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Greening Correctional Environments: The Case for Sustaining Renewable Energy and Green-Space Initiatives in Kenyan Correctional Facilities

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ABSTRACT

The transformation of correctional services requires interventions that advance institutional efficiency while supporting humane custody, staff wellbeing, safety and rehabilitation. In Kenya, ongoing initiatives to introduce renewable-energy systems and deliberately create green spaces within correctional facilities represent an important shift towards environmentally sustainable correctional practice. Although these initiatives may initially be understood as infrastructure and environmental programs, their potential contribution extends beyond reduced dependence on conventional energy sources. Reliable renewable energy can support lighting, water provision, security systems, healthcare, communication, food production and continuity of educational, vocational and rehabilitative programs. Similarly, accessible and well-maintained green spaces may improve environmental comfort, provide opportunities for purposeful activity and social interaction, and create restorative environments within settings commonly characterized by restriction, occupational strain and psychological stress. This paper makes the case for sustaining and expanding renewable-energy and green-space initiatives as essential components of green infrastructure and sustainable correctional facilities in Kenya. Drawing on psychological, correctional, and environmental perspectives, it argues that these initiatives should be understood as interconnected components of a green correctional environment capable of strengthening correctional climate. Their value should therefore be assessed not only through financial savings and environmental indicators, but also through their potential influence on psychological wellbeing, institutional safety, staff working conditions, humane treatment, and offender rehabilitation. The paper further identifies the importance of equitable access, stakeholder participation, appropriate maintenance and systematic monitoring in ensuring that green initiatives produce meaningful and sustainable institutional benefits. It concludes by proposing a mixed-methods evaluation involving persons in custody and custodial staff to establish how renewable energy and green spaces influence psychological stress, correctional climate and rehabilitation outcomes. Sustaining these initiatives would position green transformation as an integral component of modern, resilient and rehabilitation-oriented correctional services in Kenya.

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KEYWORDS: *green infrastructure, renewable energy, green spaces, sustainable correctional facilities, correctional climate, psychological wellbeing, rehabilitation.*

INTRODUCTION

Correctional reform is increasingly understood as extending beyond security and containment to include human dignity, rehabilitation, staff wellbeing, technological resilience and environmental responsibility. This broader understanding is reflected in the theme of the 2026 Corrections Week, *Transforming Correctional Services Through Technology and Green Solutions*. The theme provides

an opportunity to consider how environmentally sustainable interventions can enhance institutional efficiency while improving the conditions within which custody, work, and rehabilitation occur.

Correctional facilities are intensive users of energy, water, land and other natural resources. Reliable energy is required for lighting, cooking, water pumping, healthcare, security systems, communication, virtual court proceedings and educational, vocational and psychosocial programs. Interruptions to these services may affect institutional order, working conditions, access to justice, and the wellbeing of persons in custody. Environmental conditions such as heat, poor lighting, limited ventilation, and restricted access to natural spaces may further intensify the psychological and occupational pressures associated with correctional environments. Consequently, infrastructure must therefore be understood not merely as an operational concern, but as an important influence on institutional functioning and human experience.

Kenya has taken important steps towards environmentally sustainable correctional services. In June 2026, the State Department for Correctional Services announced a target of transitioning correctional institutions from wood fuel to clean energy by 2028. The initiative responds to the correctional system's substantial dependence on wood fuel and forms part of a broader commitment to modernization, sustainability, and climate responsibility (Kotikash, 2026). In July 2026, a solar-powered hybrid system was commissioned at Nairobi Remand and Allocation Maximum Security Prison to provide continuous backup power to essential areas, including facilities used for virtual court proceedings (Kigondu, 2026). This initiative demonstrates the connection between green technology, operational continuity and access to justice.

Correctional institutions are also creating green spaces through tree planting, landscaping, gardens and prison farms. More than 1,500 trees were planted at Nanyuki GK Prison Farm during the 2025 World Environment Day activities, alongside a commitment to regular tree-growing initiatives (Munyambu, 2025). Beyond contributing to national environmental goals, appropriately designed and maintained green spaces may provide shade, reduce environmental harshness, support food production and vocational activity, and create opportunities for reflection, social interaction and psychological restoration.

Renewable energy and green spaces are often treated as separate interventions: the former as a technological or cost-saving measure and the latter as an agricultural, aesthetic or conservation initiative. This paper proposes that they should instead be understood as complementary components of a green correctional environment. Renewable energy supports reliable institutional functioning, while green spaces influence the physical, sensory and psychological quality of the environment. Together, they may shape correctional climate, including perceptions of safety, order, dignity, institutional support and rehabilitation orientation. Research has identified lighting, environmental stimulation, views and access to nature as relevant to the wellbeing of people living and working within correctional facilities (Engstrom & van Ginneken, 2022). Studies conducted in England and Wales have also associated greater prison green space with improved self-reported wellbeing, lower self-harm and violence among persons in custody, and reduced staff sickness absence (Moran et al., 2022b; Moran et al., 2024). Although these findings cannot be transferred automatically to Kenya, they provide a credible basis for continued investment and local evaluation.

The case for sustaining these initiatives is further grounded in the principle of humane custody. Article 51 of the Constitution of Kenya affirms that persons in custody retain their rights and fundamental freedoms, except where these are incompatible with lawful detention, and requires their humane treatment (Kenya Law Reform Commission, 2010, art. 51). Creating environments that support health, dignity and rehabilitation should therefore not be interpreted as providing comfort inconsistent with punishment; deprivation of liberty constitutes the sentence, while preventable environmental hardship should not become an additional form of punishment.

