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Mar Hidalgo García

**The Great Green Wall: between hope and reality**[Visit the WEBSITE](#)[Receive the E-NEWSLETTER](#)*The Great Green Wall: between hope and reality**Abstract:*

*In an attempt to combat the impact of environmental degradation in the Sahel area and stop the expansion of the Sahara desert, in 2007 the African Union launched the project to build a Great Green Wall known as the "Great Green Wall" (GGW). ). Since its inception, the project has had to deal with multiple problems that have delayed the achievement of the objectives set for 2030. During the One Planet Summit held in January 2021 in Paris, Emmanuel Macron announced the so-called "Accelerator of the Great Green Wall", with which it is intended to save the project. With this new approach, the GGW has become an ambitious but necessary plan to face the climatic, demographic and security challenges facing the Sahel.*

*Keywords:*

*Great Green Wall, Sahel, climate change, deforestation, drought*

**NOTE:** The ideas contained in the **Analysis Papers** are the responsibility of their authors. They do not necessarily reflect the thinking of the IEEE or the Ministry of Defence.

## La Gran Muralla Verde: entre la esperanza y la realidad

### Resumen:

En un intento de combatir el impacto de la degradación ambiental en la zona del Sahel y detener la expansión del desierto del Sáhara, en 2007 la Unión Africana, lanzó el proyecto de construcción de una Gran Muralla Verde conocida como “Great Green Wall” (GGW). Desde sus inicios, el proyecto ha tenido que hacer frente a múltiples problemas que han demorado el cumplimiento de los objetivos marcados para el 2030. Durante la Cumbre One Planet celebrada en enero de 2021 en París, Emmanuel Macron, anunció el denominado "Acelerador de la Gran Muralla Verde", con el que se pretende salvar el proyecto. Con este nuevo enfoque la GGW se ha convertido en un plan ambicioso pero necesario afrontar los desafíos climáticos, demográficos y de seguridad que afronta el Sahel.

### Palabras clave:

Gran Muralla Verde, Sahel, cambio climático, deforestación, sequía

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## Introduction

The Sahel is a region of Africa stretching 5400 kilometres from west to east, from the coast of Senegal on the Atlantic Ocean to Sudan. This region is one of the poorest areas in the world and one of the most vulnerable to the impacts of climate change. In addition, land degradation has caused the Sahel region to become chronically prone to food shortages, leading to food insecurity among its population. The arrival of refugees fleeing violence may also contribute to accelerating the process of desertification in the region<sup>1</sup>.

Both climate change and land degradation are factors that add stress to other major challenges facing the area, such as rapid population growth, which is expected to reach 340 million by 2050.<sup>2</sup> Urbanisation, increased demand for natural resources, environmental degradation, food insecurity, uneven development and other factors are also adding to the stress in the Sahel, not to mention the ongoing insecurity and conflict in the region, with a worrying increase in the number of terrorist attacks against civilian and military targets and rising tensions over scarce resources, particularly among farming and herding communities.

Over recent decades, Niger, Mali, Sudan and Chad have suffered severe degradation of their natural resources<sup>3</sup>. This environmental degradation is increasing poverty in the region, which has aggravated existing conflicts, and the rise of radicalism and common crime, which in turn negatively impact the development programmes being established in the area.

In recent decades, land degradation due to drought and the encroachment of the Sahara desert have forced many of the Sahel's populations to leave their homes and with it also the agricultural and grazing economic model. The frequency and severity of droughts and

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<sup>1</sup> Minawao hosts nearly 70,000 refugees who have fled violence linked to the Boko Haram insurgency in neighbouring Nigeria since 2014. In an arid region already severely affected by climate change, the arrival of the refugees accelerated the desertification process by cutting down the few surrounding trees for firewood. <https://reliefweb.int/report/cameroon/refugees-cameroon-help-build-great-green-wall-combat-desertification>.

