

CULTIVATING RESILIENCE AND INCLUSION: AN IN-DEPTH ANALYSIS OF MOROCCO'S "GÉNÉRATION GREEN" STRATEGY AS A DRIVER FOR AGRICULTURAL TRANSFORMATION

Oussama ELMIMOUNI*

**Master in International Trade, Zhengzhou University, School of Business, Zhengzhou, China*

***Corresponding Author:**

Email: Oussamaelmimouni37@gmail.com

Abstract:

This paper offers a comprehensive examination of Morocco's "Génération Green" 2020-2030 strategy, assessing its role as a transformative framework for achieving sustainable performance within the nation's critical agricultural sector. Moving beyond the production-centric achievements of its predecessor, the "Plan Maroc Vert," this new strategy signals a paradigm shift towards a model that prioritizes human capital development, social equity, and ecological resilience. Utilizing a mixed-methods methodology, this research synthesizes longitudinal national data with original survey findings from a diverse sample of 180 Moroccan agribusinesses and smallholder farmers. The study develops a composite index to evaluate the adoption of the strategy's core pillars. The results demonstrate a significant positive correlation between the depth of adoption of these pillars and enhanced performance metrics, including substantial increases in farmer income, notable improvements in water use efficiency, and stronger market positioning. Conversely, the analysis brings to light considerable implementation challenges, such as a pervasive digital divide, constrained access to finance for smaller actors, and pronounced regional disparities. The paper concludes that while "Génération Green" provides a visionary and robust blueprint for the future, its ultimate success hinges on fostering more decentralized, participatory governance and pioneering inclusive financial mechanisms.

Keywords: Morocco, Agriculture, Génération Green, Plan Maroc Vert, Sustainability, Social Equity, Climate Resilience, Participative Management, Value Chains.

INTRODUCTION:

The agricultural sector stands as a cornerstone of Morocco's economy and social stability, contributing approximately 14% to the national Gross Domestic Product and employing nearly 39% of the workforce, with a significantly higher concentration in rural areas (Haut-Commissariat au Plan, 2022). Despite its strategic importance, the sector operates under the constant and intensifying threat of water scarcity, a challenge exacerbated by climate change, with over 90% of the country's territory classified as arid or semi-arid.

The launch of the *Plan Maroc Vert* (PMV) in 2008 marked a decisive turn towards modernization, successfully leveraging private investment to boost productivity and exports. However, a comprehensive evaluation of its legacy reveals a complex picture; while it achieved notable economic gains, its benefits were not uniformly distributed, and pressures on natural resources, particularly groundwater, continued to mount. It is within this context that the *Génération Green* 2020-2030 strategy was introduced, conceived not as a mere extension but as a fundamental reorientation. This new strategy is built upon two interconnected pillars: the first dedicated to the human element, aiming to cultivate a new agricultural middle class and empower rural youth, and the second focused on consolidating a resilient, sustainable, and market-oriented agricultural foundation.

This paper seeks to move beyond a superficial policy analysis to deliver a critical, evidence-based assessment of the "Génération Green" strategy in its early implementation phase. It explores the nuanced interplay between its stated objectives and the on-the-ground realities faced by a diverse range of agricultural stakeholders. The central inquiry of this research is to understand how the principles of strategic empowerment, sustainable intensification, and market integration collectively shape the economic viability, environmental sustainability, and social equity of Moroccan agriculture.

1. Theoretical Context and Methodological Approach

The evolution of Moroccan agricultural policy reflects a broader global transition from purely productivist models towards multifunctional paradigms that integrate environmental stewardship and social well-being as core objectives. The "Plan Maroc Vert" can be largely situated within the former category, achieving impressive growth through aggregation projects and significant private investment. Scholarly work on this period confirms its success in expanding export volumes but also highlights its limited impact on the vulnerability of smallholder farmers.

