Research Paper

Assessing the impact of urban governance system on forest degradation: The case of Barqash Forests - Jordan

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Abstract

Natural forests in Jordan are a cornerstone of sustainable development. They support biodiversity, support good quality soil and water, fight climate change, and are essential to provide a livelihood for the locals. However, they only encompass about 1.1 percent of the country (≈98,000 hectares), and a reported 89 percent lie under private ownership. In a country where roughly 90% of the land is drylands, the impact of climate change, water scarcity, population expansion, and rapid urbanization combine to drive up deforestation and land degradation. As such, these dynamics impede policymakers' attempts to oversee forestlands and strike a balance between environmental, social, and economic outcomes. The study identifies the relevant authorities, coordination mechanisms, and stakeholder collaborations of appropriate sectors in the current policy framework available in Jordan and highlights their role in forest conservation policies more generally. It also examines the ways land ownership structures condition policy effectiveness and frame different actors towards policy enforcement. Based on the mixed methods design and using the case of Barqash Forests, the research is based on the content analysis of main strategies, policies, and action plans by the national governments for forest management. Empirical data were collected from 34 semi-structured in-depth interviews with stakeholders involved in forest stewardship, and 214 community surveys on local views of responsibilities and practices for the maintenance of natural forests. Findings reveal that forest degradation results from interlocking administrative, legislative, economic, and social aspects. Governance is focused primarily on three major ministries: the Ministry of Agriculture, the Ministry of Municipal Affairs, and the Ministry of Environment. In practice, these authorities work in parallel, without common holistic programs. While integrated, long-term management plans are nascent. Poor inter-agency coordination, a lack of a modern forest tenure regime, fragmented ownership, and the absence of a single national database impede effective implementation. State protection (law bimensal, leasing, or exchange of forests), as against fewer state restrictions on privately owned forests, means that publicly owned forests are less degraded and the states allow greater developmental and investment activities, but privately owned forests are more vulnerable to conversion and ecological degradation. The study suggests, to sustain the future existence of Jordan's forest ecosystems and promote targeted SDGs of the sustainable forest ecosystem, (1) strengthening legal and policy instruments to determine mandates and fill enforcement gaps; (2) institutionalizing inter-agency coordination and data sharing via an integrated national forest information system; (3) promoting sustainable forest management that considers diversity of ownership; (4) entrenching community-led frameworks that acknowledge local stewardship and motivation, and (5) developing and implement eco-tourism initiatives that generate livelihoods while enhancing conservation objectives. Together, these actions will serve to realign governance, ownership, and practice toward effective forest preservation in Jordan.

Keywords

Forest lands governance, land tenure systems, localized sustainable development goals, and community-driven approaches.

1. Introduction

Forests can be vital system services for the environment, biodiversity, and economic processes, but their governance and management are diverse and vary according to national context and conditions (Al-Eisawi, 2012; Bank, 2019). For Jordan, forestry management is highly centralized and controlled by the government, particularly in terms of legislation, control, and surveillance. However, its environmental sustainability and climate-change management policies are quite distinct, and the public-private forestry affairs are regulated by separate laws (Bdour and Al-Shadiadeh 2013). Even though Jordan forests represent only 1.1% of its territory with around 98,000 hectares (Figure 1), they are crucial ecologically, yet they are under extreme threat, especially in a country with close to 90% of the country with arid and/or semi-arid land. The ecological significance of the forests of Jordan in terms of conservation of soil, water, climate, and sustainable development of the rural environment is very difficult to preserve when it comes to the fragmentation of forests (with almost 89% of the land being privately owned).

Climate change, water scarcity, rapid population growth, and uncontrolled urbanization exacerbate all aspects of such situations. This implies that deforestation is conceived more as an institutional and governance issue, not wholly biophysical. The responsibilities relating to forest land are divided between the Ministries of Agriculture, Municipal Affairs, and Environment, who are respectively tasked with holding only a small governance role in land planning, environmental matters, and the protection of such land. There is a significant overlap and sectoralism in governance, particularly in the absence of a national vision for all forestlands. Without a comprehensive view, accountability and long-term foresight are difficult. The relationship of the country's landownership and tenure systems further shapes the extent of deforestation, with public forests experiencing more stringent measures against selling and conversion, and private ones subject to potential subdivision, development, and land use that are subject to municipal zoning. Ownership is fragmented, land maps are outdated, and there is no broader national database on all matters with respect to what goes on in the country's forestlands, putting them at risk of progressive development and speculative buying and selling.

