles, and that follow the

guidelines for submitting reports on the level of their commitment to sustainability, "Global Reporting Initiative", and designers should ensure the integrity and credibility of these companies that they do not use chemicals, which reduce the biodegradability of products and which harm Consumer health, in the processing of their products.

3.2- Data on sustainable products: These characteristics make it easier for the interior designer to choose and relieve him of effort and time. It also allows for a contrast between products and materials. The presence of data showing the measurement of effects from the beginning of its extraction from raw materials until the end of the product's life

3.3- Certificate of sustainable product: Product certification helps the designer to classify environmentally preferred materials to keep away from substances harmful to health and the environment.

4- Internal health standards:

4.1. The nature of indoor air

The quality of the indoor environment, which includes indoor air, lighting, water, contact with nature, comfort and electromagnetic fields, has the greatest impact on the health and comfort of the consumer of the space. Interior architects can use the indoor air quality assessment model, and since this is somewhat difficult to implement, they can collect air samples and analyze them in collaboration with experts, using software that checks the air flow within the spaces. There are effective tools smart "IAQ (Indoor Air Quality) in collecting and analyzing data about the content of unwanted substances in indoor air. This leads to knowing the source of the pollution and working on plans to remove these elements (Bonda and Sosnowchik, 2006).

4.2. Monitor harmful emissions: As stated in the statistics, 40 percent of global energy consumption comes from buildings, in addition to 25 percent of global carbon dioxide emissions. This, undoubtedly, has a negative impact on human health and the environment. Here comes the responsibility of the interior designer as a first role in providing strategies and plans for implementing interior designs that support the health and safety of the consumer and the environment. Therefore, we explained the importance of the designer's role in choosing materials and products. According to Bonda and Sosnowchik, GreenScreen for Safer Chemicals is an effective tool for interior designers that guides them in choosing materials that do not have any negative impact on the health of individuals and the

environment. It is a comparative method that contains standards, scorecards, and environmental labels. This tool is very effective because it contains support and development of a healthy design (Bonda and Sosnowchik, 2006).

4.3. Biodegradable materials: These are the products that decompose into harmless products by the action of living organisms, or any materials that decompose without leaving a harmful effect on the environment. Like natural materials such as burlap and wool (Bonda and Sosnowchik, 2006). This is what an interior designer should take into consideration.

4.4. Reduction of consumption: The professional interior designer can shorten the spaces, taking into account the requirements and needs of the client, by occupying the minimum amount of space and resources. The principle of merging and nesting can be used. These two principles are applied in design spaces for multiple purposes as well as for furniture for multiple and different uses.

Employing smart lighting technologies that suit different purposes. On the other hand, choosing durable materials and products that do not require constant maintenance (Rashdan and Ashour, 2017). These solutions are considered environmentally friendly as they last longer and are recycled, thus we have reduced waste.

Minimalist : The origins of Minimalism architecture began in the 1920s in Cubist designs for De Stijl & Bauhaus, that were based on simplicity and abstraction in art. They applied these principles to architecture whose philosophy is function and the lack of ornamentation in the outward appearance. The characteristics of simplified/minimalism architecture tend towards Form, Illumination, and Unification, and these characteristics are considered the essence or basics of minimalism (Minimalist Architecture, 2022).

The development of the minimalist approach to engineering during the twentieth century, a style of architecture simplified engineering with the concept of a lifestyle free of unnecessary things in the space in which we live. This style of life, as a result of its simplicity and elegance, produces great psychological comfort and mental treatment, as it provides a comfortable place for the individual to resort to, to escape from the congestion of daily life (Nikolić and Vasilski, 2017). Massimo Finelli says, "Reduce is the pursuit of the essence of things, not of their occurrence." The minimalist approach is to go after the basics, not the looks.