The "Génération Green" strategy, in contrast, aligns closely with the concept of "sustainable intensification," which seeks to optimize agricultural output per unit of input especially land and water while actively minimizing negative environmental externalities. Furthermore, its pronounced emphasis on the "human element" resonates deeply with established principles of participative management. This body of literature suggests that involving stakeholders in strategic awareness, decision-making, and goal-setting processes fosters a greater sense of ownership, enhances satisfaction, and ultimately drives superior performance.

To ground this theoretical framework in empirical evidence, this study employs a sequential mixed-methods design.

a) Data Collection:

Secondary data was collected from national institutions including the Ministry of Agriculture and the Haut-Commissariat au Plan to establish macro-trends. This was complemented by primary data gathered through a structured survey administered to a stratified sample of 180 stakeholders encompassing large agribusinesses, agricultural cooperatives, and smallholder farmers across key regions such as Souss-Massa, Tadmra-Azilal, and the Oriental.

b) Analytical Framework: The "Génération Green" Adoption Index (GGAI):

To quantitatively assess the strategy's penetration, we developed a composite metric. This index evaluates three critical dimensions, each measured on a 0-5 scale, with the total GGAJ score ranging from 0 to 15.

Table 1. Structure and Scoring of the "Génération Green" Adoption Index (GGAI)		
VARIABLE	DESCRIPTION	MEASUREMENT SCALE (0-5)
STRATEGIC EMPOWERMENT & TRAINING (SET)	Measures awareness, access to training, and integration into support programs.	0=No knowledge of strategies. 5=Active participation in "Génération Green" programs and decision-making forums.
ADOPTION OF SUSTAINABLE TECHNOLOGIES (AST)	Assesses the use of climate-smart practices, particularly focused on water and energy.	0=No sustainable practices. 5=Fully implemented drip/solar combo with precision agriculture sensors.
VALUE CHAIN INTEGRATION & DIVERSIFICATION (VCID)	Evaluates market access, value addition, and risk diversification.	0=No market integration. 5=Direct exporting with certified, branded products and diversified income sources.

Source: Made by the Author

Data analysis was conducted using descriptive statistics and correlation analysis to explore relationships between GGAI scores and performance indicators.

2. Findings from the Field: A Multifaceted Perspective

An analysis of the data from the "Plan Maroc Vert" era reveals a period of significant transformation, as illustrated by the following key indicators.

Table 2: Selected Agricultural Indicators Pre- and Post-PMV (2008 vs. 2020)

INDICATOR	2008	2020	% CHANGE	SOURCE
AGRICULTURAL GDP (BILLION MAD)	98.2	125.4	+27.7%	Ministry of Agriculture
CITRUS EXPORTS (THOUSAND TONS)	520	680	+30.8%	EACCE
AREA UNDER DRIP IRRIGATION (THOUSAND HA)	160	560	+250%	Ministry of Agriculture
NUMBER OF AGRICULTURAL COOPERATIVES	~600	~3,100	+416%	ANDZOA

Source: Compiled from Official Reports

While impressive, this growth was not without its imbalances, setting the stage for the more nuanced ambitions of "Génération Green." Delving into our primary survey data, the picture becomes more textured.

a) Strategic Empowerment and Training: The Awareness Divide

The dimension of Strategic Empowerment and Training reveals a stark gradient of awareness and inclusion. The findings indicate that only 25% of respondents fell into the high-empowerment category (scores 4-5), primarily composed of large agribusinesses and leading cooperatives. A further 45% had a medium level of awareness (scores 2-3), while a significant 30% of respondents, predominantly smallholders, reported low levels of empowerment (scores 0-1). This "empowerment gap" is critical, as our analysis found a strong positive correlation between high SET scores and the adoption of innovative practices.

b) Adoption of Sustainable Technologies: The Water Efficiency Imperative

The assessment of **Sustainable Technologies** underscores the central challenge of water management. The data presents a clear hierarchy of efficiency, as shown in the table below.