Barqash Forests, located in northern Jordan (Figures 2 & 3), provide an important site to explore the relation between governance, tenure, and stakeholders' engagements to generate environmental impact. Over 25,000 dunams, spread across the three counties (Al-Koura, Al-Mazar, and Ajloun), Barqash has its own complexity in terms of administrative and tenure complexities (with conflicting demands over land uses). Research employs purposeful sampling of those who live in Barqash, landowners, users, and involved institutions to clarify the means through which national, sector, and local programs and actions are established, grounded, and manifested into land use and environment.

The research formulates the focal problem as one of governance deficit with multiple dimensions. The governance deficit can be identified as the absence of integral and cohesive approaches to governance, with measures and instruments not matching actual tenures and living standards. This research bridges the gaps in research and governance by analyzing various approaches to governance, including its public and private, central and local, and sectoral and inter-sectoral forms, and its impact and effect upon the

resilience and vulnerability of Jordan's forests. The research aims to analyze various approaches to governance with respect to matters of conserving forests, review and analyze various processes and approaches towards coordination and collaboration, and examine land ownership and its influence upon approaches and instruments of governance concerning matters of conserving forests. The research aims to offer expert suggestions regarding governance reform and approaches and sustainable models towards localization of sustainable development objectives, specifically those concerning environmental sustainability, climate change, and rural sustainable development.

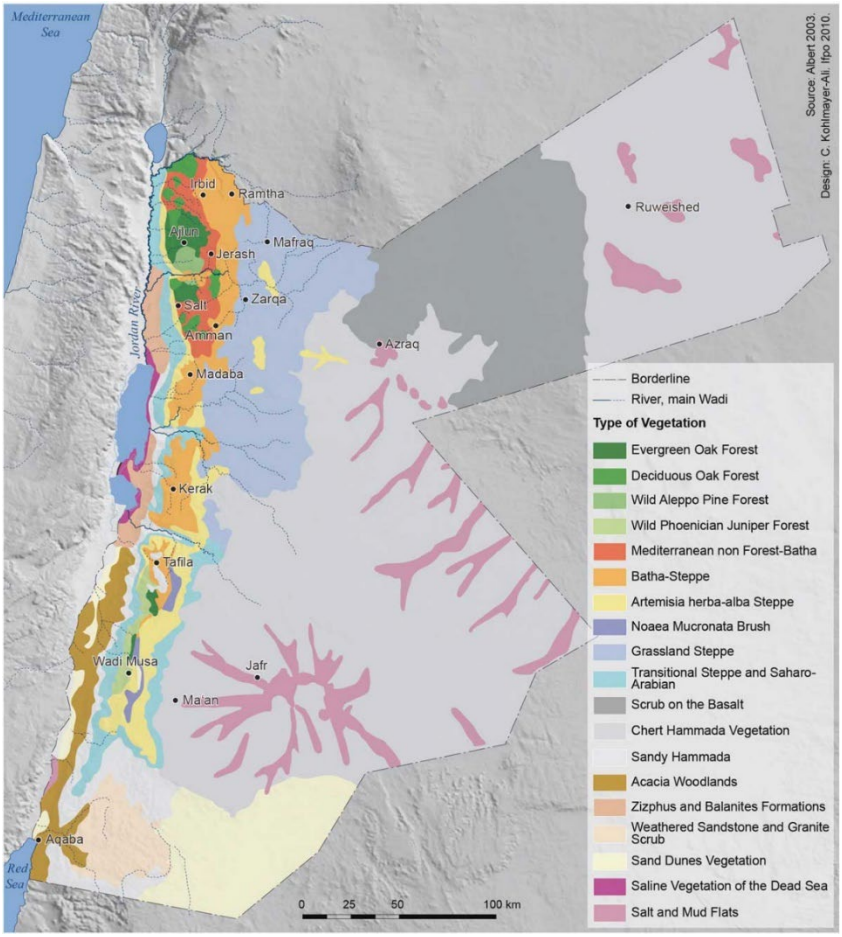


Figure 1: Vegetation Types in Jordan. (Source: Atlas of Jordan, 2014)
(https://books.openedition.org/ifpo/docannexe/image/7695/img-7.jpg)

