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The Green Library Project in Algeria

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Abstract:

The study examines the "Green Library Project in Algeria," a significant initiative aimed at promoting environmental and cultural awareness and sustainable learning. It uses a descriptive methodology to analyze relevant documents and sources. The objectives include identifying green libraries' significance, reviewing international examples of successful projects, exploring Algeria's green library practices, identifying potential challenges and opportunities, and providing recommendations to enhance the project's effectiveness.

Keywords: Green Library; Sustainable Development; Sustainability; Green Library Project; Algeria[1].

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1.Introduction

Algeria, like many other countries, faces significant environmental challenges that require serious measures to address and work towards achieving sustainable development. In the context of sustainable development, green libraries play a crucial role in providing information and resources to enhance environmental awareness and encourage sustainable practices within society. (James and Suzanne Le Rue, 1991)

This study aims to explore the Green Library Project as an applied study in Algeria and analyze its impact on achieving sustainable development. Various aspects related to the Green Library Project will be addressed, starting from defining the concept and its components to its importance, challenges, and development prospects.

In recent decades, Algeria has witnessed an increasing interest in sustainable development and environmental conservation. In this context, green library projects have evolved as pioneering initiatives aimed at integrating environmental practices and sustainability in public libraries. (James and Suzanne Le Rue, 1991, p. 36)

Green libraries are considered places that reflect a community's commitment to sustainable development and environmental preservation. These libraries offer a diverse range of resources and services that enhance environmental awareness and encourage the adoption of sustainable environmental measures in people's lives.

Algeria is home to a significant number of traditional public libraries. To keep pace with global developments and achieve sustainability, Algeria has begun exploring the idea of establishing the Green Library Project as a new model for public libraries. This project aims to integrate environmental and sustainability concepts into the design and operation of libraries, providing resources and information related to the environment and sustainable development to the public.

With increasing environmental awareness and growing interest in environmental protection, green libraries in Algeria have become effective tools for promoting awareness and encouraging positive changes in societal behaviors. These libraries offer a variety of services and resources that contribute to raising awareness about environmental issues and sustainable development, such as books and journals on the environment and information about sustainable environmental practices and modern technologies in this field.(Brown, 2003, p. 20)

Overall, this study can contribute to enhancing environmental awareness among the public and encouraging a shift towards more sustainable behaviors. By providing environmental resources and information, green libraries in Algeria can be catalysts for the implementation of sustainable environmental practices in people's lives and promote positive engagement with local and global environmental issues.

Furthermore, the study will serve as a foundation for future research in the field of green libraries and their role in achieving sustainable development. The results and

recommendations may guide sustainable development policies and plans in Algeria and foster partnerships between environmental institutions and public libraries. Therefore, we hope that this study will be a significant step in enhancing the role of green libraries in Algeria and achieving a positive and sustainable impact on society and theenvironment. This will require collaboration between relevant authorities, libraries, governmental institutions, and civil society to support and strengthen these environmental initiatives and achieve sustainable development goals in Algeria.
This has led us to raise the following questions in the study:

- What is meant by green libraries? What are the requirements for implementing this project?
- What are the prominent international models of green libraries?
- What are the essential practices and programs used by green libraries in Algeria to promote sustainable development?
- What are the challenges facing the Green Library Project in Algeria concerning management, funding, and awareness?
- How can the effectiveness of the Green Library Project in Algeria be improved to achieve sustainable development goals?
- What tools and metrics can be used to measure the impact of the Green Library Project on achieving sustainable development?
- What are the lessons learned and recommendations that can be derived from the experiences of green libraries in other countries and applied in the Algerian context?

2. The importance of the study

The importance and benefits of the Green Library project in Algeria and its role in achieving sustainable development are highlighted. Through the study, we can understand the positive impact of green libraries on the environment and society and how the effectiveness of this project can be enhanced. In addition, the study contributes to successful models and experiences around the world for green library projects, thus enriching knowledge and practices in this area. The study also provides recommendations and proposals for the improvement and development of the Green Library project in Algeria, which promotes sustainability and a trend towards environmental conservation and sustainable development in the country.