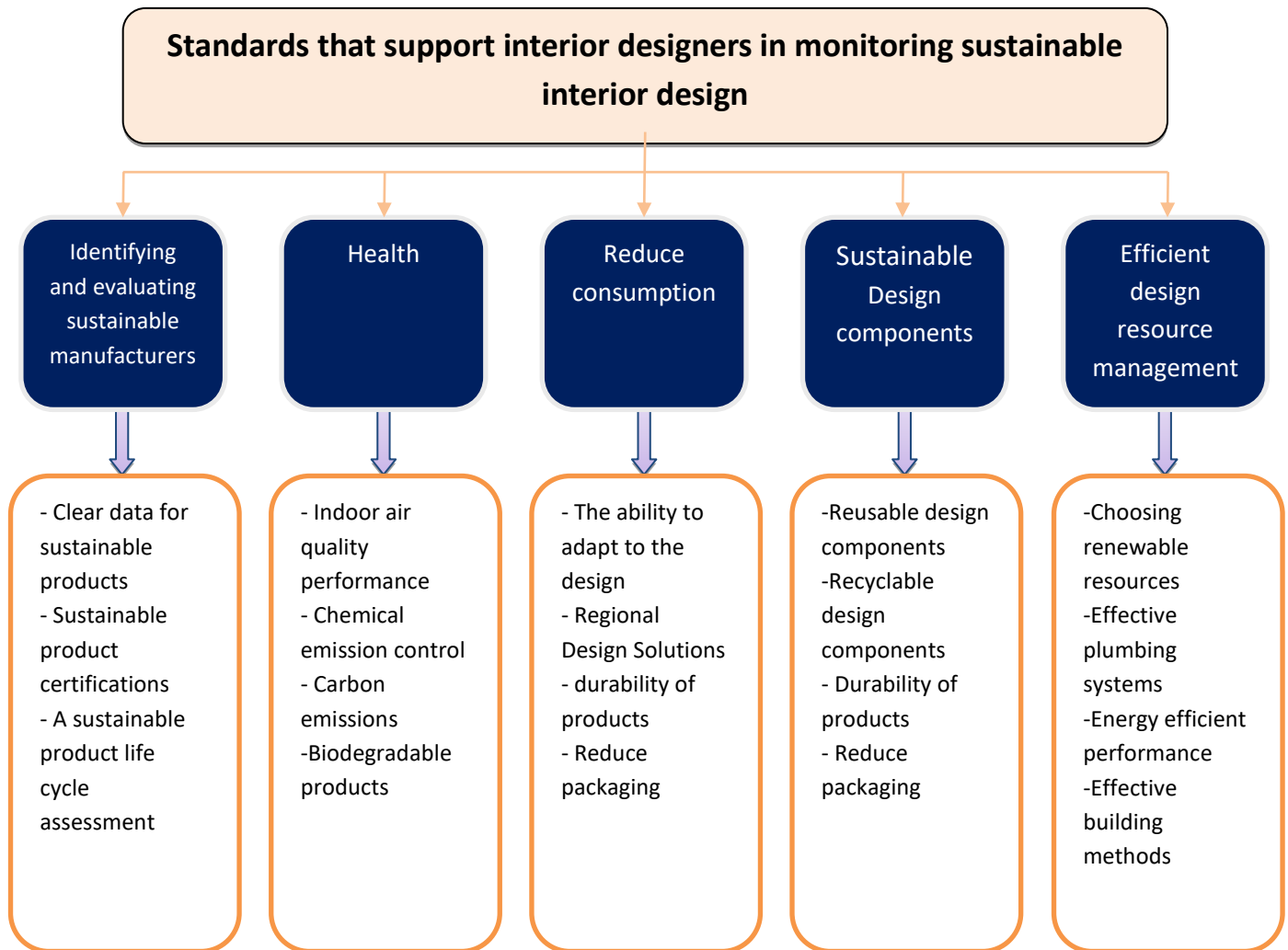


Figure (3): Standards to follow for sustainable interior design



Minimalism

Figure source: <http://www.home-designing.com/neutral-modern-minimalist-interior-design-4-examples-that-masterfully-how-us-how>



Maximalism

Figure source: <https://www.tidbitsandtwine.com/maximalism>

We note that there is a strong trend towards simplification in interior architecture in recent decades, and also in all respects, as the world has become more aware of the procedures that must be followed for their health and physical and intellectual integrity.