1.1. Ecological, Socio-economic, and Institutional Dimensions of Forest Degradation

Forests provide various ecological, economic, and socio-cultural benefits, which are particularly important in dryland contexts. Forest ecosystems support biodiversity, carbon storage, soil and water conservation, and provide extensive provisioning services, such as timber and non-timber forest products (Asante et al., 2017a; Timko et al., 2018; Muvengwi et al., 2020). At the local level, rural households depend upon forests for grazing, medicinal plants, fuelwood, charcoal, and other products that support people's subsistence and earning prospects (Jew et al., 2017; Carlson et al., 2018; Scoones et al., 2018). At a macro-level, forests contribute to fighting climate change via carbon sequestration, and they regulate ecosystem services (Saatchi et al., 2011; Bridhikitti & Khadka, 2020). Global conservation norms, community-based

approaches, and the adoption of protocols on biodiversity are also defined by international organizations, particularly by the International Union for Conservation of Nature (IUCN). In this light, degradation of forests is imagined in terms of not just a decrease in forest cover or productivity but also a socio-political mechanism and institutional change. There is a considerable international literature associating deforestation and degradation with agricultural expansion, infrastructure development, poor regulatory enforcement, and illegal or informal logging, which are major contributors to global carbon dioxide emissions (Harris et al., 2012; Diniz et al., 2015; Curtis et al., 2018). Jordan and other similarly located settings experience additional pressure from investment projects in forested areas, socio-economic stress upon rural communities, and limited public awareness of conservation priorities (Bdour & Al-Shadiadeh, 2013). Governance failures, which appear in fragmented mandates, overlapping responsibilities, and sectoral policy silos, are repeatedly identified as major drivers of degradation (Arnold et al., 2014; Gaveau et al., 2017; Avitabile & Camia, 2018). Corruption in land-use permitting, inadequate monitoring systems, and limited technical and financial capacity further undermine enforcement (Bridhikitti & Khadka, 2020).



Figure 2: Barqash Forests, 2010. (Source: Google Earth Pro)



Figure 2: Barqash Forests, 2020. (Source: Google Earth Pro)

1.2. Forest Conservation Governance and Management Approaches

Considering such difficulties, literature recommends holistic and multi-faceted strategies towards conserving forests, including ecological, economic, social, and cultural aspects and dimensions. Conserving forests can be part of comprehensive and iterative plans designed by planners and managers creating spatial information, diagnosing pressure, and applying context-appropriate actions, including monitoring and control (Al-Eisawi in 2012; Timko et al. in 2018). Various empirical synthesis works cover various factors and induce effective approaches towards conserving such vital environments, including ecological and technological, and techno-social and economic aspects, such as sustainable and alternative economic uses and benefits, and poverty reduction (Wickama et al., 2015; Gratzer & Keeton, 2017).

Different approaches to governance and management practices are reported. Ecosystem-based management views forests as part of larger ecosystem approaches, with a focus on the landscape level and coordination between sectors. The role of management and governance approaches has been realized, with those under strong government control, economic development through forestry, and cultural approaches, which focus on indigenous values and symbols (Aung, 2007; Rametsteiner, 2009). Community-managed forests (CMFs) are another important set of field studies. Based on the findings of this research area, granting rights and responsibilities to local users and securing land tenure can reduce deforestation, which leads to improved living conditions (Porter-Bolland et al., 2012; Austin et al., 2019). Involvement methodologies in this research provide tools to contribute to the blending of local and scientific knowledge (Mansourian, 2016).