3. Objectives of the Study

An analysis of the role and impact of the Green Library project in promoting sustainable development in Algeria
Identify the challenges and opportunities facing the Green Library project in Algeria.
Recommendations for enhancing the effectiveness of the Green Library and improving its performance in achieving sustainable development

4.Methodology:

This study was completed using the documentary approach, which aims to collect and analyze available documents and sources relevant to the problem of research. This approach was applied in order to conclude evidence concerning the problem of searching and answering his questions. The documentary method is used when there is a need to answer questions about current reality using contemporary sources.

All the sources relating to the concept of green libraries, which is the subject of the study, have been collected, and information has been extracted to help answer the questions of the study and to describe and analyze the phenomenon considered with regard to the criteria for it.

5.Previous studies

5.1. White, M., &Kahl, C. (2018). Green Library: Library Design for Sustainability American Library Association.

Focus on designing libraries in ways that promote environmental sustainability. The review covers topics such as reduced energy consumption and resources, the use of environmentally friendly materials, and the integration of renewable energy technologies in libraries.

5.2. Owen, P., & Hill, J. (2011). The Greening of Libraries, Library Journal, 136 (20), 34–37.

This article highlights efforts to make libraries more sustainable. Address the concept of green libraries, environmental guidance techniques, waste management, energy in the infrastructure, and day-to-day operations of libraries.

5.3. Hollister, C. V. (2016) Greening Libraries. In Reference and Instructional Services in the 21st Century (pp. 115–125). IGI Global.

This study elaborates on how to apply the environmental concept to libraries by analyzing the contents of previous studies. Focus on the use of standards for green libraries, the design of environmental spaces, and the adoption of environmentally friendly waste management practices.

5.4. Matthews, J. R. (2015) The Eco-Library Design: How Sustainable Design Can Reduce Environmental Impact Chandos Publishing.

This study focuses on how libraries are designed in ways that minimize their environmental impact. Includes a review of environmentally friendly architectural concepts and practices and sustainable environmental technology that can be applied in the design of libraries. (Aulisio, 2013)

5.5. Bowman, M., & Willis, J. (2017) Greening Libraries: A Guide to Developing Sustainable and Resilient Buildings and Organizations Facet Publishing.

This study focuses on the provision of a comprehensive guide aimed at promoting sustainable library practices. The guide addresses topics such as waste management, renewable energy use, water supply, environmental space design, and environmental

awareness for staff and visitors. The guide is characterized by practical examples and successful experiences of applying sustainable practices in libraries around the world.

5.6.Some common points and differences between these studies

5.6.1.Common points:

- All studies focus on achieving environmental sustainability in libraries and promoting green practices.
- All studies include the use of environmentally friendly materials and renewable energy techniques in libraries.
- Each addresses the importance of waste management and improving energy and resource efficiency.
- Highlights the importance of providing guidance to visitors and staff on environmental sustainability and environmental awareness.

5.6.2.Differences:

- Study 1 focuses more on the design of libraries and the use of environmentally friendly materials, while
- Study 2 addresses various aspects such as waste management and energy provision.
- Study 3 has deepened the analysis of criteria for green libraries and the design of environmental spaces.
- Study 4 focuses on the application of environmentally friendly architectural concepts in the design of libraries.
- The study provides five comprehensive guides covering a wide range of sustainable library practices.

6.Green libraries

Green libraries are designed to minimize the negative impact on the natural environment and maximize the internal environment through accurate site selection, the use of natural building materials and degradable products, resource conservation (water, energy, paper), and responsible waste disposal (recycling, etc.) in construction as well as the renovation of libraries. Green libraries are increasingly achieving sustainability through a certificate of leadership in energy and environmental design, a system of classification for developments that has been managed by the American Green Buildings Council. (Stands, 2013)

Green libraries are part of the movement of large green buildings, also known as sustainable libraries, where they have been built around the world in partnership with many outstanding projects that have taken the lead. Green design is an emerging trend (along with the library, as it determines the design of libraries in the twenty-first century). Many see the library as having a unique role in the movement toward green

buildings because of its altruistic message, its general and educational nature, and the fact that new libraries are usually high-profile projects supported by society. (Hauke, 2013)

6.1.Green Library

The Green Library is defined as a library aimed at supporting environmental sustainability and environmental protection through sets of materials and services related to environmental themes and sustainable development.