Here we suggest simple strategies for designers, and even individuals, to take to implement Minimalism for a healthier and more productive life:

- 1- Making the interior spaces open with outlets to connect the interior with the outdoor space/nature. This is what sends a sense of psychological, physical and mental satisfaction.
- 2- The use of light color palette tones, which makes the space appear larger.

3- Using one material for the surfaces, which contains the finishing with natural materials that fit the colors used in the interior space. It could be finished with wood, for example. Flooring also apply only one suitable material. Most of the time we stay on the concrete floor, flatten its surface and polish it. The concrete style is not only beautiful, but it acts as a thermal mass by maintaining the cool temperatures of the earth, slowly spreading it throughout the day to cool the interior spaces (Barari, 2022).

4- Take quality, not quantity. The beauty of the place is not the abundance of assets. The less furniture with high quality gives greater satisfaction. This also supports sustainability (Barari, 2022).

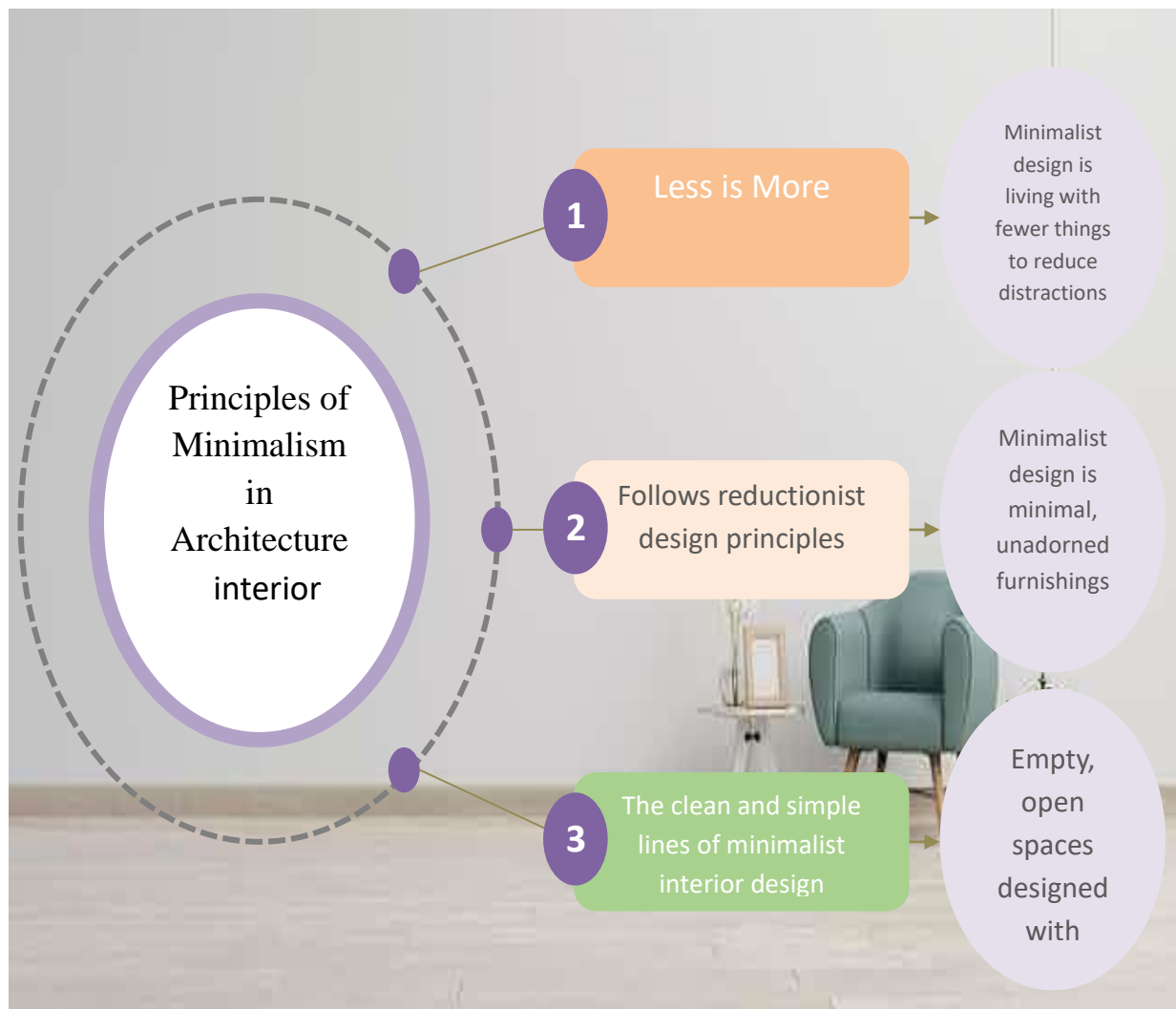


Figure (4): Minimalist process

Minimalist relationship to sustainable development:

As we mentioned earlier, the conditions for sustainable development are in three:

- 1- Maintaining environmental safety
- 2- Harmless economic systems and activities open to all.
- 3- All people achieve their universal rights and basic needs. Living in healthy and safe communities. Hence equality between all and non-discrimination. (Zafar, 2022).

Since the Minimalism is the life of the minimum, which is a method of reducing the consumption of luxury products, and wastage, one of the foundations of sustainable environmental development is to reduce the number of consumed products and try to reduce the consumption of natural resources. Here we see the relationship between sustainable development and the bottom line. One of the goals of the