1.3. Forest Ownership, Tenure, and Fragmented Landholdings

Ownership and tenure of forests have long been established as key drivers in shaping deforestation and conservation processes. Forest ownership can be generally defined as the legal right to make use of, control, and dispose of a forest and its resources, and international research has classified them into public, private, and others. The concept of overall tenure concerning forests has emerged with rights, regulations, and social norms to allow or govern access, utilization, management, and exclusion (Larson et al., 2010). The global pattern shows an overall reduction in both state and exclusively owned forests and an extension in community, private, and mixed-tenured forests and management systems over time (MacDicken, 2015). Strengthening rights and institutions' support and advancing each form of decentralization can be potential advantages and benefits. But ambiguous, combined, and conflicting tenures pose one of the most serious threats to managing, restoring, and better utilizing and developing forest resources heavily and effectively (Ostrom, 2010; Kishor & Rosenbaum, 2012).

Within this tenure context, fragmentation of ownership has arisen as an important, but underexamined, driver of deforestation. Fragmentation normally arises from inheritance systems, land market processes, and development pressures that split up forest land into small, dispersed units (Sklenicka, 2016). Such units are normally economically marginal, difficult to manage, and hard to administer, making sustainable management impractical. Evidence indicates that fragmentation raises the propensity to transition to non-forest uses, hinders social coordination among small-scale farmers with divided interests, and raises edge effects and ecological degradation (Sloan et al., 2017; Timko et al., 2018).

The synthesis of this literature points to significant gaps in the current body of knowledge, especially with respect to arid countries such as Jordan. There is limited empirical insight regarding the intersection of specific processes involved in forest policymaking and various tenure arrangements, and how such

ownership can impact the success of policies about conserving these environments, and, by extension, allow communities meaningful participation. Gaps such as these form part of the rationale behind this analysis, focusing on governance and ownership structures regarding Barqash degradation.

2. Methodology

This study employed an explanatory sequential mixed-method research approach to examine the linkage between governance structure, land ownership, and local participation and engagement in the degradation of Barqash Forest. The study included utilizing a structured research query to collect the quantitative data via the resident and visitor community data from Barqash Forest. A structured research instrument was employed to collect data on demographic and social factors, land ownership, and perceptions on the degradation of Barqash Forest and its causes from 214 participants. Data were summarized and analyzed in a diagnostic analysis, which informed the selection of landowners and past users of Barqash Forest to participate in the study. In Phase 2, the study carried out 34 open-ended semi-structured interviews: 22 decision-makers and government representatives, six landowners and investors, and six community representatives. To further enrich the sample pool, snowball sampling was used so that interviewees identified eligible individuals. Interviews were all conducted in Arabic, and audio recordings were made with the consent of all participants. Data were analyzed through several steps. Descriptive statistics about research participants and their perceptions were employed to analyze the survey results. Audio clips of the research interviews were transcribed into Arabic, partially translated into English, and analyzed in open and focused coding (specifically with ATLAS.ti software), from which open coding followed by focused coding was used regarding the research questions. Qualitative content analysis of policy and legal texts included the coding of provisions, procedures, and roles along with the development of the comparative matrix to examine overlaps, gaps, and inconsistencies.

Results

3.1. Institutional Arrangements and Policy Limitations in Forest Conservation

The analysis started by drawing together a framework of institutions and policies that affected Barqash Forests. Responses revealed that the government-related FCM efforts in question were mostly implemented by the Ministry of Agriculture through its Forestry Directorate and local Directorates of Agriculture, the Ministry of Environment through its nature reserve and affiliated bodies, and local authorities whose area includes wooded areas. Environmental organizations are not involved but are active through public awareness campaigns, volunteerism, and projects. Several respondents indicated that collaboration regarding road schemes was made up of the Ministry of Public Works, the Forestry Directorate, and local governments. On the other hand, the participants highlighted cases of cooperation and cases of governance deficits. There are dual legal systems: the Forestry Maintenance Law for state-controlled forests and the Town and Villages Planning Law for private forests. Both systems play a critical role in permits and developments. The interplay of these systems and smaller plots of land within larger areas of public forest creates complex landownership matrices, albeit not mutually exclusive. More than 90% of the respondents across all groups involved reported that Barqash did not have an overall long-term conservation plan. The forestry sector interventions were described as unstructured and project-oriented and were based on the available fiscal resources and grant-based access to resources. The forestry sector had reported that initial annual allocations to manage the forest cover began to be intermittent through projects, reducing the extent to which they could make holistic reforestation, pruning, cleaning, and restoration initiatives. The forest sector is considered an economic asset, whether it is government-owned,

owned by sectors, or owned by the local community, rather than ecologically protected. This perception shapes priorities and contributes to the marginalization of long-term conservation planning.