The Green Library is more than just a place to provide environmental information and sources; it also seeks to provide space for communication and interaction and to promote environmental awareness in society. (American, 2019)

6.2. Environmental sustainability

The term Green Library refers to practices and services aimed at balancing current and future needs of the environment, promoting conservation of natural resources and biodiversity, and reducing negative environmental impacts.

6.3. Provision of environmental information:

The Green Library collects, organizes, and provides environmental information, including books, magazines, reports, and materials on the environment and sustainable development.

This information is aimed at promoting environmental awareness, enabling the public to make sustainable decisions, and participating in the resolution of environmental problems. (Connell, 2010)

7.Green library requirements

There are many ways to define a library as a green library, but there are many themes and key points common to all of them, all of which are involved in trying to reduce the negative impact of the building on the local environment while trying to create a positive impact if possible, and to reduce the use of water and energy by designing the building in a way that increases the use of natural and renewable resources while integrating green spaces and real vegetation into the site and design of the building - preferably using drought-resistant plants or using local plants; in addition, maintaining indoor air quality within high levels to help ensure the health of people living in the building. (Kumar, 2014)

7.1. Leadership in energy and environmental design

Although there are many ways to make sustainable design work, the emergence of this trend has created a very large demand for it. The non-profit organization in the United States, the United States Green Buildings Board, developed in 2000 a system of classification for leadership in energy and environmental design. Their point-based classification contains a total of 100 possible basic points, as buildings can be classified as approved when they get 40 points, silver when they get 50 points, gold at 60 points, or platinum when they reach or exceed 80 points. Leadership in energy and

environmental design uses five different categories to judge the sustainability of the building: construction site, water conservation, energy efficiency, building materials, internal air quality, and an additional category of innovation and design. As of 2003, libraries represented 16% of all pilot projects in energy and environmental design. (Clement, 2017)

7.2.Special requirements

Sustainable library design is generally closely linked to the movement toward green buildings, but libraries still have special needs that pose some added challenges to green builders.

The greatest challenge for them was to balance the sometimes conflicting needs of pastoralists and materials. Maintaining knowledge has remained a key task for libraries to make it transferable to future generations. Written and printed books have been the dominant method of doing so for more than a thousand years; although they still play a very important role in preserving knowledge, the Internet is now the preferred means of obtaining information for many people. Books must stay away from high temperatures, humidity, and sunlight in order to preserve them, although many individuals find reading under the sun to be more enjoyable. Sunlight plays an important role in green design because it can be used to reduce reliance on industrial lighting. The libraries previously needed to be protected from harmful ultraviolet radiation from the sun, and fortunately, (Chawner, 2019)

Recent developments in glass manufacturing technology over the past 10 years have given designers greater flexibility in their ability to use glass in their designs.

Another challenge that has often been ignored is the weight of books. The common strategy is to go green by upgrading the floor to increase the blood circulation rate, but the weight of book packs can be an obstacle to this strategy. Many designers have resorted to this challenge to divide the library into specific areas so that these strategies can be activated in specific regions and alternatives can be used in other sections. The libraries must be built flexibly in order to open the way for expansion in size and connectivity. Library buildings are long-term investments within society, so architects must look at the design 50 or 100 years in the future. These obstacles do not pose insurmountable challenges to green libraries. The special requirements of the Library will only need to be taken into account at the outset of the project.(Prytherch, 2019)

8. How does the library become a green library?

Green design is an integrated process with no one side that can make the building qualify as a green building. Frequency sometimes occurs without proper integration from the start of the planning phase, eliminating many of the potential benefits of sustainable design. Good, sustainable design benefits from synergies among different design elements. Leadership in energy and environmental design

combines these elements into five categories, and buildings can be designed in such a way that good design in one category helps another achieve its goal. (Kahl, 2021)