Table 3: Irrigation Technology Adoption and Water Efficiency (Survey Sample)

TECHNOLOGY LEVEL	% OF FARMS	AVG. WATER USE (M ³ /HA) CITRUS	AVG. YIELD (TONS/HA) CITRUS
ADVANCED DRIP (WITH SENSORS/SOLAR)	18%	5,500	30.1
BASIC DRIP IRRIGATION	40%	6,800	25.4
IMPROVED SPRINKLER SYSTEMS	17%	8,200	21.0
TRADITIONAL FLOOD IRRIGATION	25%	11,500	17.2

Source: Primary Survey Data (2023)

The data is unequivocal: advanced drip irrigation can reduce water consumption by over 50% compared to flood irrigation while boosting yields. However, the high initial capital cost was identified as the primary barrier to adoption for 65% of smallholders surveyed.

c) Value Chain Integration: A Hierarchy of Profitability

When examining **Value Chain Integration**, the survey data illustrates a clear hierarchy of profitability and stability. The distribution was as follows: 12% of farms were direct exporters, 20% exported through cooperatives, 25% supplied national supermarkets, and a substantial 43% sold their produce primarily in local wholesale markets. This last group faced the highest price volatility and the lowest gross margins, often below 15%. A core objective of "Génération Green" the creation of a "new agricultural middle class" is intrinsically linked to enabling the ascent of farmers from this vulnerable segment into more integrated and rewarding market channels.

Synthesizing these three dimensions into the overall GGAI score reveals a powerful pattern, as summarized below.

Table 4: Correlation between GGAI Score and Farm Performance Indicators

GGAI SCORE RANGE	AVG. ANNUAL INCOME (MAD/HA)	WATER EFFICIENCY (M ³ /UNIT OUTPUT)	LIKELIHOOD OF YOUTH INVOLVEMENT
HIGH (11-15)	48,500	Low	85%
MEDIUM (6-10)	28,000	Medium	45%
LOW (0-5)	11,200	High	15%

Source: Analysis of Primary Survey Data

Farms with a high GGAI score are not only more economically prosperous and environmentally efficient but are also significantly more successful in attracting and retaining the younger generation.

Ways to Lead Participation:

Currently, participative management is an efficient, effective, and modern management system. It can only be practiced with great results if there is a tendency towards a common goal by all employees of an organization, regardless of their hierarchical position within the organization. In this situation, the fundamentals are created that are necessary to establish the medium and long-term objectives and program by consensus, to base the decisions, and to put them into practice. Due to the accelerated changes like goods and services, the organization must focus its attention on the market segment, not the product. *"A business is not defined by its name, charter or bylaws, but it is defined by the need that a customer meets when purchasing a product or service provided by the business."* The question, *"What is our business? can only be answered from a perspective that allows us to look at this business from the outside, that is, from the point of view of the consumer or the market segment"* (Drucker, PF 1999). In management terms, participation is the activity by which employees of an organization take part in the management process, becoming involved both in the definition of objectives and in their effective and efficient implementation in practice. Participation is a combination of two specific actions: involvement and integration.

Today's managers must be able to cope with the many complex changes in the economy, such as social ties, demographic changes, and activities to promote internal development and acquisitions. Strategic planning allows managers to know what challenges and opportunities lie ahead. Because of the close dependencies amplified in the external environment of organizations, today's management can no longer make decisions based solely on internal or domestic considerations, as it must constantly consider laws, public opinion, shareholder wishes, labor ties, and other external parties. Otherwise, the needs or requirements of customers must be the top priority in developing the organization's mission because *"an organization is distinguished by the quality of the products that satisfy the customers' requirements"* (Drucker, PF 1993). Participative management encourages the development of creativity and innovation so that the members of the organization see it as a challenge to achieve the best results. At the same time, participative management aims to motivate staff to provide quality services by appreciating the merits they have had after some interesting ideas and proposals and to push them towards advanced knowledge through self-improvement and training. It is mainly envisaged to reward and encourage the contribution of members to the improvement of organizational performance which is contained in the strategic objectives of the organization. Objectives such as increasing the profitability of the company, the competitive advantage held by the company, and market share are just some of the aspects of competitive advantage.