Nevertheless, solar panels, trees and gardens do not automatically produce psychological, correctional or rehabilitative benefits. Renewable-energy systems require adequate resourcing, equitable distribution and consistent maintenance, while green spaces must be safe, accessible and integrated into institutional life. This conceptual paper therefore makes the case for the continuation, institutionalization and responsible expansion of renewable-energy and green-space initiatives within Kenyan correctional facilities. It examines their potential contribution to environmental sustainability, operational resilience, psychological wellbeing, correctional climate and rehabilitation, while proposing systematic evaluation to guide their effective implementation and future expansion.

LITERATURE REVIEW

Green Transformation in Correctional Services

The concept of green corrections refers to the integration of environmental sustainability into the

infrastructure, operations and rehabilitative functions of correctional institutions. It may include renewable and clean energy, energy-efficient buildings, sustainable water management, waste reduction, tree planting, food production, climate-resilient agriculture and the deliberate creation of accessible green spaces. Although these initiatives are frequently justified through environmental protection and cost reduction, their significance may extend to institutional resilience, correctional climate, psychological wellbeing and rehabilitation.

Correctional institutions operate continuously and depend on reliable infrastructure to maintain safety and provide essential services. Energy is required for lighting, cooking, water pumping, healthcare, communication, surveillance, administrative functions and rehabilitative programs. Inadequate or unreliable energy may interrupt institutional routines, increase workload, restrict access to services and heighten uncertainty among staff and persons in custody. These effects are particularly consequential in secure environments, where institutional order depends substantially on predictable routines and functional systems.

Kenya's correctional system has begun incorporating green technology into its transformation agenda. The State Department for Correctional Services has announced plans to transition correctional institutions from wood fuel to clean energy by 2028. This is significant given the reported consumption of approximately 2.5 kilograms of wood fuel per person in custody each day (Kotikash, 2026). The subsequent mobilization of green and climate finance indicates an intention to extend clean cooking technologies across correctional facilities (Kigondu, 2026)

The commissioning of a solar-powered hybrid system at Nairobi Remand and Allocation Maximum Security Prison illustrates the operational possibilities of renewable energy. The system provides continuous backup power to essential areas and supports virtual court hearings in a facility conducting approximately 200–500 virtual sessions daily (Kigondu, 2026). Renewable energy can therefore support access to justice, continuity of services and institutional efficiency, in addition to reducing environmental impact.

However, the existence of renewable-energy infrastructure does not necessarily indicate that its benefits are equitably distributed or sustainably realized. System capacity, maintenance, staff training, areas served and integration into institutional operations determine whether renewable energy produces meaningful change. Green correctional transformation must therefore be evaluated in terms of reliability and function rather than simply the presence of infrastructure.

Renewable Energy and the Correctional Environment

Research directly examining the psychological effects of renewable energy within correctional facilities remains limited. Renewable energy is more commonly evaluated using technical indicators such as installation capacity, energy output, carbon reduction and financial savings. These measures are important, but they do not adequately capture how energy systems influence the lived and working environment of a correctional institution.

Renewable energy is unlikely to reduce psychological stress merely because the source of power is environmentally sustainable. Its psychological and correctional value arises through the conditions it enables. Reliable power may improve lighting, water availability, ventilation, food preparation, healthcare delivery, communication and access to virtual judicial proceedings. It may also reduce interruptions to education, vocational training, counselling and other rehabilitation programs.

For custodial staff, reliable services may reduce operational uncertainty, emergency workload and the strain associated with maintaining security when essential systems are interrupted. For persons in custody, continuity of basic services and institutional routines may reduce uncertainty and environmental discomfort. These changes may strengthen perceptions of institutional competence, safety and procedural fairness.

The proposed relationship is therefore indirect. Renewable energy may influence wellbeing through improved environmental conditions, operational continuity and correctional climate. This distinction is important because it avoids portraying green technology as a psychological intervention in itself. It also demonstrates why the success of renewable-energy initiatives should be assessed using institutional and human indicators alongside technical and financial outcomes.

Green Spaces and Psychological Restoration

Green spaces include areas of vegetation within or around correctional institutions, such as trees, gardens, lawns, agricultural spaces and landscaped outdoor areas. Their potential value depends not merely on the amount of vegetation present but also on visibility, accessibility, safety, maintenance and meaningful use. A green space that persons in custody or staff cannot see, access or use may contribute to environmental sustainability without necessarily producing psychological restoration.

Exposure to natural environments has been associated with stress recovery, improved mood, reduced physiological arousal and restoration of depleted attention. These effects may be especially relevant within correctional settings, which are often characterized by restricted movement, limited autonomy, sensory monotony, crowding and persistent vigilance. Green spaces may provide visual relief from institutional surroundings, shade and opportunities for movement, purposeful activity or regulated social interaction.

Evidence specific to correctional institutions is emerging. Research involving prisons in England and Wales found that institutions with greater proportions of green space reported lower levels of self-harm and violence. These associations remained after accounting for institutional characteristics such as prison size, security level and overcrowding (Moran et al., 2022a). Subsequent research found associations between prison green space and self-reported wellbeing, with potentially stronger benefits in facilities experiencing overcrowding or holding larger proportions of younger and unsentenced persons (Moran et al., 2024).

The possible benefits are not limited to persons in custody. Moran et al. (2022b) found that prisons with higher proportions of natural vegetation had lower levels of staff sickness absence, even when institutional characteristics, violence, self-harm and assaults against staff were considered. Although sickness absence is not a direct measure of psychological stress, the findings suggest that the physical correctional environment may have implications for workforce wellbeing and institutional functioning.

The available literature nevertheless has limitations. Much of it originates from high-income countries, particularly England and Wales. The findings cannot be assumed to apply identically within Kenyan correctional facilities, where climate, institutional resources, population characteristics, security arrangements and cultural meanings attached to nature may differ. Furthermore, observational relationships do not conclusively demonstrate that green space causes reductions in stress, violence or self-harm. Better-resourced and more effectively managed institutions may also be more likely to maintain green spaces. This strengthens the case for continued implementation accompanied by locally grounded evaluation.