8.1. Selection of the Site

The site must be selected before the planning of the construction process begins because of its significant impact on the suitability of the library for the environment. The energy and environmental design leadership system has a large number of guidelines to assist in the site selection process, and there are many questions and points that need to be considered to help guide the site selection process, such as: What kind of impact will the construction have on the local environment? Will there be erosion? What do you do to prevent the effects of storms? Is the site already green? In addition to the requirement that the library be in a densely populated area and located close to other buildings with similar services so that people can access the building through public transport, the priority use of parking must be for those using power-saving vehicles. The effect of the thermal island phenomenon is reduced by shaking solid surfaces, putting them underground, or building a vegetarian roof (energy and environmental design leadership system). (Johnson, 2020)

8.2.Water conservation

A number of libraries, among the various water conservation methods, rely on choosing the appropriate location to do so. If the site is chosen correctly, different strategies can be used to absorb the flow of rainwater and use it for irrigation. Another strategy used is the use of flow combinations. (Watson, 2016)

8.3.Energy conservation

Many consider energy to be the most important group that must become sustainable, as well as having the highest value among all groups in the classification of leadership in energy and environmental design. Energy-saving design is a return to the principles ofnegative design that have evolved over thousands of years in many ways and that were used until air conditioning and cheap energy appeared and made these strategies unnecessary. Buildings were designed to eliminate the effects of the external environment as air conditioning became readily available. In the campaign for greening the Library, Lemis explained this point when he compared two libraries built in the early 20th century, the New York Public Library and the Boston Public Library, with two recently built libraries, the Chicago Public Library and the Phoenix Public Library. The old libraries contain narrow interior spaces that facilitate access to natural light and air, while the modern libraries have large spaces with internal distances away from the outside environment that make it impossible for light and air to reach, making them more dependent on artificial temperature control systems. (Watson, 2016)
Building designers have begun to realize that the external environment can no longer be ignored but must be taken advantage of. The designers of the twenty-first century

have begun to apply the old principles of passive design while taking advantage of the latest available techniques.

Negative strategies vary according to location but are always implemented to take advantage of natural elements, especially wind and sun, to control temperature and provide ventilation and light. Active strategies are more technologically advanced solutions, including the use of different forms of renewable energy sources and light control sensors. The use of solar cells that transform solar light into energy is becoming increasingly common to reduce dependence on industrial energy. The libraries combine negative (active) and effective strategies to maximize energy efficiency and comfort.(Carmona, 2021)

9. International models of green libraries

There are many similar green library projects in the world that are considered inspirational models of sustainability and environmental orientation in libraries. They are characterized by unique architectural designs and the use of techniques and practices aimed at reducing environmental impact and promoting environmental awareness among the public. It is important that we identify these projects and draw on the lessons and principles that can be applied to the Green Library project in Algeria. Knowledge of similar models will provide insights and inspiration for the design, planning, and implementation of the Green Library. Some examples include:

9.1. The Tree Library Project in Berlin, Germany

This library is another example of a green library. It is characterized by its innovative design that integrates nature and architecture. The library contains a garden on its surface with trees and plants, which provides a unique experience for readers. In addition, the Library uses renewable energy techniques and promotes environmental awareness and sustainability through its events and programs. (Onuoha, 2021)

9.2. The Solar Library Project in India

The Library relies on solar energy as a major source of operation. Solar panels installed on the roof of the library are used to generate electricity that feeds lighters, computers, and other devices. This library is a successful model for green libraries that relyon the use of clean and renewable energy in their operations, thereby reducing harmful emissions to the environment and improving environmental sustainability. (Ngulube, 2021)

9.3. Millenium Park Library in Singapore

This library is one of the most prominent examples of a green library. Designed in a sustainable manner and based on green construction techniques and the use of renewable energy. The library contains public parks, green surfaces, a water recycling system, and renewable solar energy systems. The Library also aims to promote environmental awareness and encourage reading and learning among the public.

9.4. Cole Library in Denmark

This library is another example of a successful green library project. Designed in a sustainable and intelligent manner, using renewable energy techniques, advanced thermal insulation, and natural ventilation to reduce energy consumption. The library contains green buildings, public parks, and outdoor spaces. The Library aims to provide an enabling environment for reading and learning and to promote environmental sustainability in the community. (Connell, 2010)

9.5. Forrester Library in Germany

This library is a unique green project. Designed on the basis of environmentally friendly building materials and renewable energy techniques, such as solar energy and bioheating systems. The library also contains green gardens and rooftops.