3.2. Drivers and Manifestations of Forest Degradation

The main forms of degradation, as perceived by the respondents, are deforestation and frequent forest fires. The respondents consider frequent forest fires particularly damaging because they lead to a reduction in tree coverage and soil degradation, thereby making it difficult to restore. The economic aspects emerged as the most influential factor in deforestation, with 38% agreement, including the inadequacy of funding and poor management of investment projects. The social aspects, which include recreational behavior, community responsibility, and encroachment, contributed 26%. The administrative aspects, which are poor monitoring and poor enforcement of existing regulations, comprise 22% in relation to deforestation, while regulatory aspects, including inconsistencies in cooperation between authorities and between public and private entities, amount to 14%. Another area discussed by the participants was forest monitoring. Although all parties were aware that Barqash had guards in its forests, most found existing monitoring grossly inefficient and lacking in tools, personnel, and support. Roughly two-thirds of respondents noted that a more robust monitoring system is needed and that cameras and lighting should be installed. Results of the content analysis of the Forestry Maintenance Law revealed that law enforcement was originally conceived as a shared responsibility between the government and the local community. The law includes provisions that offer rewards to the locals for reporting offenses and assisting in enforcement.

3.3. Tenure, Investment Dynamics, and Community Participation in Forest Governance

A third aspect of the research findings is tenure, investment, and participation. According to a survey, 81% of Barqash landholders got their land from inheritance, and 19% got it from purchase, leading to very fragmented land tenure frameworks with several private land parcels being small in nature. State-controlled forest land cannot be sold or rented; however, transferable private forest land may be developed once municipal approvals and permits are obtained. Participants mentioned that the phenomenon of subdivision driven by inheritance and the number of small land parcels has become the decisive driver of construction, opening, and investment projects, particularly on private forest land. Attitudes toward investment projects were largely positive and, at times, divergent. Thus, 60 percent viewed investment projects as good or potentially beneficial to forests, with about one-fifth seeing them in a negative light; others were type and location-contingent. The conditional factor was more evident amongst decision-makers, while land and local community members were more favorable. Nonetheless, perceptions, revealed via narratives, indicate that tree clearance and realigning land use change (with an emphasis on the clearing of private forests) lead to degradation, since the realization of tree clearance and a more permanent state of land use change, especially on private forest property. Results revealed themes of ambitions for local economic development and environmental sensitivity of forest systems. Community participation in decision-making was generally regarded as important but not well institutionalized.

Around two-thirds of respondents said they perceived community involvement to play a positive and useful role within planning and decision-making on the forest area, with a significantly larger percentage of respondents distrusting: They were linked to low environmental consciousness and the role of the state. Most said they were ready to engage in planning and making decisions; a substantial few did not care. Sometimes, community participation is encouraged through the submission of proposals and complaints to the Forestry Directorate, but the representatives said that such community participation is not formal

and structured. Community members mentioned that they had engaged in activities like tree planting drives, forest cleaning, and workshops done by nature organizations and public bodies voluntarily, rather than structured consultative and control arrangements. These regulations have some regulatory aspects for community participation, but they need to be put into place in proper institutions to get an indication about the effective participation of communities in governance and management of the forests. Taken together, these findings indicate Barqash is experiencing forest loss as a result of multiple factors: institutional fragmentation, the economic logic of governance, and the splitting of the land as the property owner gains tenure, and limited modes of community participation. However, we could leverage existing voluntary efforts and potential legal and environmental actions.