On the organizational level, it contributes to economic efficiency with levers such as: involving the company's staff in the decision-making processes, creating favorable conditions for employees that aim to facilitate participation in important decisions related to the prosperity of the company, the design and preservation of the strategic advantage through team spirit, a factor that is enhanced by the competitive skills of the staff. To achieve superior performance, there must be common goals, constructive criticism to encourage the development of individual skills and there must also be a superior supervisor who must be an example for the company's staff and must motivate them to achieve an optimal degree to reach maximum performance.

The main objective of the participatory management system is to strengthen management skills, to adapt future leaders to the problems that may arise, and to stimulate the ability to solve them through creative methods. Precarious leaders fail to support participative management for two reasons: either they aspire to have taken control of everything, or they fear being replaced by someone more competent.

Only strong leaders can instill courage and confidence in others by giving them responsibility and creating competent teams that bring success and prestige to the organization. The implementation of participatory management has advantages such as increasing the quality of decisions through the use of knowledge and managerial skills of the members of the company, improving the participation of stakeholders in the definition and achievement of the company's objectives, and raising the awareness of the members of the organization.

The use of participative management leads to the formation of competencies within the organization that will facilitate the introduction of transformation, change, permanent innovative practices, and the increase of organizational performance. In an organization where the organizational culture and work climate are strong, employees work together effectively, share the vision and mission of the organization and make joint efforts to create appropriate working conditions for each employee.

4. Discussion: Systemic Opportunities and Structural Barriers

The findings of this study affirm the theoretical soundness and potential efficacy of the "Génération Green" strategy as a holistic framework. The strong positive correlations observed between the Génération Green Adoption Index (GGAI) and key performance indicators spanning income, resource efficiency, and intergenerational renewal provide robust, field-level validation of its core hypothesis. This demonstrates that when the principles of empowerment, sustainable intensification, and market integration are synergistically applied, they generate a virtuous cycle of improved economic returns and enhanced resilience.

However, this research also illuminates profound and systemic challenges that threaten to create a significant implementation gap, potentially relegating the strategy's benefits to a privileged minority. The discussion must therefore be bifurcated, addressing both the opportunities confirmed by the data and the structural barriers that obstruct their universalization.

a) The Empowerment Paradox and the Limits of Top-Down Diffusion

The stark "empowerment gap" uncovered where 30% of farmers, primarily smallholders, report negligible strategic awareness is perhaps the most critical finding. This aligns with critiques of the PMV, which note that technocratic, top-down approaches often fail to permeate the complex social and informational networks of marginalized farming communities (Bossenbroek & Ftouhi, 2020). In the context of "Génération Green," this gap is paradoxical: a strategy explicitly centered on the "human element" risks excluding a large portion of its intended beneficiaries from its conceptual framework. The principles of participative management tell us that without a sense of ownership and understanding of the strategic goals, compliance may be secured, but genuine engagement, innovation, and adaptive capacity will not (Kim, 2002). These disempowered farmers are not merely passive recipients; they are active agents whose exclusion from the strategic narrative weakens the entire system's ability to innovate and adapt to localized shocks.

b) The Techno-Financial Bottleneck in Sustainable Intensification

The data on technology adoption presents a classic techno-financial bottleneck. While the benefits of advanced drip irrigation are quantifiable and significant, the capital investment required creates an almost insurmountable barrier for the majority of small and medium-sized farms. This challenge transcends simple access to credit; it speaks to the suitability of financial products. Conventional loans, with their rigid repayment schedules, are often mismatched with the long investment horizons and variable cash flows inherent in agriculture, especially for capital-intensive green technologies (FAO, 2022). This bottleneck effectively means that the sustainability pillar of the strategy, while ecologically imperative, may inadvertently consolidate advantages with larger, capital-endowed actors unless financing mechanisms are radically rethought.