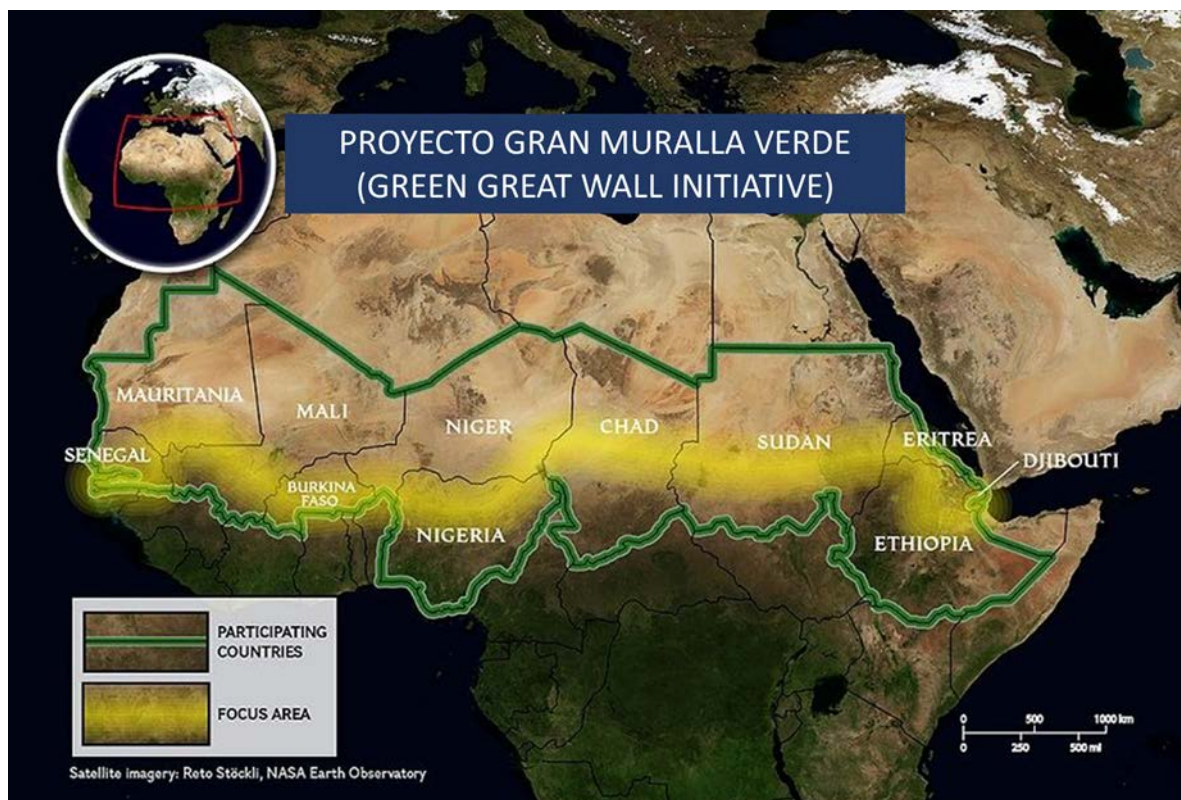
<sup>2</sup> Available at: [https://www.ieeee.es/Galerias/fichero/docs\\_analisis/2018/DIEEEA03-2018\\_Sahel-Tsunami\\_demografico\\_reversible\\_JAMT.pdf](https://www.ieeee.es/Galerias/fichero/docs_analisis/2018/DIEEEA03-2018_Sahel-Tsunami_demografico_reversible_JAMT.pdf)

<sup>3</sup> Available at: <https://www.worldwildlife.org/ecoregions/pa1329>

floods have increased and more than 80% of the region's arable land is now degraded<sup>4</sup>, contributing to frequent famine conditions.

### An idea was born: A “green wall”

In an attempt to combat the impact of environmental degradation in the Sahel and halt the expansion of the Sahara Desert, the African Union, at the proposal of then Nigerian President Olusegun Obasanjo and former Senegalese President Abdoulaye Wade<sup>5</sup>, launched the Great Green Wall (GGW) project in 2007, which consisted of planting trees along the southern boundary of the desert to combat land degradation, desertification and drought in the region. In total, it would cover an area 7000 km long and 15 km wide.