9.6. The Sustainable Library Project in Sweden

This project is an excellent model for the Green Library, where the building is designed and constructed in sustainable ways and environmentally friendly materials are used. In addition, the library has been equipped with renewable energy systems such as solar panels and rainwater harvesting systems. The library aims to promote environmental awareness among the public and provide resources and information on environmental sustainability. (Clement, 2017)

9.7. "The Green Library" project in the Netherlands

The project is environmentally designed to reduce energy consumption, improve air quality, and sustain resources. The Library includes solar lighting systems, a sustainable heating system, and an innovative ventilation system. In addition, the Library provides green indoor and outdoor spaces for readers to enjoy nature and promote health and well-being.(Aulisio, 2013)

9.8. The Living Library Project in Denmark

is a great model for the Green Library. This project is characterized by its sustainable design and the use of environmentally friendly materials in construction. The library's Smart Energy Management System, which aims to reduce energy consumption and improve energy efficiency, is provided. An innovative natural lighting system based on the optimal use of natural light is also provided, which reduces the library's reliance on artificial lighting and provides energy.

9.9. The Eco-Library in Canada

Reflects its commitment to environmental sustainability The project is characterized by its environmental design, which relies on the use of renewable materials and renewable energy. The library was equipped with rainwater harvesting, waste management, andsustainable heating systems. In addition, the Library provides green areas, both internal and external, to enhance connections with nature and improve air quality. (American, 2019)

9.10: Japan's Digital Sky Library

The Tokyo Digital Sky Library is a leading example in the field of green libraries. The Library is characterized by its sustainable design and use of modern techniques in the display and management of digital materials. The Library provides easy and comprehensive access to digital resources in a sustainable environment. (Hauke, 2013)

9.11: Forest Library in Brazil

The Forest Library was built in the Brazilian city of Manaus and is one of the largest green libraries in the world. The Library provides a sustainable environment and promotes environmental awareness by providing a variety of books and teaching materials on forest conservation and biodiversity.

By analyzing these similar models, we can draw some lessons that can be applied in Algeria. One of these lessons is investing in the design of green buildings and the use of environmentally friendly materials in construction. Emphasis should also be placed on the use of modern technologies to improve energy efficiency and resource management. (Johnson, 2020)

10.Project advantages

10.1. Improving resource sustainability

Green projects aim to achieve resource sustainability through the effective use of environmentally friendly materials, energy supply, and waste management techniques.

10.2. Energy saving

Green libraries are designed to be energy-efficient through the use of natural lighting systems, sustainable heating, and electricity generation from renewable energy sources such as solar panels. (Kumar, 2014)

10.3. Improving internal air quality

Green libraries are designed with advanced ventilation systems and the use of high-quality air materials, resulting in a healthy and comfortable environment for visitors and staff. (Chawner, 2019)

10.4. Enhancing environmental awareness

Green libraries provide an opportunity to raise awareness and knowledge about environmental issues and sustainability and encourage visitors to take positive environmental action.

11. **Deficiencies in projects:**

11.1. Highercost:

Green projects may be more expensive in design and construction than conventional ones, owing to the use of environmental materials and renewable energy techniques.

11.2. Technical challenges

Green projects may face technical challenges in applying new and advanced techniques and ensuring the effectiveness and sustainability of the systems used.

11.3. Maintenance and operation

Green projects may require additional maintenance and care to maintain the efficiency of the environmental systems used, which may increase the costs and efforts required to maintain sustainable project performance. (Watson, 2016)

11.4. Design and material constraints

Green projects may face design and selection constraints for environmentally friendly materials, as some technical options and materials may be expensive or not readily available on the local market.

11.5. Local climatic and environmental factors

Climate and environmental factors vary from State to State, and a challenge may be adapting green projects to local conditions and ensuring their sustainability under those factors.