Green Spaces as Rehabilitative Resources

Green spaces may also contribute to rehabilitation when they are incorporated into structured activities. Prison gardens, tree nurseries, agriculture and environmental conservation programs can provide opportunities for vocational learning, responsibility, teamwork, and purposeful engagement. Such activities may support the development of skills that are useful after release, while allowing persons in custody to contribute to food production and environmental restoration.

The rehabilitative value of these spaces should not, however, be presumed. Participation should be safe, meaningful, and appropriately supported. Green work should not be reduced to compulsory labor or used solely to improve the appearance of facilities. The type of activity, voluntariness, skills acquired, and relationship to reintegration opportunities determine whether a green program is genuinely rehabilitative.

The benefits of green space may also extend beyond formal programs. Access to a safe outdoor space can support reflection, calm, social connection, and temporary relief from the pressures of confinement. These effects align with a rehabilitative correctional orientation in which the environment is designed to support constructive behavior and eventual reintegration rather than merely intensify deprivation.

Correctional Climate

Correctional climate encompasses the social, emotional, organizational and material qualities of life and work within a correctional institution. Its dimensions commonly include safety, institutional order, staff–inmate relationships, fairness, support, autonomy, respect and opportunities for personal development. Correctional climate is experienced differently by persons in custody and staff because the two groups occupy different roles and levels of institutional power. Nevertheless, both groups are affected by the same physical systems, routines and environmental conditions.

Research has demonstrated a relationship between prison climate and the wellbeing of persons in custody. In a study of 4,538 incarcerated adults in the Netherlands, both individual perceptions and shared experiences of prison climate were associated with wellbeing (van Ginneken et al., 2019). For custodial staff, perceptions of institutional organization, safety, peer support and administrative support have similarly been associated with occupational stress and anxiety.

Correctional climate provides the conceptual link between green infrastructure and psychological outcomes. Reliable energy may make the institution more predictable, functional and safe. Green spaces may make it less environmentally harsh and provide opportunities for restoration and purposeful activity. These conditions may influence perceptions of safety,

dignity, order and rehabilitation orientation, which may subsequently affect psychological stress.

The physical environment should therefore be recognized as one contributor to correctional climate rather than treated as separate from it. A systematic review of prison architecture identified lighting, environmental stimulation, views and access to nature among the environmental domains relevant to wellbeing (Engstrom & van Ginneken, 2022). Correctional climate is produced through the interaction of physical infrastructure, institutional practices, relationships and individual experiences.

Psychological Stress Among Persons in Custody and Custodial Staff

Persons entering correctional institutions may already have histories of trauma, social disadvantage, substance use, mental health difficulties and disrupted relationships. Imprisonment can introduce additional stressors, including loss of liberty, separation from family, uncertainty about legal outcomes, reduced autonomy, exposure to violence and adaptation to institutional routines. Environmental discomfort and interruptions to essential services may add to this cumulative burden.

Custodial staff experience a different but related pattern of stress. Their work may involve exposure to violence, threats, emergencies, overcrowding, high workloads and responsibility for individuals with complex psychological, medical and social needs. Organizational conditions such as limited resources, inconsistent systems and inadequate support can amplify these demands. Reliable infrastructure and supportive physical environments cannot eliminate the inherent demands of custodial work, but they may reduce avoidable operational and environmental stressors.

It is therefore important that persons in custody and custodial staff are not combined into a single undifferentiated population. The same environmental intervention may operate through different mechanisms. Reliable lighting may be associated with personal safety and predictability for persons in custody, while enabling staff to perform security duties more effectively. A green space may provide psychological relief to both populations, but access, control and patterns of use are likely to differ.

Knowledge Gap

Existing literature supports the proposition that correctional environments affect wellbeing and institutional functioning. However, three important gaps remain. First, renewable-energy programs in correctional settings are predominantly discussed in technical and economic terms, with limited attention to their psychological, social, and correctional implications. Second, although evidence connecting prison green space with wellbeing is growing, it remains concentrated in settings outside Africa. Third, few studies have examined renewable energy and green spaces together as components of a broader green correctional environment.

There is consequently limited evidence concerning how custodial staff and persons in custody in Kenya experience these initiatives or whether the initiatives influence psychological stress, correctional climate, and rehabilitation. The absence of local evidence should not be used as a reason to discontinue promising initiatives. Rather, it demonstrates the need to sustain them while establishing monitoring systems and conducting contextually appropriate research.

THEORETICAL FRAMEWORK

This paper is primarily guided by Environmental Stress Theory, complemented by Stress Reduction Theory. Together, the theories explain how correctional environments may generate stress and how improved environmental conditions and contact with nature may support recovery.

Environmental Stress Theory

Environmental Stress Theory proposes that features of the physical environment can become sources of psychological and physiological strain when they are experienced as threatening, unpredictable, uncomfortable or beyond an individual's control (Evans & Cohen, 1987). Environmental stressors may include noise, crowding, heat, poor lighting, inadequate ventilation, restricted space and interruptions to essential services.

This perspective is particularly applicable to correctional facilities because individual control over the environment is limited. Persons in custody cannot generally leave uncomfortable settings, determine institutional schedules or independently obtain alternative services. Custodial staff may possess greater freedom of movement but remain responsible for maintaining safety and order when infrastructure fails. The same energy interruption may therefore produce different but interconnected stress responses across the two populations.

Within this framework, renewable energy may reduce environmental stress indirectly by increasing the reliability of lighting, water, communication and other essential services. Green spaces may reduce environmental harshness by providing shade, vegetation, sensory variation and opportunities for restorative engagement. The theory consequently supports examining both objective environmental conditions and participants' perceptions of those conditions.