Source: Own elaboration on PA-GWW image

<sup>4</sup> Available at: <https://www.weforum.org/agenda/2019/01/all-the-warning-signs-are-showing-in-the-sahel-we-must-act-now/>

<sup>5</sup> Available at: <https://www.globalcitizen.org/fr/content/african-countries-commit-to-building-a-wall-of-tre/>

The idea of planting trees to stop desertification was not an original idea. The concept was based on a proposal made by the British explorer Richard St Barbe in 1950<sup>6</sup> but, perhaps because it was far-fetched or lacked the necessary technical resources, it did not receive the necessary support. In 2005, this idea came up again at the Conference of Leaders and Heads of States of the Community of Sub-Saharan States. The fact that China had initiated a similar project in 1978 to curb the Gobi desert probably encouraged the African Union to launch the project with the initial objective of repopulating 100 million hectares, creating 350000 rural jobs and absorbing 250 million tonnes of CO<sub>2</sub> by 2030.

The project covers the southern fringe of the Sahara desert and involves not only the countries of the Sahel through the African Union but also those on the northern and southern borders. In total more than 20 African countries are involved: Algeria, Burkina Faso, Benin, Chad, Cape Verde, Cameroon, Djibouti, Egypt, Eritrea, Ethiopia, Ghana, Libya, Mali, Mauritania, Niger, Nigeria, Senegal, Somalia, Sudan, Gambia and Tunisia<sup>7</sup>.

Since the start of the GGW project, many problems have arisen that have delayed the objectives set being achieved, which has led to the project being questioned. But far from abandoning it, the African Union, together with its main promoters and donors have turned the approach around, focusing on turning GGW into an engine for strengthening the economy of the regions it covers by contributing to agricultural development and strengthening the livelihoods of local populations. Under the slogan "A project by Africa for Africans", the GGW is becoming a patchwork of agricultural development projects that need foreign investment to carry them out<sup>8</sup>.

### **The first phase of the GGW: Learning from mistakes**

The GGW idea was born out of the hope that by planting trees across the Sahel, desertification could be reduced by moderating temperatures, wind patterns and soil

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<sup>6</sup> Available at: <https://venturesafrica.com/africa-is-building-a-wall-of-trees/>

<sup>7</sup> Available at: <https://www.greatgreenwall.org/partners>

<sup>8</sup> Available at: <https://www.greatgreenwall.org/about-great-green-wall>



erosion, as well as increasing moisture for agriculture. It was an ambitious plan but with the potential to work.<sup>9</sup>

However, since its inception in 2007 – despite there having been occasional success stories – the GGW has encountered a number of problems and difficulties in moving forwards. Originally conceived as an ambitious project to mitigate the environmental and economic impacts of climate change using nature itself, the GGW, according to the United Nations Convention to Combat Desertification (UNCCD) 2020 status report on the Great Green Wall 2020, had achieved only 4% of the targets proposed in 2007<sup>10</sup>. GGW became the focus of criticism as it was proving to be a waste of time and money<sup>11</sup>.

Causes for this low compliance include increased conflict and insecurity in the Sahel area; lack of investment; and perhaps the misconception of the project itself, based on the theory that once the trees are planted, nature will take care of itself. If the purpose of the Great Wall was also economic development, it has become clear that planting trees is not enough, but that human intervention to care for the replanted areas is a critical factor if a long-term solution for the prosperity of the region is to be achieved. In the early days of reforestation, up to 80% of the trees died within two months of being planted<sup>12</sup>, due to lack of water, protection and proper care. The main cause of this disaster was the fact that many trees had been planted in areas with few or no inhabitants to care for them.

On the other hand, the idea of uniformly covering the region with trees left out other traditional agricultural practices used by local populations who have their own way of using the land, trees and forest<sup>13</sup>.