sustainable economic pillar is that it seeks that every person on the face of the earth will have enough money to protect themselves and their families. The minimalist/minimalist here seeks to focus on the important things rather than the money. This method eliminates waste as money is spent on important and necessary things. On the other hand, the minimalist approach focuses on morals and human values in society, and this is another link related to sustainable development that seeks healthy and safe societies.

The link between sustainable development and the minimalist approach is a sound approach to applying

one of the principles of sustainable development, which will also make a noticeable change if we work with it (Zafar, 2022).

Sustainable development in the Arab countries and the challenges they face

There is no doubt that the Arab countries are striving to achieve the goals of sustainable development, but if we look in general at the factors that surround this region, there are some goals that raise concern in their application, if in terms of economic growth in light of the conditions that the region is going through, especially after the Corona pandemic, which It led to significant repercussions, the rate of poverty increased in the Middle East and North Africa. However, it turns out that the rich Gulf states, Morocco and Jordan have made great progress in economic terms.

In terms of environmental development, climate change poses a threat to population presence all over the world, especially in the region, which represents a hot and dry environment in most of its regions, whose percentage may increase in the future unless reforms are taken.

Moreover, community development, which represents Goal 16 in sustainable development; what about the wars that occur in Iraq, Yemen, Libya, Syria, Sudan and most countries in the region? What about the prevailing corruption without accountability? (Assi, 2021) This increases the concern in achieving the sustainability goals.