3. Discussion

4.1. Institutional Fragmentation, Legal Pluralism, and Policy Shortfalls

The findings demonstrate the joint effect of multi-level fragmentation and legal pluralism as factors challenging the sustainability of forest management. Forest management responsibilities are divided among three entities: the Ministry of Agriculture, via its Forestry Administration, the Ministry of Environment, and similar groups with interests, and local authorities with a geographically limited area of planning covering wooded land. This variation suggests overall multi-level fragmentation of forest management where multiple interests of competing entities with overlapping mandates are neither clearly delineated by a clear structure nor by common processes (Arnold et al. 2014). Despite coordination, which is reported in some cases, such as joint site visits and road plan revision to reduce tree cuttings, it is, however, not systemic and reliant on individual action. This fragmentation is even more complicated by the implementation of two legal systems to oversee state and private forestry.

The Forestry Maintenance Law that governs state-managed forests prohibits the sale, leasing, or trading of such land. The Town and Village Planning Law regulates buildings and land-use alterations. The Lands and Building Permits Law regulates construction permits and land use on privately-owned land. Although the application of these two systems may not be seen as conflicting by the parties involved, their simultaneous application has led to discriminatory approaches to land based on its property rights. State-owned forests are granted stronger legal protection, and private forests are exposed to the threat of construction, road developments, and investments, leading to conflicts and confusion over who is responsible for a presumably unified landscape that embodies separate public and private land compartments. This is consistent with international reports that argue that legal pluralism and property fragmentation can derail conservation when not accompanied by efficient coordination and accountability (Kishor & Rosenbaum, 2012). Inadequate long-term and comprehensive planning for conservation and management contributes yet again to governance weakness. The Barqash interventions are largely project-driven, and funding is derived sporadically from external sources instead of budget allocation. The forestry officials admitted that funding for formal management activities, such as reforestation, pruning, cleaning, and restoration, has shifted to irregular support from donor projects, like other settings where restricted planning and intermittent funding prevent effective conservation (Acheampong et al., 2016). Within this governance structure, forests are viewed primarily as economic resources, not as vital infrastructure resources. This approach extends support to an ‘economic development' method, favoring immediate growth and returns from investment projects, firewood, and agricultural land, with community and cultural approaches remaining at the periphery.

4.2. Tenure Fragmentation, Investment Pressures, and Forest Degradation

One of the main strengths of this research lies in its examination of forest tenure and ownership as underlying causes of degradation. The instance of Barqash establishes that joint public and private ownership, combined with subdivision based upon inheritance, has led to a very fragmented tenure pattern. The majority of land has come into possession through inheritance, splitting overall parcels into progressively smaller, dispersed, and multi-co-owner pieces, which correlates with research that indicates that fragmentation of ownership leads to higher administrative and coordination costs among owners, thereby increasing land degradation and land cover change into different land uses, including deforestation of the area under forestry cover (Sloan et al., 2017; Timko et al., 2018). In Barqash forests, the existence of small private parcels embedded within a larger forest matrix has led to increased demands and pressure regarding development, including road opening and construction, particularly on private lands where regulatory control is weaker, and enforcement is not even.

The quantitative findings demonstrate that a significant proportion of respondents were positive or conditionally positive towards investment, focusing on benefits like job creation, tourism development, and local services. Nevertheless, qualitative insights demonstrate that tree clearance and permanent land use change, particularly in private forest land, are significant aspects of numerous investment schemes. The clause in regulations that increased the 'greatest area of land which can be allocated to family projects' from 1 to 3 acres was seen to be exacerbating these drivers. The drivers and causes of degradation, as reported by participants, support this conclusion. Pressures such as tree harvesting (for firewood, logging, and land preparation) and frequent forest fires emerged as the main causes of degradation. Economic drivers were viewed as major, primarily capturing systemic and opportunistic investment drivers. The role of social drivers, such as unmanaged recreational uses and housing encroachment, exacerbates these drivers, while administrative and governance inefficiencies and poor coordination, with weak monitoring and enforcement capacity, reduce the coercive power of existing governance instruments. Results align with international findings regarding the degradation of world forests and their relationship with material, social, and administrative drivers and performance (Harris et al., 2012; Curtis et al., 2018).