There have also been coordination problems that have led to significant differences in achieving targets between the different countries participating in the GGW. Ethiopia, for example, started reforestation earlier than other nations and is now far ahead<sup>14</sup>. Other countries such as Mali have progressed more slowly due to different geographies, levels

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<sup>9</sup> O'Connor D. and Ford J. Increasing the Effectiveness of the "Great Green Wall" as an Adaptation to the Effects of Climate Change and Desertification in the Sahel. *Sustainability*, October 2014 6(10):7142

<sup>10</sup> Available at: <https://www.unccd.int/publications/great-green-wall-implementation-status-and-way-ahead-2030>

<sup>11</sup> Available at: <https://earth.org/the-great-green-wall-legacy/>

<sup>12</sup> Available at: <https://www.smithsonianmag.com/science-nature/great-green-wall-stop-desertification-not-so-much-180960171/>

<sup>13</sup> Available at: <https://www.lifegate.com/africas-great-green-wall-a-bursting-dream>

<sup>14</sup> Available at: <https://www.unccd.int/actions/great-green-wall-initiative>

of governance and economic development. As far as return on investment is concerned, the results have not been very favourable either.

### **The second phase of GGW: best practices for hope**

On a global scale, large-scale land and landscape restoration has become increasingly important at national and international levels. Proof of this is the declaration of the UN Decade for Ecosystem Restoration 2021-2030, under which the GGW is considered the first flagship.

For this reason, and despite the difficulties encountered, mistakes made and the low percentage of targets met, the GGW project – far from being discarded – received a boost for its renewal during the One Planet Summit held in January 2021 in Paris. In it, Emmanuel Macron announced the so-called "Great Green Wall Accelerator", which aims to save the GGW project by offering 14 billion dollars in financial support over the next five years from governments and financial institutions. This is a significant amount considering that the total estimated cost, according to the UN of the GGW, is about 33 billion dollars<sup>15</sup>.

With this new approach, the GGW has become an ambitious but necessary plan to address the climate, demographic and security challenges facing the Sahel. The aim is to address the region's lack of social and economic resilience to the impacts of climate change by improving the efficiency of crop yields and creating jobs.

The GGW has entered a new phase that is being supported by the international community. The African Development Bank (AfDB) has committed 6.5 billion dollars<sup>16</sup> and the EU, which strongly supports the GGW, contributes 700 million euros per year. In her speech at the climate change summit (COP26) in Glasgow, Ursula van der Leyen, noted that the Green Great Wall was "*a beautiful example of sustainable development on a continental scale and an example of how this climate action combines action at the local level with the global goal of mitigation*"<sup>17</sup>.

<sup>15</sup> Available at: <https://www.greatgreenwall.org/great-green-wall-accelerator#:~:text=The%20Great%20Green%20Wall%20multi,the%20Great%20Green%20Wall%20Initiative.>

<sup>16</sup> Available at: <https://www.afdb.org/en/news-and-events/press-releases/sahel-region-african-development-bank-pledges-mobilise-65-billion-support-great-green-wall-initiative-40203>

<sup>17</sup> Available at: [https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT\\_21\\_5742](https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT_21_5742)

The African Union has thus secured the necessary support for the GGW to meet its objectives in its bid to integrate climate change into its peace and security agenda. At the First African Union Peace and Security Council in November 2021, participants demonstrated consensus to consider climate change as a threat multiplier in the region. Perhaps now with this new approach GGW can also gain greater institutional backing from the African countries involved in order to achieve the objectives of land reclamation and job creation to promote development in the Sahel. In fact, the GGW has been present in the bilateral meetings that African countries are holding with the main powers, as demonstrated by the meeting between the EU and the African Union held on 17 and 18 February<sup>18</sup>. The EU has launched several initiatives in support of the GGW, including the "Natur Africa Landscapes" initiative that will contribute to promoting sustainable agriculture, forestry, land restoration and the implementation of green value chains in several GGW blocks<sup>19</sup>. The GGW has also received support from China along with the Climate Change Adaptation Initiative at the December 2021 Africa-China Cooperation Forum<sup>20</sup>. For the development of agriculture, China and the AU contemplate an economic collaboration aimed at fostering a capacity for independent agricultural development, betting on the training of Africans in modern agrotechnology practices, with the sending of Chinese experts in the field.

UNEP, the UN Food and Agriculture Organisation and the UN Convention to Combat Desertification (UNCCD) are collaborating with ten other UN agencies and development banks to coordinate action to support the GGW. All this political and financial support is proof that the GGW project is viable in achieving its Sahel development objectives from both a mitigation and adaptation perspective, the second component of the climate change equation, which, perhaps until relatively recently, was not given the same importance as the first.