Stress Reduction Theory

Stress Reduction Theory proposes that exposure to safe and non-threatening natural environments can promote recovery from stress through positive emotional and physiological responses (Ulrich et al., 1991). Natural elements may reduce arousal, interrupt negative affect, and support a transition from heightened vigilance towards calm. Ulrich et al. (1991) demonstrated more favorable emotional and physiological recovery following exposure to natural rather than urban environments.

In a correctional context, the theory suggests that seeing, accessing, or engaging with safe green spaces may provide moments of psychological restoration within an otherwise highly regulated environment. The restorative effect would depend on whether the space itself is perceived as safe. Poorly supervised, inaccessible, or conflict-prone spaces may not produce the anticipated benefits.

Stress Reduction Theory is most directly relevant to the green-space component of the paper. It does not explain the influence of renewable energy by itself. The contribution of renewable energy is better understood through the reduction of environmental and operational stressors. The two theories are therefore complementary. The Environmental Stress Theory explains how dysfunctional or harsh environments add to stress, while Stress Reduction Theory explains how contact with nature may facilitate recovery.

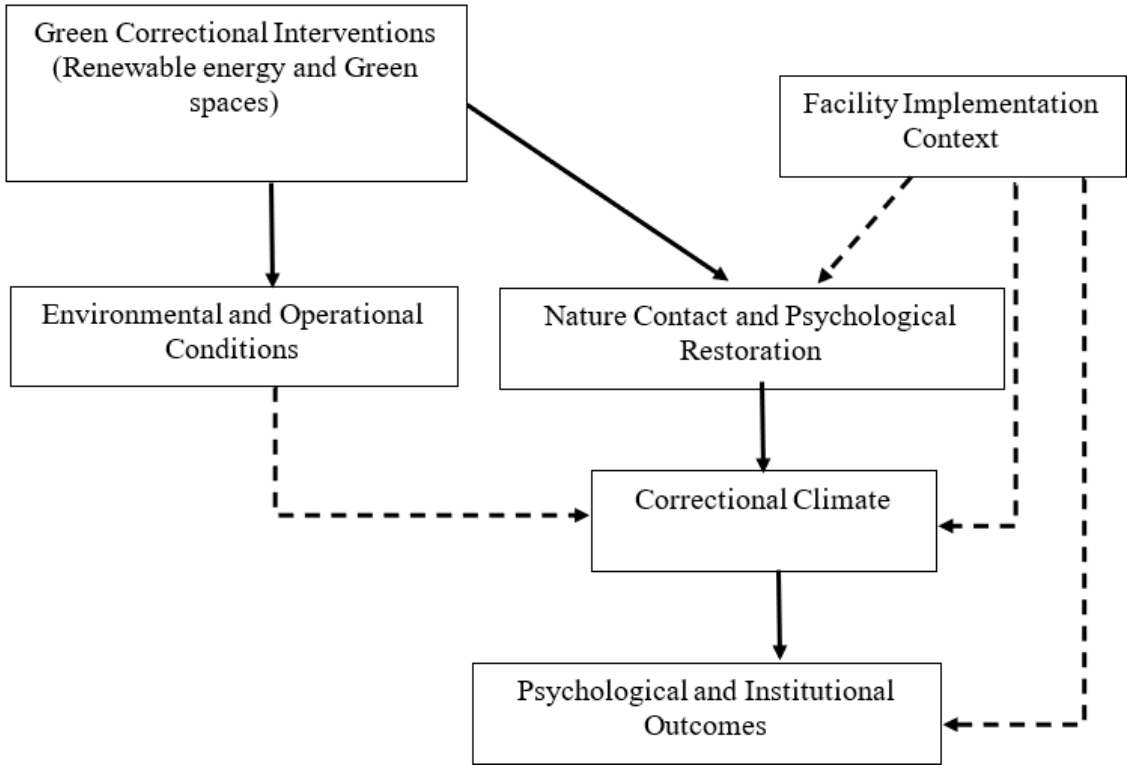
Correctional Climate as the Institutional Mechanism

Correctional climate is not presented as a separate psychological theory but as the institutional mechanism through which environmental interventions may acquire correctional meaning. Green infrastructure can alter material conditions, but participants interpret those changes in relation to safety, fairness, dignity, institutional competence, and rehabilitation. For example, improved lighting may be experienced not only as a technical improvement but as greater safety. Reliable virtual court facilities may be understood as institutional responsiveness and improved access to justice. A maintained garden that is accessible to persons in custody may communicate dignity and rehabilitation orientation. Conversely, infrastructure that benefits administrative areas while living or working areas remain underserved may be experienced as inequitable and may not improve correctional climate. The theoretical position of the paper is therefore that psychological stress is influenced not only by exposure to physical conditions but also by how those conditions are interpreted within the institutional environment.

CONCEPTUAL FRAMEWORK

The paper conceptualizes renewable energy and green spaces as two distinct but related dimensions of green correctional interventions. The proposed relationships are illustrated in Figure 1.

Figure 1. Conceptual Framework Linking Green Correctional Interventions to Psychological and Institutional Outcomes



As illustrated in Figure 1, green correctional interventions constitute the principal independent variable, comprising renewable and clean energy systems and deliberately created accessible and maintained green spaces. These interventions are proposed to influence psychological and institutional outcomes through three intervening mechanisms (i) improved environmental and operational conditions, (ii) nature contact and psychological restoration, and (iii) correctional climate. The environmental and operational conditions include energy reliability, lighting, water availability, ventilation, environmental comfort, as well as continuity of services and programs. Correctional climate includes perceived safety, order, fairness, relationships, dignity, institutional support and rehabilitation orientation. The nature and strength of these relationships may vary according to facility and implementation factors, including facility type, security level, overcrowding, infrastructure, intervention quality, accessibility, maintenance and equitable distribution. Psychological stress and wellbeing constitute the principal psychological outcomes, while institutional safety, staff functioning, operational resilience and engagement in rehabilitation represent the anticipated institutional outcomes.