c) Market Integration and the Persistence of Informality

The persistent dominance of informal, local wholesale markets for 43% of surveyed farms is a major impediment to creating a "new agricultural middle class." These markets are characterized by information asymmetry, high transaction costs, and price volatility, trapping farmers in a cycle of low value capture and high risk. Moving farmers into formal, integrated value chains requires not only improved quality and volume but also the capacity to navigate certification schemes, contractual agreements, and logistical complexities. The data suggests that the support systems for this transition in terms of technical assistance, collective bargaining power through strengthened cooperatives, and market linkage programs are not yet reaching a critical mass of smallholders (World Bank, 2020). This perpetuates a dualistic structure where a modern, export-oriented sector coexists with a large, vulnerable informal sector.

d) The Compounding Challenge of Regional and Digital Divides

These barriers are not uniformly distributed but are compounded by geography and digital access. Rain-fed regions, already more vulnerable to climate variability, show lower GGA scores across all dimensions. Concurrently, the digital tools heralded as a cornerstone of the strategy's modernization precision agriculture apps, e-extension services, digital marketplaces remain out of reach for those lacking connectivity, devices, or digital literacy. This creates a dangerous feedback loop: the regions and farmers most in need of the resilience and market access offered by "Génération Green" are the least equipped to adopt its enabling technologies, risking an exacerbation of existing spatial inequalities (Igue & Said, 2021).

5. Conclusion and Pathways for a Truly Transformative Strategy

In conclusion, the "Génération Green" strategy represents an ambitious and theoretically coherent vision for transitioning Moroccan agriculture towards a model that balances productivity, sustainability, and equity. The empirical evidence presented confirms that its integrated approach, when implemented, yields measurable and mutually reinforcing benefits, validating its design.

However, the strategy's ultimate success and its ability to fulfill its promise of widespread, inclusive transformation are contingent upon confronting the deep-seated structural barriers identified in this discussion. Its future impact will be determined not by the clarity of its policy documents, but by the depth of its institutional and operational innovations. To this end, we propose three interconnected pathways for evolution.

First, the strategy must undergo a fundamental shift from a **diffusion-based to a participatory co-creation model**. This involves decentralizing implementation authority to regional agricultural directorates and, more importantly,

institutionalizing the role of farmer organizations, unions, and cooperatives in the design, monitoring, and evaluation of local programs. This aligns with Ostrom's (1990) principles of polycentric governance, where resource users involved in crafting rules demonstrate higher compliance and better outcomes. Training programs should evolve from transmitting pre-defined knowledge to facilitating farmer-led innovation platforms where solutions are adapted to local socio-ecological contexts.

Second, tackling the **techno-financial bottleneck** requires a revolution in agricultural finance. Public policy should actively catalyze the development of a green finance ecosystem. This includes: i) promoting de-risking instruments like partial credit guarantees to encourage banks to lend to smallholders for sustainable technologies; ii) developing and scaling pay-as-you-go (PAYG) financing models for drip irrigation and solar pumps, which align repayment with harvest cycles; and iii) supporting the issuance of green bonds specifically earmarked for sustainable agriculture projects that include a clear smallholder inclusion component (Clapp et al., 2018).

Finally, a **national digital inclusion compact for agriculture** is urgently needed. This would be a public-private partnership aimed not just at providing infrastructure, but at developing appropriate, low-cost technological solutions (e.g., USSD-based market information services for basic phones) and massive digital literacy campaigns tailored to farmers. The goal should be to make the "digital" in "Digital Agriculture" an inclusive tool for empowerment, not an additional vector of exclusion.

By embracing these pathways governance through participation, finance through innovation, and technology through inclusion Morocco can ensure that "Génération Green" transcends being a top-down plan and becomes a genuinely collective project. It can evolve from a strategy for farmers to a strategy with and by the agricultural generation it aims to cultivate, thereby securing a resilient and equitable future for its most vital sector.

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