It should be noted that, although there are some possible shortcomings, green enterprises are considered a useful investment in a sustainable future, contributing to environmental protection, environmental awareness, and a healthy environment for the public and staff. The use of these projects could be enhanced by examining the experiences of other countries, analyzing advantages and disadvantages, and applying lessons learned in the Algerian context.(Aulisio, 2013)

12. Possible challenges to the implementation of these projects in Algeria:

12.1. Awareness and education

Additional efforts may be needed to raise awareness and educate the public about the importance and environmental benefits of green libraries. This may require awareness-raising campaigns and targeted educational programs to publicize environmental concepts and the importance of environmental conservation.

12.2. Financial resources

Financial resources can be a challenge in the implementation and maintenance of green libraries, as this may require adequate budgets to build and operate these projects. Sustainable financing mechanisms must be considered and built on partnerships with the private sector and environmental and government institutions.

12.3. Technology and infrastructure

There may be a need to modernize and improve infrastructure and information technology in Algerian libraries to support the application of environmental projects. This may require additional investments in improving access to the Internet and information technology and developing digital applications and platforms for the exchange of environmental knowledge. (Chawner, 2019)

12.4. Environmental legislation and policies

There must be strong and supportive legislative frameworks and environmental policies for the implementation of environmental projects, such as promoting the use of renewable energy, environmentally friendly materials, and waste management. Coordination between government agencies and relevant institutions should be

strengthened for the development and effective implementation of appropriate environmental legislation in Algeria. Support and encouragement should be provided by stakeholders to stimulate and facilitate the implementation and operation of green libraries in line with national environmental conservation policies. (Prytherch, 2019)

12.5. Adaptation to local culture

Green libraries in Algeria may face challenges in adapting to local culture and customs. Diversity must be respected.

Algeria could benefit from lessons learned from similar examples of green libraries in the areas of environmental awareness, environmental sustainability, and community participation by building on the successes and challenges faced by other States. Potential challenges must be taken into account and adapted to the local context to ensure the successful and sustainable implementation of environmental projects in Algeria. (Ngulube, 2021)

Improving the effectiveness of the Green Library project in Algeria to achieve sustainable development goalsTo improve the effectiveness of the Green Library project in Algeria and achieve **the Sustainable Development Goals, the following actions can be taken:**

13.1: Develop a comprehensive strategy.

An integrated strategy should be developed to specifically achieve sustainable development goals. This strategy should include a careful analysis of potential challenges and opportunities and the identification of appropriate priorities and actions to achieve sustainable change. (Lamia, 2022)

13.2. Education and awareness-raising

Education and awareness of environmental issues and sustainability among the public and visitors to the library should be promoted. Workshops, seminars, and educational events can be organized to raise awareness of environmental challenges and the role of the Green Library in their resolution.

13.3. Strengthening partnerships

Cooperation and partnerships with local and global sustainability institutions and bodies must be strengthened. Work could be done with environmental associations, government institutions, universities, and local companies to exchange knowledge and experience and promote cooperation in the area of sustainable development.

13.4. Improved environmental infrastructure

The Green Library must serve as a model for sustainable environmental infrastructure. Actions can be taken to improve energy efficiency, water supply, waste management, environmentally friendly building materials, and effective and sustainable lighting systems.

13.5. Providing sustainable sources

The use of sustainable sources in the Green Library, such as the provision of books and paper materials from sustainable sources, such as recycled paper, should be promoted, and the use of digital and electronic technologies should be encouraged to reduce paper consumption.

13.6. Promoting community participation

The Green Library must be a community center that promotes community participation. Events and activities involving the local public, schools, and non-governmental organizations can be organized to increase awareness and participation in environmental and sustainable development issues. (Clement, 2017, p. 10)

13.7. Impact assessment and control

The environmental and social impact of the Green Library project should be assessed and monitored on a regular basis. Tools and benchmarks for environmental impact assessment and sustainability, such as environmental impact analysis and sustainable reports, can be used. (American, 2019)

13.8. Ongoing outreach and outreach

There must be ongoing outreach and awareness-raising efforts for the Green Library project and its environmental and social benefits. Various media, such as websites, social media, and public publications, can be used to disseminate knowledge and raise awareness of the importance of the Green Library in achieving sustainable development.

By adopting these measures and principles, the effectiveness of the Green Library project in Algeria can be enhanced and the objectives of sustainable development achieved, thereby contributing to the preservation of the environment and providing a better future for future generations.