Renewable energy is expected to operate principally through environmental and operational conditions. Green spaces may operate both through direct restorative experiences and through their contribution to the broader correctional environment. Correctional climate is positioned as a mediating pathway because environmental improvements may influence stress partly by changing perceptions of safety, order, dignity and institutional support.

The framework does not assume that every intervention will generate positive outcomes. Benefits may be moderated by several factors including:

- the reliability and adequacy of renewable-energy systems
- accessibility and quality of green spaces;
- maintenance and institutional ownership;
- participation of staff and persons in custody;
- equitable distribution of benefits;
- overcrowding and security classification; and
- whether green initiatives are integrated into rehabilitation and daily operations.

The framework supports the central proposition of this paper: sustaining renewable-energy and green-space initiatives can contribute to more resilient and humane correctional institutions, but their correctional and psychological value depends on how they are implemented, experienced and maintained. A subsequent mixed-methods study can test these relationships and establish their relevance within Kenyan correctional facilities.

DISCUSSION

The literature, theoretical perspectives and conceptual framework presented in the preceding sections indicate that renewable energy and green spaces have significance beyond environmental conservation and infrastructure modernization. Within correctional settings, these initiatives may influence the reliability of essential services, the quality of the physical environment, psychological wellbeing, correctional climate and opportunities for rehabilitation. Their value should therefore not be assessed solely through energy output, financial savings, reduced wood-fuel consumption or the number of trees planted, but also through their contribution to humane, safe, resilient and rehabilitation-oriented institutions.

This paper consequently argues that renewable-energy and green-space initiatives should be sustained, progressively expanded, and embedded within Kenya's broader correctional transformation agenda. The case for their continuation rests on five interconnected contributions namely (i) strengthening operational resilience and access to essential services, (ii) supporting the psychological wellbeing of persons in custody and custodial staff, (iii) advancing humane custody and a positive correctional climate, (iv) promoting rehabilitation and reintegration, and (v) contributing to environmental responsibility and national development priorities. However, these benefits are neither automatic nor uniform. They depend on the quality of implementation, equitable access, appropriate maintenance, stakeholder participation and integration into the everyday operations and rehabilitative functions of correctional institutions.

Strengthening Operational Resilience and Access to Essential Services

Correctional institutions operate continuously and depend on reliable infrastructure to maintain security, institutional order, and access to essential services. Energy interruptions can affect lighting, surveillance, communication, water pumping, food preparation, healthcare, administrative systems, virtual court proceedings and rehabilitative programs (Unified Industries & JRB Associates, 1981). Since these functions cannot simply be suspended when conventional power fails, energy reliability is central to institutional resilience rather than merely a matter of operational convenience.

Renewable-energy systems can reduce dependence on a single or unreliable energy source and provide backup power for critical functions (Kotulla et al., 2022). Their value lies not only in generating cleaner

energy, but also in sustaining the services required for safe and effective correctional operations. Reliable power may reduce program interruptions, administrative delays and the additional workload created when staff have to manage essential functions during outages (Giri, 2020). It can also strengthen the adoption of digital technologies by ensuring that systems for communication, case management, virtual hearings, and service delivery are supported by a dependable energy supply.

The solar-powered hybrid system commissioned at Nairobi Remand and Allocation Maximum Security Prison demonstrates this operational contribution. The system provides continuous backup power to essential areas, including facilities used for virtual court proceedings. In an institution facilitating approximately 200-500 virtual hearings daily, energy reliability directly supports continuity of judicial processes, reduces delays and may lessen the logistical and security demands associated with transporting persons in custody to court (Kigondu, 2026). Renewable energy therefore functions simultaneously as green infrastructure, technological enablement, and support for access to justice.

The transition from wood fuel to clean cooking has similarly important operational implications. Correctional facilities must prepare food consistently for large populations, making cooking a resource-intensive and time-sensitive function. Clean-energy alternatives may improve the reliability and efficiency of food preparation while reducing smoke exposure, pressure on forest resources and the logistical demands associated with procuring, transporting and storing firewood. The State Department for Correctional Services' target of transitioning correctional institutions from wood fuel to clean energy by 2028 consequently represents both an environmental commitment and an operational reform.

Green spaces may also support institutional functioning when they are deliberately integrated into facility planning. Trees can provide shade and reduce heat exposure, while gardens, nurseries and prison farms may contribute to food production, environmental management and vocational programming. Their contribution, however, depends on appropriate location, maintenance, accessibility and compatibility with institutional safety requirements.

The operational benefits of green initiatives are not automatic. Renewable-energy systems must be appropriately sized, equitably distributed and supported by preventive maintenance, trained personnel, and reliable access to replacement components. Green spaces similarly require clear management responsibilities and integration into institutional routines. Without these provisions, green initiatives risk becoming short-lived projects rather than dependable institutional systems.

Operational success should therefore be assessed through more than installation numbers or immediate financial savings. Relevant indicators include the frequency and duration of service interruptions, continuity of water and healthcare services, reliability of virtual court proceedings, consistency of food preparation, program continuity, staff time, maintenance costs and emergency preparedness. Embedding these measures within correctional management would demonstrate whether green initiatives are strengthening the resilience and efficiency of institutions in practice.