For the development of the GGW project to be accelerated and completed by 2030 as planned, the problems encountered in the first phase need to be solved. This new approach has been directed towards productivity, optimising yields and making land use more efficient. Instead of just reforestation, land management policies would be

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<sup>18</sup> Available at: [https://www.consilium.europa.eu/media/54412/final\\_declaration-en.pdf](https://www.consilium.europa.eu/media/54412/final_declaration-en.pdf)

<sup>19</sup> Ibid

<sup>20</sup> Available at: [https://www.fmprc.gov.cn/mfa\\_eng/wjdt\\_665385/2649\\_665393/202112/t20211202\\_10461183.html](https://www.fmprc.gov.cn/mfa_eng/wjdt_665385/2649_665393/202112/t20211202_10461183.html)



implemented, including water harvesting techniques, agroforestry and regenerative agriculture. All of this is aimed at developing the GW from a practical point of view<sup>21</sup>. The generic conception based on the mere replanting of trees has been left behind. This is being done by promoting local knowledge, planting trees in strategic locations to benefit the soil and increase crop efficiency.

As easy as it may seem, planting a tree, especially if it is in extreme climatic conditions such as those in the Sahel region, requires knowledge and constant care. In order for them to survive, it is crucial to think about what types of trees should be planted in the first place, as well as researching what species local communities would benefit from. For this reason, local leaders and farmers are also being given a greater say in deciding what to do with the land, and their opinions are being listened to by those who have to make the final decision. Local populations have the potential to achieve environmental and social development goals simultaneously, even if this also requires changes in their access to land rights.

The GW initiative now aims to be a mosaic of sustainable land use practices, implementing agroforestry to increase tree density while disseminating the most efficient local practices to farmers. For example, in Burkina Faso, a unique agricultural technique in the western Sahel known as 'zai' has been used for generations. The method involves digging shallow pits in the soil during the pre-season to capture scarce rainfall and concentrate it on crop roots. Some farmers have placed manure in these pits to attract termites, whose tunnels help to further break up the soil and improve underground irrigation. When used correctly, this rehabilitation practice significantly increases yields of crops such as millet and sorghum, as well as preserving soil vitality<sup>22</sup>.

However, despite this focus on local people's solutions for crop design, in order for the GW to achieve its goal of population development and the necessary financial support, technology is also needed both in terms of energy and methodology to quantify the results obtained from the multiple projects that make up the GW. Private investment should

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<sup>21</sup> Available at: <https://www.smithsonianmag.com/science-nature/great-green-wall-stop-desertification-not-so-much-180960171/>

<sup>22</sup> Available at: <https://earth.org/the-great-green-wall-legacy/>

also be an important pillar in the development of the GGW. Studies indicate that the average return would be \$1.2—within a range of \$1.1 to \$4—per dollar invested<sup>23</sup>

In terms of energy, one of the main problems posed by the GGW is that if people do not have alternative energy sources to firewood, there is a risk that in the absence of food and income, trees will be used as fuel. This may be the case in Burkina Faso, where 86% of the population depends on natural resources for survival and 60% use firewood for heating and cooking<sup>24</sup>.

Linking the GGW project to access to clean energy is a prerequisite for the viability of the project. This was stated by AfDB President Akinwumi Adesina at COP26 in Glasgow that "If there is no electricity in the Sahel, and levels are very, very low at the moment, the GGW is nothing more than a bundle of coal and wood waiting to be cut". He also indicated that the bank has mobilised 1.2 billion dollars of the 2 billion dollars needed for a solar project in Niger, Chad, Mali, Burkina Faso and Mauritania. This would develop 2 GW of electricity generation for 3.5 million people<sup>25</sup>. In addition, the Bank has provided 2 billion dollars for the Desert to Power programme to provide universal access to electricity in the G5 Sahel countries (Niger, Chad, Mali, Mauritania, Burkina Faso) through solar energy. The Desert to Power programme has also received a 150 million contribution from the Green Climate Fund<sup>26</sup>.