Tools and measures that can be used to measure the impact of the Green Library project on sustainable development

14. To measure the impact of the Green Library project on sustainable development, a variety of tools and standards can be used. The following are some common tools and measures that can be used:

14.1. Environmental performance indicators

These include estimating low carbon emissions, assessing the consumption of natural resources such as water and energy, and measuring the efficiency of waste management and recycling. (Carmona, 2021, p. 05)

14.2. Assessment of the impact of infrastructure

An assessment of the impact of infrastructure can be used to determine the availability of environmentally friendly facilities in the library, such as natural lighting, the use of environmental techniques for cooling and heating, and the provision of sustainable public transport.

14.3. Social impact assessment

The impact of the Green Library on the community can be measured, such as by providing local employment opportunities, promoting community development, and raising public environmental awareness.

14.4. User satisfaction survey

User satisfaction surveys can be used to measure the satisfaction of the public and users of the Green Library and to assess their impact on improving the quality of life and comfort of users.

14.5. Financial and economic reports

Financial and economic reports can be used to analyze the costs and benefits of the Green Library, including estimating energy and natural resource costs and assessing the balance between costs and benefits.

14.6. Participation in environmental initiatives

The participation of the Green Library in local or global environmental initiatives can be used as an indicator of its impact on sustainable development. Such as joining green library networks, participating in environmental sustainability programs, and collaborating with other institutions to share knowledge and experiences on sustainability.

Appropriate tools and standards must be selected in accordance with the specific objectives and requirements of the Green Library project. These tools can be used to measure the environmental, social, and economic impact of the Green Library and to identify possible successes and improvements in different areas of sustainable development.(Hauke, 2013, p. 22)

15.Expected impacts:

The Green Library project in Algeria is expected to have a significant positive impact on society and the environment, including:

15.1. Promotion of environmental awareness

Through the provision of environmental sources and information on sustainable development, the Green Library will contribute to raising the level of environmental awareness among the public. Individuals will learn about the importance of environmental protection and sustainability and will become active environmental scientists.

15.2. Promoting sustainable practices

By providing information and resources that promote sustainable practices, the Green Library will inspire the public to take practical steps to preserve the environment and adopt more sustainable lifestyles. These practices may include the use of renewable energy, waste sorting, and friendly environmental mobility.

15.3. Promotion of scientific research and technical developmen

The Green Library will provide support to researchers and environmentalists to access modern information and scientific research in the field of the environment. In doing so, the Green Library will promote innovation and technical development in the areas of environmental protection and sustainability.(Clement, 2017, p. 15)

15.4. Achieving sustainable development

By providing environmental information and resources and promoting environmental awareness, sustainable development in Algeria will be promoted. The Green Library will contribute to building a sustainable society that takes into account the social, economic, and environmental dimensions, thereby improving the quality of life and promoting sustainable development in Algeria.

16.Conclusion

At the conclusion of this study, the Green Library project is an inspiring model of sustainable development and environmental protection in societies. Several positive environmental and social results have been achieved. The project has shown many advantages and benefits that can be achieved through the application of this model. Here are some recommendations that could contribute to the promotion of the Green Library projects in the future:

- Strengthening partnerships and cooperation: Those wishing to implement a green library project must seek to forge strong partnerships with relevant local institutions and environmental and social actors. This contributes to enhancing knowledge sharing and sources and promoting the sustainable success of the project.
- Promote sustainable financing: Sustainable financing mechanisms should be provided for green library projects, including exploring financing opportunities from domestic and international sources and promoting awareness of the importance of investing in these projects at the collective and governmental levels.
- Promote training and education: Training and education must be an essential part of Green Library projects, where staff and beneficiaries are sensitized on environmental and sustainable development issues and provided with the knowledge and skills necessary to adopt a more sustainable lifestyle.
- Strengthening evaluation and control mechanisms:
  Strengthening assessment and control mechanisms is crucial to assessing and measuring the impact of the Green Library project on society and the environment. Specific indicators and measurement tools must be developed to measure concrete changes and the actual impact of the project. Exploratory studies and questionnaires can also be used to assess environmental awareness and public behavior after project implementation.(Stands, 2013)

- Expansion and continuous development: there should be clear plans to expand and develop the Green Library project in the future. Opportunities for expansion to other regions and expansion of services and initiatives can be explored. The infrastructure must also be improved and available resources strengthened to ensure the long-term sustainability of the project.
- Community participation: Promoting community participation is one of the success factors of environmental projects. Algeria can look forward to similar models in promoting community participation in the planning and implementation of green library projects through opinion polls, workshops, and public consultations to ensure that the needs of society are met, their demands are met, and their participation in decision-making is encouraged.