Supporting the Psychological Wellbeing of Persons in Custody and Custodial Staff

Correctional institutions are inherently demanding environments for both persons in custody and custodial staff. Persons in custody may experience psychological stress associated with loss of liberty, separation from family, uncertainty about legal proceedings, restricted autonomy, overcrowding, and concerns about personal safety. Custodial staff work within the same environment while managing security risks, demanding workloads, institutional emergencies, and responsibility for individuals with complex psychological, medical, and social needs. Although green initiatives cannot eliminate these inherent pressures, they may reduce avoidable environmental and operational stressors that intensify them.

The psychological contribution of renewable energy is primarily indirect. Renewable-energy systems should not be assumed to reduce stress simply because the energy source is environmentally sustainable. Rather, reliable energy may support psychological wellbeing by improving the consistency of lighting, water supply, ventilation, food preparation, healthcare, communication, and institutional programs. When essential services function predictably, uncertainty, discomfort, and disruption may be reduced. This is consistent with Environmental Stress Theory, which recognizes that environmental conditions experienced as uncomfortable, unpredictable or beyond an individual's control can generate or intensify psychological strain.

Energy reliability may have different implications for persons in custody and custodial staff. For persons in custody, reliable lighting, water, healthcare and communication may support physical comfort, safety

and confidence in institutional responsiveness. Continuity of virtual court proceedings may also reduce distress associated with delays and uncertainty in legal processes. For staff, dependable infrastructure may reduce emergency workload, operational frustration and the pressure of maintaining safety and order when essential systems fail. These distinct experiences demonstrate why the psychological implications of renewable energy should be examined separately for the two populations.

Green spaces offer a more direct pathway to psychological restoration. Correctional environments are commonly characterized by restricted movement, institutional architecture, sensory monotony, and prolonged vigilance. Safe and accessible vegetation, gardens and landscaped outdoor areas may provide visual and sensory relief from these conditions. In accordance with Stress Reduction Theory, exposure to non-threatening natural environments may support recovery from stress by promoting positive affect, reducing arousal, and creating opportunities for calm and reflection.

Emerging correctional research supports this proposition. Studies conducted in prisons in England and Wales have associated greater availability of green space with improved self-reported wellbeing as well as lower levels of self-harm and violence among persons in custody. The associations were particularly pronounced in overcrowded institutions and facilities holding larger proportions of younger and unsentenced persons (Moran et al., 2024). Greater prison green space has also been associated with lower staff sickness absence, suggesting that nature contact may have implications for correctional workforce wellbeing and institutional functioning (Moran et al., 2022b). Although these findings do not establish that equivalent outcomes will occur in Kenya, they provide a credible basis for sustaining the initiatives while generating context-specific evidence.

The psychological value of green spaces depends on more than the presence or number of trees. Spaces must be visible or accessible, appropriately maintained, and experienced as safe. Their design should consider shade, seating, opportunities for movement, supervision, and the needs of different facility populations. Green spaces may also acquire greater meaning when connected to purposeful activities such as gardening, horticulture, or environmental conservation. Conversely, inaccessible, poorly maintained, or unsafe spaces may produce limited restorative benefit, regardless of the amount of vegetation present.

Green initiatives should also complement rather than substitute for mental health services, adequate staffing, supportive management, and humane institutional practices. Psychological distress within correctional environments is multidetermined and cannot be addressed through environmental design alone. Renewable energy and green spaces are best understood as components of a broader institutional approach that reduces unnecessary stressors while strengthening conditions that support safety, dignity, emotional regulation, and access to care.

Sustaining these initiatives therefore offers an opportunity to incorporate psychological wellbeing into correctional infrastructure and environmental planning. Their success should be monitored through indicators such as perceived stress, environmental comfort, sense of safety, access to restorative spaces, staff wellbeing, sickness absence, self-harm, and incidents of violence. Including the perspectives of both persons in custody and custodial staff would help establish whether green initiatives are experienced as meaningful improvements and how their psychological benefits can be strengthened.

Advancing Humane Custody and a Positive Correctional Climate

Green correctional initiatives can advance humane custody by improving the material and environmental conditions in which persons live and staff work. Humane custody involves more than preventing cruel or degrading treatment. It requires institutional conditions that protect dignity, health, and safety while supporting rehabilitation. Article 51 of the Constitution of Kenya requires the humane treatment of persons in custody and affirms that they retain all rights and fundamental freedoms except those incompatible with lawful detention (Kenya Law Reform Commission, 2010). Reliable lighting, water, food preparation, healthcare and communication, together with safe and accessible green spaces, can support this obligation by reducing preventable environmental hardship. The deprivation of liberty constitutes the sentence and should not be compounded by avoidable infrastructural deprivation or environmental neglect.

The shared experience of safety, order, fairness, relationships, institutional support, and rehabilitation orientation within a facility shape correctional climate. The physical environment is not merely the setting in which correctional climate develops; it influences routines, interactions, and perceptions of institutional competence. Reliable energy may strengthen predictability and confidence in essential systems, while maintained green spaces may reduce environmental harshness and communicate care,

dignity, and an orientation towards personal development. Such conditions can contribute to more respectful interactions and a stronger sense that the institution is organized, responsive, and capable of fulfilling both custodial and rehabilitative responsibilities.

The effects of green initiatives on correctional climate nevertheless depend on how their benefits are distributed and experienced. Infrastructure that reliably serves administrative areas while accommodation, healthcare, or program spaces remain underserved may reinforce perceptions of inequality. Similarly, green spaces that are visible but inaccessible, and available only to selected groups or primarily maintained for ceremonial purposes may be interpreted as symbolic rather than humane. If green initiatives are to strengthen perceptions of fairness and institutional legitimacy, equitable access, transparent allocation, stakeholder participation, and sensitivity to differences in gender, age, disability, remand status, and security classification are crucial.