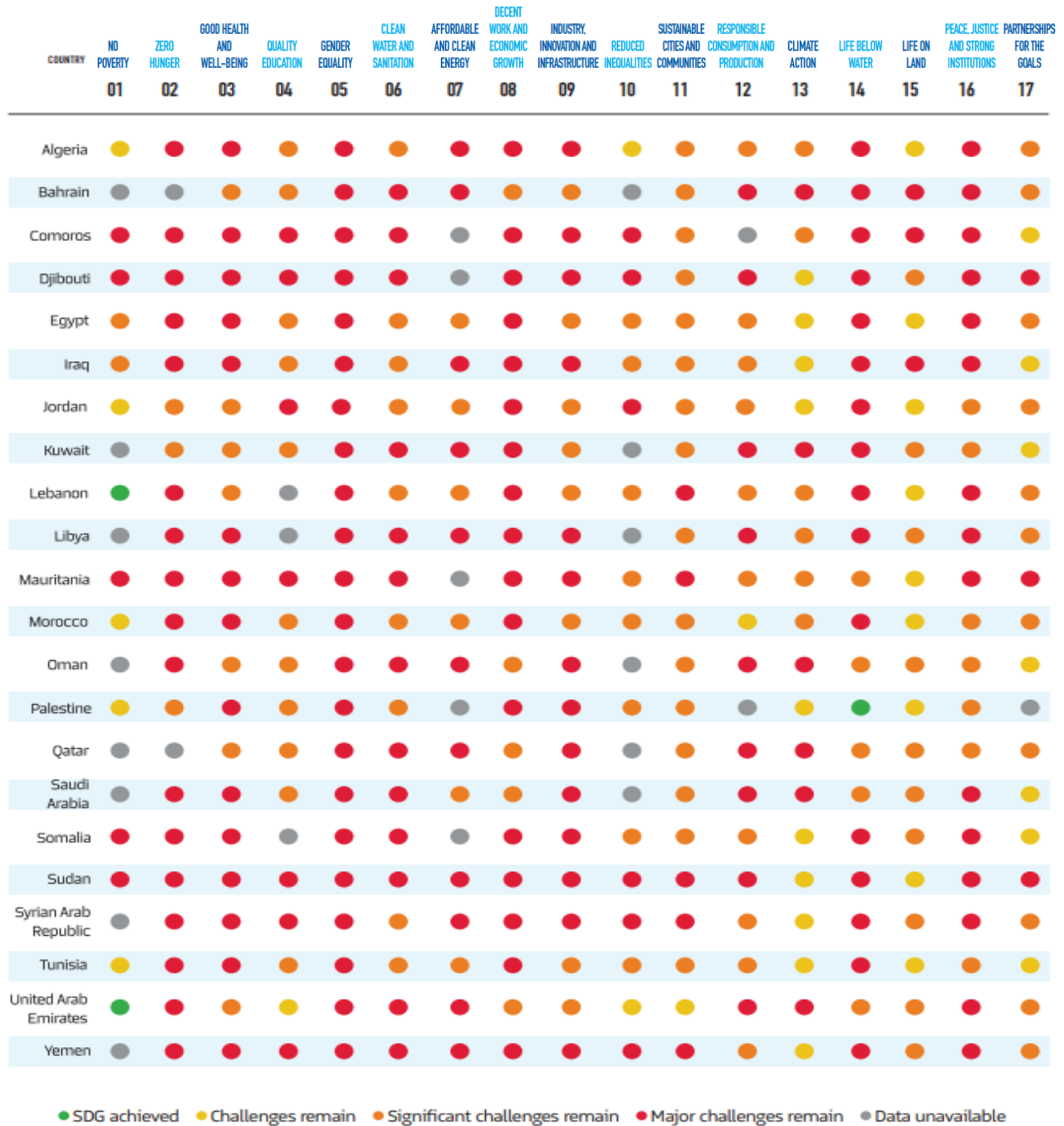


Figure (5): SDG Dashboard for the Arab Region

Information resource from: 2022 Arab Region SDG Index and Dashboard Report
 Bayoumi, M., Luomi, M., Fuller, G., and AlSarihi, A. 2022, with Salem, F. and Verheyen, S. Arab Region SDG Index and Dashboard Report 2022. Dubai, Abu Dhabi and New York: Mohammed bin Rashid School of Government, Anwar Gargash Diplomatic Academy and UN Sustainable Development Solutions Network.

