

From Fields to Fortune: Elevating Rural Livelihoods through Rural Resources – A Systematic Scoping Review

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Abstract

Recent research highlights the utilisation of rural resources as a significant tool for mitigating rural poverty by fostering economic development, creating employment opportunities, and empowering local communities. This article investigates the potential contributions of rural resources across regions through a comprehensive literature review from 2020 to 2024. Using a systematic scoping review methodology, 35 research publications were identified and analysed from Scopus. The discussion is structured around three pivotal topics. The first, "Resource-Based Economic Strategies for Rural Development," explores strategies for optimizing economic benefits from local resources. The second topic, "Sustainable Rural Development through Resource Management and Economic Opportunities," examines sustainable management practices for rural resources, including micro-livestock farming, resin extraction, and the role of forest resources. The final topic, "Sustainable Resource Management and Climate Change Adaptation in Rural Communities," looks at how rural communities can adapt to climate change through sustainable practices. Findings indicate that while rural resources offer numerous advantages, economic gains may lead to overexploitation and negative social impacts. Climate change also adversely affects rural resources, especially agriculture, impact in socio-economic conditions. Effective and sustainable interventions require a nuanced understanding of local contexts, including specific resources, cultural practices, and socio-economic conditions. Policies must balance economic empowerment with environmental sustainability and social equity to address rural resource dependency and climate change impacts. This review provides valuable insights for rural entrepreneurs, decision-makers, and institutions involved in rural development.

Keywords: rural resources, village resources, socio-economic, rural development

INTRODUCTION

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Rural resources play a significant role in ensuring the sustainability and livelihood of rural communities (Matiwane & Matiwane, 2023). These resources, which include natural, human, and infrastructure resources, contribute to different aspects of rural life, ranging from economic development to environmental sustainability and social well-being (Mphande, 2016). While rural resources offer numerous advantages to rural areas and their communities, there are several issues associated with their consumption. Based

on available literature, this review examines the distinctive contributions of rural resources to rural communities and explores the challenges that rural resources face.

METHODOLOGY

The search strategy for the present review was carried out systematically. Two independent authors (Ab Rahman and Kassim) performed the searches for peer-reviewed manuscripts published from 2020 up to May 2024. The guiding statement was as follows: rural resources contribute significantly to the socio-economic development of rural communities. The database searched was Scopus. The keywords used were: (rural resources) OR (village resources) AND (socio-economic) AND (rural communities) AND (rural development). Moreover, the exclusion criteria were non-English language documents and research papers that were published other than in the field of social sciences were also excluded. All articles (from 2020-2024) describing the potential use of rural resources as tools to sustain livelihood in rural areas were selected. The studies were recorded in Mendeley, and the duplicates were subsequently removed. The selected articles were then screened by analyzing the titles, keywords, abstracts, and full texts. The articles that did not fit in the guiding statement and the set criteria were then removed. If any disagreement arose on the eligibility of a particular article, the dispute was resolved through a discussion with the other authors. The following data were then collected and tabulated in Microsoft Excel: study location, types of rural resources, and the usage of rural resources. The authors (Bahrin., Ab Rahman., and Kassim) then categorized the included studies into the appropriate themes. These categories were formed based on the apparent general themes illustrated by the included studies. Figure 1 illustrates the search and selection processes.

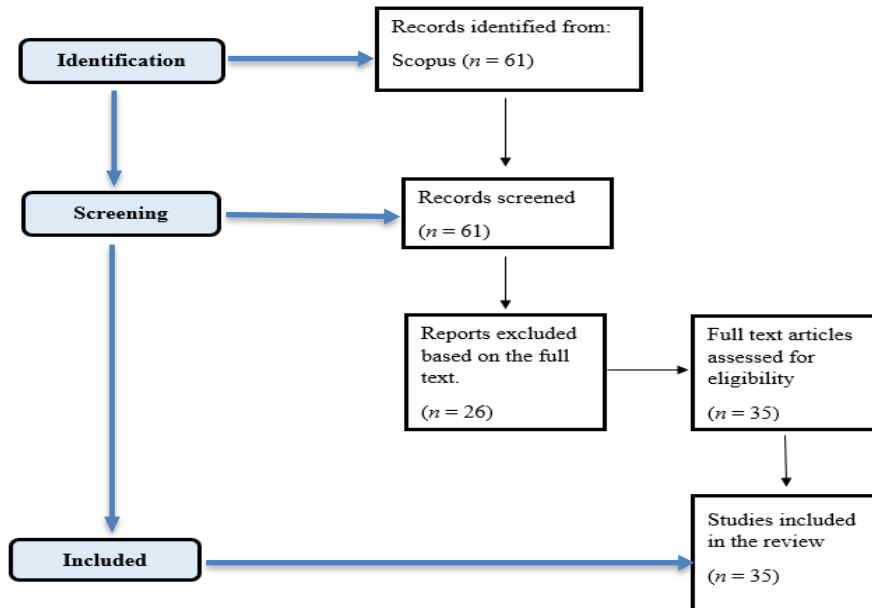


Figure 1: Identification of Studies via Databases

RESULTS AND ANALYSIS

This article undertakes a comprehensive review of the literature from 2020 to 2024 to assess the critical role that rural resources play in enhancing food and nutrition security, providing natural remedies, and contributing to other essential aspects of rural life. The review reveals that rural resources are not merely supplementary to the livelihoods of rural communities but are central to their economic stability, health, and overall well-being.