A more positive correctional climate may support both wellbeing and institutional order by reducing avoidable frustration, strengthening trust, and creating conditions conducive to constructive engagement. Green infrastructure therefore should not be presented as a substitute for adequate staffing, procedural fairness, respectful treatment or accountable leadership; rather, it can reinforce these institutional practices. Sustaining renewable-energy and green-space initiatives as part of a wider humane-custody strategy would align environmental transformation with the constitutional responsibilities of correctional services and ensure that modernization is assessed not only by what institutions install, but also by how safely, fairly, and respectfully people experience life and work within them.

Supporting Rehabilitation and Reintegration

Green correctional initiatives can support rehabilitation when they are intentionally connected to purposeful activity, education, and skills development. Prison gardens, farms, tree nurseries, environmental conservation programs, and renewable-energy projects can provide structured opportunities for persons in custody to develop responsibility, teamwork, problem-solving, and practical competence. Engagement in such activities may also reduce idleness, create a sense of contribution, and strengthen the rehabilitative orientation of correctional institutions. Their value therefore extends beyond environmental improvement to the creation of experiences that support personal development during custody.

Green initiatives may also provide vocational skills relevant to emerging employment and livelihood opportunities. Training in horticulture, climate-resilient agriculture, tree propagation, waste management, clean-cooking technologies, and the installation or basic maintenance of renewable-energy systems may strengthen employability and self-employment prospects following release. For these activities to contribute meaningfully to reintegration, training should be competency-based, appropriately certified, and connected to external employers, technical institutions, community organizations, and post-release support. Skills that cannot be recognized or applied outside the correctional institution are less likely to facilitate sustainable reintegration.

The rehabilitative value of participation should not, however, be presumed. Green activities must be safe, voluntary or appropriately regulated, fairly allocated, and accompanied by meaningful instruction rather than reduced to compulsory or routine labor. Access should take account of gender, age, disability, sentence status, security classification, and individual rehabilitation plans. Participants should understand the competencies being developed and, where possible, receive documentation of their training and contribution. These safeguards help ensure that green programs promote agency, dignity, and future orientation rather than simply meeting institutional production or maintenance needs.

Sustaining green initiatives can therefore strengthen the connection between environmental responsibility and the core correctional objective of preparing individuals for lawful and productive community life. Their success should be assessed not only by agricultural output, trees planted or energy systems maintained, but also by participation, competencies gained, certification, psychosocial development, and post-release education, employment, or livelihood outcomes. When embedded within individual rehabilitation plans and supported through community partnerships, green correctional programs can contribute to continuity between custody and reintegration while enabling persons in custody to participate meaningfully in Kenya's developing green economy.

Contributing to Environmental Responsibility and National Development Priorities

Correctional institutions have a substantial environmental footprint because of their continuous demand for energy, cooking fuel, water, food, and land. The large populations accommodated within these facilities can intensify wood-fuel consumption, waste generation, and pressure on surrounding natural resources. Transitioning to renewable energy and

clean-cooking technologies can reduce dependence on firewood, limit greenhouse-gas emissions, and support more sustainable use of public resources. The State Department for Correctional Services' target of transitioning correctional institutions from wood fuel to clean energy by 2028 (Kotikash, 2026) therefore positions the correctional system as an active contributor to Kenya's wider climate and clean-energy agenda rather than merely a consumer of environmental resources.

Deliberate creation of green spaces can similarly support national priorities concerning forest restoration, biodiversity, climate resilience, and land rehabilitation. Tree growing within correctional facilities and prison farms may increase vegetation cover, provide shade, reduce soil erosion, and improve the productive use of institutional land. The participation of correctional institutions in Kenya's national tree-growing agenda demonstrates how secure public institutions can contribute land, labor, nurseries, and organizational capacity to environmental restoration. These efforts should, however, emphasize the survival and ecological suitability of planted trees rather than relying exclusively on the number of seedlings planted as evidence of success.

Green initiatives may also strengthen food security and institutional self-sufficiency. Prison farms, gardens, and climate-resilient agricultural systems can supplement food production while providing platforms for vocational training and environmental learning. Renewable energy may support irrigation, water pumping, food preservation, and value addition. This would connect technological transformation with sustainable agriculture. When responsibly managed, this integration can reduce vulnerability to climatic variability and supply disruptions while contributing to national priorities in food security, agricultural modernization, and green skills development.

The environmental contribution of correctional facilities should consequently be incorporated into institutional planning, budgeting, and performance assessment. Relevant indicators include reductions in wood-fuel and conventional-energy consumption, renewable-energy generation, carbon-emission reductions, tree survival, restored land, water efficiency, sustainable food production, and skills development through green programs. Aligning correctional transformation with national environmental and development priorities can strengthen access to climate financing, technical partnerships, and public investment. More importantly, it demonstrates that correctional institutions can contribute to national sustainability goals while simultaneously advancing humane custody, rehabilitation, and responsible stewardship of public resources.

Conditions Necessary for Meaningful and Sustainable Implementation

The anticipated benefits of green correctional initiatives depend on implementation quality rather than the mere installation of renewable-energy systems or creation of green spaces. Facilities differ in population size, security classification, infrastructure, climatic conditions, available land, and operational demands. Consequently, a uniform model may be neither effective nor sustainable. Facility-specific assessments should determine energy consumption, essential services requiring backup, cooking requirements, water needs, suitable technologies, and opportunities for greening. These assessments should inform realistic implementation plans with clear objectives, timelines, responsibilities, and indicators extending beyond equipment installed or trees planted.

Long-term sustainability requires dedicated financing, preventive maintenance, and appropriate technical capacity. Renewable-energy systems may become ineffective when replacement components, trained personnel, or maintenance budgets are unavailable. Similarly, green spaces may deteriorate without water, ecological planning, and clear responsibility for their care. Procurement decisions should therefore consider lifecycle costs, compatibility with locally available expertise and supplies, warranties, repair arrangements, and eventual equipment replacement. Staff and appropriately selected persons in custody may receive technical or environmental training, but this participation should supplement - not replace - qualified professional oversight.