4.3. Community Participation and Prospects for Governance Reform

The third overarching theme is linked with community participation in governance, and it is evident that communities are one of the groups most affected by deforestation and are also knowledgeable regarding forest conditions and are better placed to provide solutions to various problems. Most respondents confirmed the need for community participation in planning and decision-making, and there is also potential in voluntary community programs, such as tree-planting and cleaning actions, undertaken by environmental organizations, higher education institutions, and the Forestry Directorate. Despite this, social participation is still inadequately institutionalized and takes place mostly in the form of projects and symbolic actions. A significant proportion of local people consider state forests solely the concern of government agencies. This attitude, combined with distrust of the authorities and potential social sanctions, is an actual limiting factor against reporting and resisting incidents of attack against the forests. The Forestry Directorate restricts opportunities and systems for participation, which, if available, only involve making proposals and complaints and possibly receiving feedback. This practice differs from more advanced approaches to community-based sustainable forest management in various countries, which are characterized by secured rights, intergovernmental and community cooperation and benefits, and

reported positive advances in conserving and providing benefits from those forests (Porter-Bolland et al., 2012; Mansourian, 2016).

The Barqash case shows that degraded forests are not only caused by governance deficits at all multi-level governance scales and by fragmented tenure systems and economically driven logic in their management but are also inadequately addressed by current community and environmental provisions and practices, by environmental non-governmental organizations, and by emerging environmental values. Enhancing intersectoral governance coordination, enhancing tenure and cadastral systems, and applying stringent environmental standards to financial investment schemes are essential to decrease the vulnerability of forests. But more crucial, perhaps, is making true community co-management, and its encouragement through capacity and economic incentives that align local sectoral objectives with environmental ones, part of land and governance institutions and practices. Such reform initiatives would reposition forests not only as economic and recreational areas but also as integral parts of climate change resilience, biodiversity, and sustainable rural development in Jordan.

4. Conclusion

This research examines the nexus of governance, tenure, and community participation in influencing the degradation of Barqash Forests, one of Jordan's most significant and degraded wooded land tracts. The degradation in Barqash stems from a complex interplay of administrative, legal, economic, and social variables. The problem of deforestation and degradation arises from defective governance of the forest, with three ministries responsible, and without one overall long-term management strategy. Insufficient funding, poor monitoring, and lax enforcement of legal punishment impede, rather than enhance, the effectiveness of present legal frameworks, particularly those of the Forestry Maintenance Law and the Towns and Villages Planning Law.

One of the main research insights is regarding tenure systems and ownership fragmentation and their role in driving degradation. Barqash forests include public land with conservational forestry rights and private land with planning and land division rights. The legal changes involving decreases in land lot size accelerated fragmentation, especially in private land, with more landowners and encouragement of investment, road construction, and buildings. This approach raises tree harvest and land allocation to more economic uses, particularly in private Barqash, which has land division rights that favor economic land allocation. The dual legal system creates variable environmental conditions with amplified legal inconsistencies and degradation risks, which support international struggles to legitimize defined and guaranteed tenure rights and conditions for environmental safeguarding.

The research also points to the untapped potential of local communities. While local people make significant use of Barqash forests for recreational, grazing, agricultural, and fuelwood purposes, their involvement in mainstream decision-making is minimal and mostly consultative. Low involvement and the absence of shared responsibility, along with poor monitoring and enforcement, are driving forces behind degradation. Local people have intimate knowledge of conditions and causes in Barqash forests, and community-managed and state-managed protected area performance can be equivalent or better if supported structures and incentives are provided, as has been shown in global research findings concerning community-managed and state-managed protected areas. Overall, the study contends that to protect Barqash and the Jordanian forests, there is an urgent need to rethink the governance system, including its

multi-level and multi-actor aspects. Among such crucial paths for governance, there is a need to make legal systems compatible so that there would be equal legal support for private and public forests. Additionally, reforming land division laws is essential to prevent further fragmentation. Furthermore, there must be development of comprehensive and up-to-date systems of information regarding forests, and, finally, financial sustainability must be ensured for restoration and monitoring measures.

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