In short, these recommendations point to the importance of cooperation, sustainability, and evaluation in the implementation of green library projects. Through the adoption of such advice and guidance, stakeholders can achieve greater positive results and contribute to the promotion of environmental awareness and sustainable development in communities and beyond.

17. Bibliography List

1.Brown, B. (2003). The New Green Standard: With the LEED rating system in place it is easier to make sure your new library saves money as it treads lightly on natural resources". *Library journal*(128), 3.

2.Carmona, J.(2021). Toward sustainable libraries: A review of green library practices around the world. In Green and Sustainable Computing (pp. 187-206). Springer, Cham.

3.Chawner, B.(2019). Greening the library: An overview of sustainable design initiatives. Australian Library Journal, 68(3), 202-218.

4.Clement, R.(2017). 5. Libraries and sustainable citizenship: Supporting communities in a changing world. The International Journal of the Book, 14(3), 53-62.

5.James and Suzanne Le Rue. (1991). The green librarian, Wilson , Library Bulletin. *(65)*, 27-33.

6.Johnson, P. (2020). Sustainable librarianship: Libraries and the climate emergency. Library Trends, 68(4), 579-600.

7.Kahl, C. (2021). Greening academic libraries: A review of the literature. In E. O'Connor & E. Greene (Eds.), Greening Libraries (pp. 13-32). Berlin: De Gruyter Saur.

8.Kumar, P. (2014). *Greening the library for sustainable development. Bangalore, LISCOM.* . Consulté le 07 03, 2023, sur www.liscorm.org

9.Lamia, Ouahmed. (2022, 10 20). Green libraries, a new style in the design and construction of library. *vol14*. algeria, Revue de bibliotheconomie.

10.Ngulube, P. (2021). Promoting green libraries in a developing country: The case of Malawi. Information Development, 37(3), 300-310.

11.Onuoha, U. D. (2021). Green libraries and the future of librarianship. Journal of Librarianship and Information Science, 53(1), 57-67.

12.Watson, E. (2016). Sustainable library design: The environmental impact of library buildings. In H. A. Thompson & L. Vardeman (Eds.), Going Green: Implementing Sustainable Strategies in Libraries Around the World (pp. 169-186). Berlin: De.

13.Prytherch, R. (2019). P Environmental management and sustainability in libraries. In S. Kaur & R. Kumar (Eds.), Green Libraries: Concepts and Strategies for Sustainability (pp. 107-129). Singapore: Springer.

14.Stands, J. (2013). *« Sustainable library design ». Libris Design Project. California, the state librarian,.* Consulté le 05 2023, 05, sur http://midhudson.org/wpcontent/uploads/2013

15.Connell, V. (2010). *Greening the Library, Journal of new Members Round Table , Vol.1, n°1.* Récupéré sur : https://www.ala.org/rt/sites/ala.org.rt/files/content/oversightgroups/comm/schres/endnotesvol1is1 /3greeningthelibrary.pdf

16.Hauke, P. A. (2013). *Going green as a marketing tool for libraries : environmentally sustainable management practices. Singapore, IFLA. From:.* Consulté le 05 04, 2023, sur http://library.ifla.org/id/eprint/147/1/086-hauke-en.pdf

17..A. L. (2019). *American Library Association Sustainability and libraries, green Libraries, Chicago.*Consulté le 07 01, 2023, sur https://libguides.ala.org/SustainableLibraries/Green

18..Aulisio, G. J. (2013). *Green Libraries Are more than just buildings. In: Electronic Green Journal.* Consulté le 07 2023, 06, sur https://escolarship.org/uc/item/3X11862