In relation to assessing the results achieved, countries lack the capacity and financial means to report and evaluate progress. Insufficient reporting makes donors lose confidence in the project and makes them less likely to fund it. In the second phase of the GGW, there is the intention to establish a proper monitoring and reporting system that will accelerate the progress of the Great Green Wall. Technology can help to address this problem, as remote sensing methods are currently being explored for independent assessment of afforestation and agricultural activities in arid and semi-arid landscapes<sup>27</sup>.

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<sup>23</sup> Mirzabaev, A. et al. Eficiencia económica y focalización de la Gran Muralla Verde Africana. *Nat Sustain* 5, 17–25 (2022). <https://doi.org/10.1038/s41893-021-00801-8>

<sup>24</sup> Available at: [https://www.profor.info/sites/profor.info/files/Country%20case%20study%20-%20Burkina%20Faso\\_0.pdf](https://www.profor.info/sites/profor.info/files/Country%20case%20study%20-%20Burkina%20Faso_0.pdf)

<sup>25</sup> Available at: <https://www.reuters.com/business/cop/africa-needs-renewable-power-great-green-wall-work-afdb-head-says-2021-11-04/>

<sup>26</sup> Available at: <https://elperiodicodelaenergia.com/tag/programa-power-to-desert/>

<sup>27</sup> M. Sacande y col. "Monitoring Large-Scale Restoration Interventions from Land Preparation to Biomass Growth in the Sahel". *Remote Sens*, 13, 3767 (2021).

## The GGW: reason for hope?

There is no doubt that well-executed agroforestry initiatives can offer great economic and ecological benefits. From an environmental standpoint, once the GGW is completed, it will be the largest living structure on the planet, three times larger than the Great Barrier Reef; it is even being called the eighth wonder, a wonder of the 21st century.

Expectations are also high for the GGW in its contribution to the development of the Sahel region. Susan Gardner, Director of UNEP's Division of Ecosystems, said: "*This initiative alone will not transform the fortunes of the Sahel overnight, but it is fast becoming a green growth corridor that is bringing in investment, boosting food security, creating jobs and sowing the seeds of peace*"<sup>28</sup>.

For UN Secretary-General, António Guterres, "The Great Green Wall Initiative is a historic opportunity to simultaneously conserve biodiversity, tackle climate change and improve food security"<sup>29</sup>,

The GGW also aims to provide a brighter future for the rural youth population and an opportunity to revitalise community economies. The GGW aims to be a symbol of unity, solidarity and an example of the kind of international cooperation that is required in the 21st century and it has even been argued that the GGW has become Africa's greatest opportunity<sup>30</sup>.

For some experts, the GGW represents a long-term vision that can contribute to the struggle for human rights compliance and good governance in the Sahel.

The GGW is also seen as an image of decolonisation, as a project by Africans for Africans that enhances the integrity and dignity of the African population and even as a solution to the migration crisis in Europe by preventing Africans from travelling across the Mediterranean in search of a better future.

It is clear that the GGW has given reason for hope for the development of the Sahel. However, given the serious challenges facing the Sahel area, in terms of demographics,

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<sup>28</sup> Available at: <https://www.unep.org/ar/node/28742>

<sup>29</sup> Available at: <https://www.unep.org/news-and-stories/story/good-news-africas-great-green-wall>

<sup>30</sup> Available at: <https://www.lifegate.com/africas-great-green-wall-a-bursting-dream>

development, ecosystem degradation, unsustainable use of natural resources and insecurity, the GW – while successful in its ecological recovery mission – cannot be ruled out as a driver of economic development in the Sahel. However, the GW does represent the long-term vision and coordination effort that is so necessary to address the region's problems and highlights the need to address security issues from the standpoint of an environmental and sustainable use of natural resources.

For all these reasons, it can be said that the "Green Wall" is a reason for hope, provided that the projects are carried out within a time frame and with reasonable expectations, without forgetting, furthermore, that a significant part of the stability of the Sahel depends on that future green strip on the edge of the Sahara

*Mar Hidalgo García\**

IEEE Analyst

[@ieeee\\_mhidalgo](#)