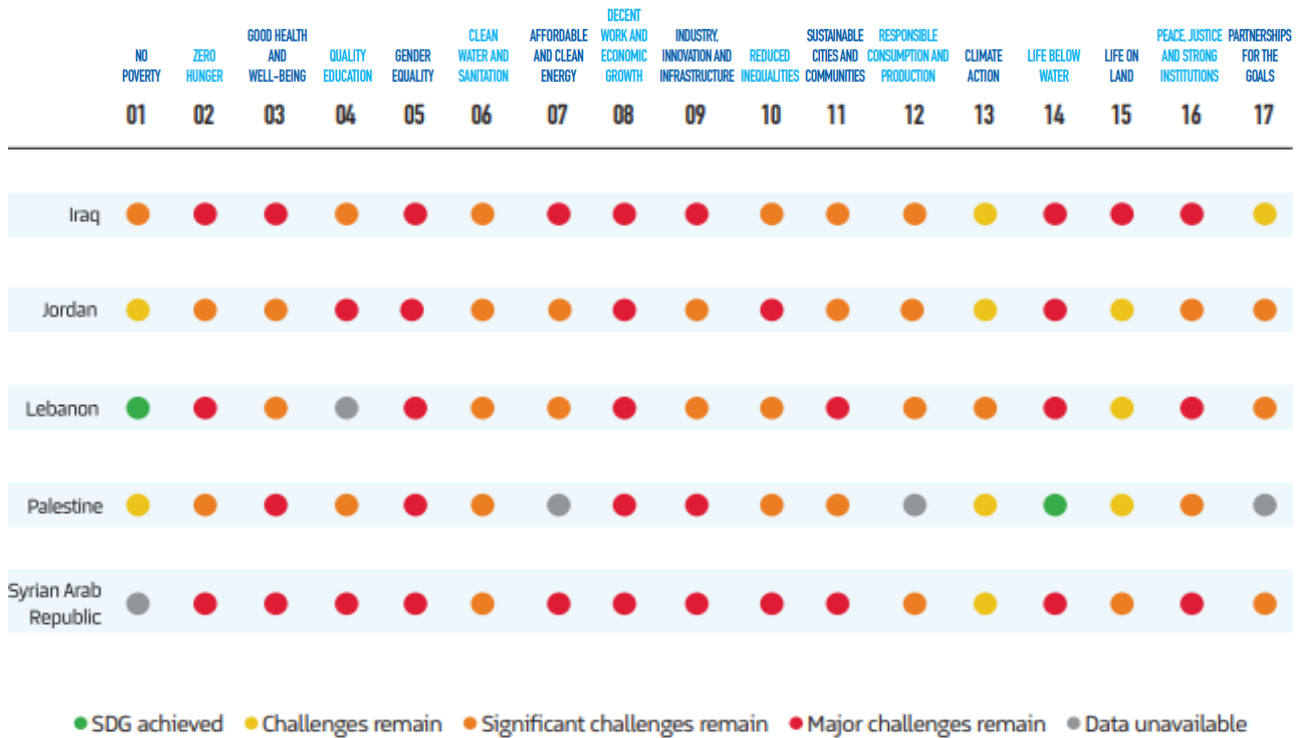


Figure (6): SDG Trend Dashboard for Levant and Iraq

Information resource from: 2022 Arab Region SDG Index and Dashboard Report

Bayoumi, M., Luomi, M., Fuller, G., and AlSarihi, A. 2022, with Salem, F. and Verheyen, S. Arab Region SDG Index and Dashboard Report 2022. Dubai, Abu Dhabi and New York: Mohammed bin Rashid School of Government, Anwar Gargash Diplomatic Academy and UN Sustainable Development Solutions Network.