Equity, safety, and stakeholder participation are equally important. Staff and persons in custody should be consulted about environmental challenges, priority services, green-space use, and barriers to access because they experience the facility's conditions directly. Benefits should be distributed transparently across accommodation, healthcare, kitchens, program areas, and administrative or security functions. Green spaces should also accommodate differences in gender, age, disability, health, remand status, and security classification while maintaining appropriate supervision. Participation by persons in custody must be safe, fairly allocated, and connected to genuine rehabilitative or vocational objectives rather than becoming exploitative or uncompensated labor presented as sustainability.

Finally, green initiatives should be institutionalized through policy, management systems, and continuous monitoring rather than implemented as isolated, donor-dependent projects. Correctional facilities require defined performance indicators covering energy reliability, service continuity, environmental outcomes, access, psychological wellbeing, institutional safety, and rehabilitation. Routine monitoring should combine technical records with the experiences of staff and persons in custody. This would enable institutions identify unequal benefits, unintended consequences, and maintenance failures. Embedding these initiatives within correctional budgets, infrastructure plans, staff responsibilities, and interagency partnerships would protect them from leadership changes and short funding cycles, allowing green transformation to become a durable component of correctional policy and practice.

POLICY AND PRACTICE RECOMMENDATIONS

This paper recommends the following actions in order of priority:

1. Adoption of a national green corrections framework.

The State Department for Correctional Services could establish standards for renewable energy, clean cooking, green spaces, sustainable agriculture, rehabilitation, and environmental performance across correctional facilities.

2. Prioritization of essential services through facility-specific assessments.

Each facility could identify critical energy and environmental needs, prioritizing lighting, water, kitchens, healthcare, security systems, virtual courts, and rehabilitative programs.

3. Provision of lifecycle financing and technical maintenance.

Budgets could cover installation, preventive maintenance, repairs, replacement components, and staff training to prevent green infrastructure from becoming non-functional or donor-dependent.

4. Integration of wellbeing and equitable access into implementation.

Green spaces and reliable services should benefit persons in custody and custodial staff across accommodation, work, healthcare, and program areas. Consideration for gender, disability, age and security requirements should be met.

5. Connection of green initiatives to rehabilitation and reintegration.

Correctional facilities could provide accredited training in renewable energy, clean cooking, horticulture, climate-resilient agriculture, and environmental management. These trainings should be supported by external training and employment partners.

6. Establishment of multidimensional monitoring and accountability.

Performance could be assessed using operational, environmental, psychological, and rehabilitative indicators, including service continuity, energy savings, tree survival, psychological wellbeing, institutional safety, skills acquired, and post-release outcomes.

PROPOSED RESEARCH AND EVALUATION AGENDA

Although existing evidence provides a strong basis for sustaining green correctional initiatives, systematic evaluation is necessary to determine how they function within Kenyan correctional facilities. A contextually grounded research agenda could assess implementation quality, identify intended and unintended outcomes, and guide responsible expansion. Such evaluation is not a precondition for continuing the initiatives, but a means of strengthening implementation, demonstrating value, and informing future policy and resource allocation.

Rationale for Evaluation

Systematic evaluation is necessary to establish whether green correctional initiatives produce their intended operational, environmental, psychological, and rehabilitative benefits. The evaluation would identify implementation gaps, unequal access, and unintended consequences while determining which interventions work, for whom, and under what facility conditions. The resulting evidence would strengthen accountability, guide resource allocation, and inform the responsible adaptation and expansion of green initiatives across Kenya's correctional system.

Priority Areas for Evaluation

Evaluation could assess renewable-energy reliability and coverage. This includes green-space availability, accessibility and use, continuity of essential services and programs, psychological stress and wellbeing, correctional climate, and institutional safety including staff functioning as well as engagement in rehabilitation. Environmental and operational indicators would include energy savings, reduced wood-fuel consumption, tree survival, maintenance costs and service interruptions. Rehabilitation outcomes would capture participation, competencies acquired, certification and post-release education, employment or livelihood pathways. These indicators could be examined across different facility types and populations to establish whether benefits are equitable and contextually sustainable.

Proposed Methodological Direction

A multi-site mixed-methods evaluation is recommended, combining facility records and environmental indicators with surveys, interviews and focus-group discussions. The participants would be persons in custody, custodial staff, and institutional managers. Where feasible, baseline and follow-up data should be collected to assess change over time, with comparisons across facilities and levels of implementation. Data for staff and persons in custody should be analyzed separately and then integrated to explain how intervention quality, facility context, and correctional climate influence psychological, operational, and rehabilitative outcomes.

CONCLUSION

Renewable energy and green spaces should not be treated as peripheral environmental projects within Kenya's correctional system. They represent interconnected investments in operational resilience, access to essential services, psychological wellbeing, humane custody, rehabilitation, and national environmental responsibility. Sustaining and progressively expanding these initiatives is therefore consistent with the transformation of correctional services into institutions that are technologically enabled, environmentally responsible, and rehabilitation-oriented.

Their benefits, however, will depend on deliberate implementation, equitable access, technical maintenance, stakeholder participation and integration into institutional planning and rehabilitative programs. A national policy framework and multidimensional monitoring system are consequently necessary to ensure that green initiatives remain functional, inclusive, and accountable. Systematic evaluation should accompany implementation to establish what works, for whom, and under what facility conditions. By embedding green solutions within correctional policy and practice, Kenya can move beyond greening correctional facilities as physical spaces towards transforming the conditions in which custody, work, and rehabilitation occur.

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