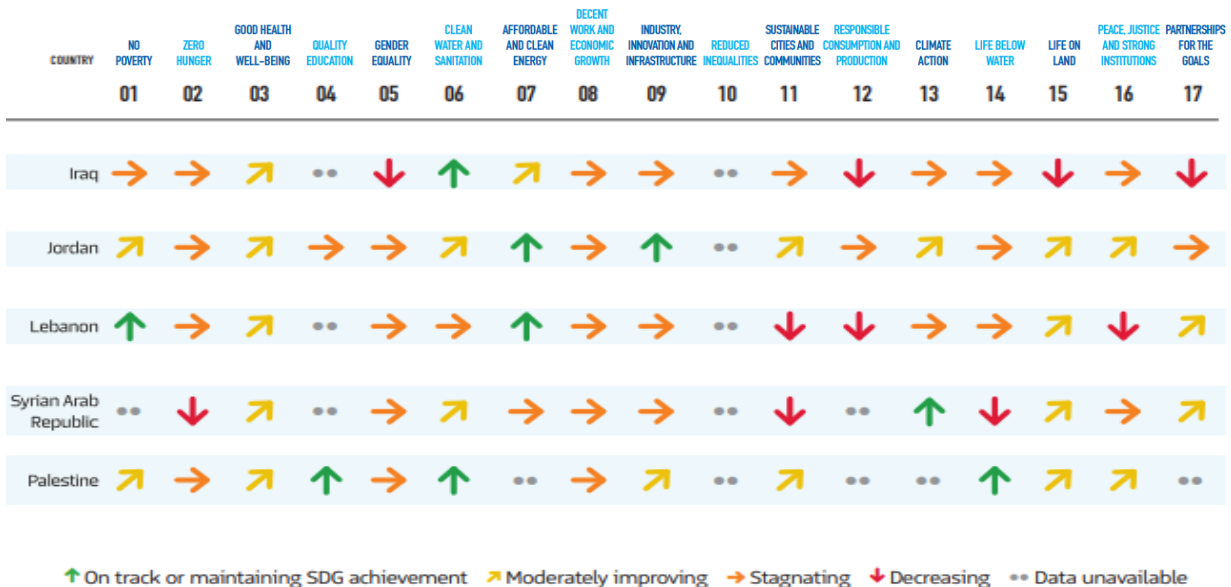


Figure (7): SDG Trend Dashboard for Levant and Iraq

Information resource from: 2022 Arab Region SDG Index and Dashboard Report

Bayoumi, M., Luomi, M., Fuller, G., and AlSarihi, A. 2022, with Salem, F. and Verheyen, S. Arab Region SDG Index and Dashboard Report 2022. Dubai, Abu Dhabi and New York: Mohammed bin Rashid School of Government, Anwar Gargash Diplomatic Academy and UN Sustainable Development Solutions Network.

Conclusions

Several basic aspects related to interior architecture affect the noticeable delay in achieving sustainable development. Environmental pollution resulting from factors, both natural and man-made, which negatively affect public health and environmental development, and on the other hand, lack of sufficient awareness and a lack of clear understanding of sustainable development for the consumer in order to adhere to serious measures to mitigate this pollution, as well as a lack of understanding It is clear for the materials and products used, especially in the internal environment in which he lives, which causes physical, psychological and intellectual diseases. Moreover, we find a small number of people who adopt the minimalist style, and this affects the quality of life in all its aspects, health and even economic. On the other hand, despite the development in the concept of sustainability and environmental conservation, most of the interior architects do not apply it accurately, which puts the internal environment of the spaces unhealthy, as well as the style of designing the interior spaces and components as well as the products are also environmentally responsible. Therefore, the lack of clear data for materials and products with most suppliers, which leads to the selection of these products without making a sound decision. As for the oversight from the responsible authorities, it is not available and there is clear negligence, which makes the matter worse. The conclusions we have reached and working on them seriously supports the sustainable development goals, while taking serious steps to achieve before 2030.

Recommendations

- 1- It is necessary to clarify the concept of sustainable development to the general public and its impact on health, environment and society through the media and direct social communication.
- 2- Clarify the importance of adopting a minimalist approach to consumers and its impact on their health and economic life.
- 3- Guiding interior designers and architects to the need to take into account sustainable development and work seriously on its objectives.
- 4- Putting control over suppliers for the absence of clear data that works on the accuracy of selecting materials or products for the engineer or the consumer, and therefore a penalty is applied for the violator.
- 5- Educating students in Arab countries in schools and universities on the importance of a minimalist

lifestyle for a healthy life, economically, environmentally and intellectually, through training and guidance. Further, the implementation of the sustainable development goals.

6- The government should set strict laws for interior architects, obligating them to adhere to the principles of sustainable development and apply them accurately, and issue a decree to punish the violating engineer by dismissing him from practicing the profession.

7- It is necessary to cooperate between the interior architecture and the architect from the beginning of the project when drawing up the plans through appointing an interior designer who has sufficient awareness of the goals and principles of development Sustainable and certified by trusted bodies. With this step, the internal engineer is responsible for his choices and under the supervision of the concerned authorities.

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