Diverse Roles and Impacts of Rural Resources: A Comprehensive Overview (2020-2024)

Rural resources play a crucial role in sustaining the livelihoods and well-being of communities across various regions. These resources encompass a diverse array of natural assets and practices that contribute to economic stability, health, and cultural heritage. The following summary provides an overview of different types of rural resources, their uses, and their effects based on recent studies conducted from 2020 to 2024. By examining specific case studies from various locations, we gain insights into how these resources are utilized and their impact on rural communities. Table 1 provides

a detailed summary of rural resources, their usage, and impacts across various regions (2020-2024).

Table 1:

Summary of Rural Resources: Usage and Impacts Across Various Regions (2020-2024)

Num	Study Location	Type of Rural Resources	Usage	Effects	Author/s
1.	Nahua Community Central Mexico	Non timber forest product	Medicine, ornamental, ceremonial, edible	Income generation	Miranda-Gamboa et al. (2024)
2.	Ethiopia	Coffee	Tourism product	Improve socio-economic	Degarege and Lovelock (2021)
3.	Namibia	Geological assets and landscape	Geotourism	Revenue generation	Dowling and Pforr (2021)
4.	Indonesia	Bamboo	Socio-cultural economic tool	Community-based development	Ekawati et al. (2022)
5.	India	Non wood forest product	Edible plants, food, traditional medicine	New market opportunities and social value	Bisui and Shit, 2023; Živojinović et al. (2020)
6.	Peru	Carob trees (Algarrobina)	Nutritive syrup	Income generation and employment opportunities	Blanco-Jimenez et al (2024)
7.	Tonga	Mabe pearl	Handicraft and jewellery production	Generate socio-economic support for the rural communities	Johnston et al. (2020)
8.	Anuradha Pura District, Sri Lanka	Micro-livestock farming	Remedy for malnutrition	Tools to enhance livelihoods and income generation	Jayasooriya (2023)
9.	Northern Province of Sierra Leone	Plantation forest	Wood product	Employment opportunities, improved road conditions, and water well constructions	Kainyande, Auch and Okoni-Williams (2022)
10.	Western Iran	Wild pistachio trees	Resin extraction	Improves socio-economic status	Yousefi et al. (2020)
11.	Bihar and Jharkand India	Fermented foods (jalebi, dhuska and toddy)	Improve shelf life, better digestibility and palatability	Employment opportunities, provide communities with nutritious food	Singh, Singh and Kamal (2020)
12.	Desa Cileuksa, West Java Indonesia	Paddy, banana, village chicken, mangoesteen, durian, capsicum and african woods	Edible plants, food	Potential for commercialization and income generation	Hidayati et al. (2020)

13.	Mukwe constituency, Kavango East Region, Namibia	Non timber forest product	Wild fruits, mushrooms, honey bees, mopane worms, insect, medicinal plants, wild meat, ropes, thatching grasses, devil's claw	Income generation to sustain livelihoods	Kamwi, Endjala and Siyambango (2020)
14	Ethiopia	Bamboo	Material for house and fence construction, furniture, wood fuel, and musical instrument, .source of food, medicine, and fodder and also for soil and water conservation	Source of agricultural-related tasks for communities, and it provides considerable cash income	Alemayahu and Hido (2023)
15.	Not mentioned	Wild berries and small wild fruits	Prevent or delay some chronic diseases attributed to oxidative stress and chronic inflammation, used in culinary products, processed foods, and nutraceuticals.	Sustainable commercial potential	Aguilera and Toledo (2024)
16.	Acapulco, Mexico	Lagoon	Tourism potential to produce sustainable products	Revenue generation	Anzaldua-Soule et al. (2021)
17.	Eastern Cape	Wild tree resources	Food, medicinal products, construction materials, support and cultural services.	The generation of cash income, food, and traditional and ethnoveterinary medicines	Maroyi (2022)
18.	Ghatan of Beni Municipality, Myagdi District, Nepal	Zanthoxylum armatum (winged prickly ash or rattan pepper in English)	Traditionally used as a medicinal plants in managing various health conditions (such as snake bites, stomach problems, skin lesions, inflammation, and parasitic diseases)	Generation of annual income for household	Neupane et al. (2023)
19.	Peru	Polylepis forest	Water resources	Important source of products for daily subsistence	Joseph et al. (2021)

20.	Niger Delta, Nigeria	Mangroves	Habitats of fish, plant products, ensure coastal stabilization and provide fish for the local communities, source of biofuel, medicinal ornaments and honey for the local population.	Source for communities livelihood and improves socio-economic conditions	Onyena and Sam (2020)
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DISCUSSION: EXPLORING THE MULTIFACETED CONTRIBUTIONS OF RURAL RESOURCES

The discussion is structured around three pivotal topics that illuminate the multifaceted contributions of rural resources. The first topic, "Resource-Based Economic Strategies for Rural Development," investigates how rural resources can be harnessed to spur economic growth and improve livelihoods in these communities. It explores various strategies for optimizing the economic benefits derived from local resources and their impact on rural development. The second topic, "Sustainable Rural Development through Resource Management and Economic Opportunities," delves into the importance of adopting sustainable management practices for rural resources. The final topic, "Sustainable Resource Management and Climate Change Adaptation in Rural Communities," examines the intersection of resource management and climate change. It addresses how rural communities can adapt to the impacts of climate change through sustainable resource management practices.

Resource-Based Economic Strategies for Rural Development

Miranda-Gamboa et al. (2024) reveal that the commercialization of non-timber forest products (NTFPs) among the Nahua community in central Mexico provides income for rural indigenous households. The study recorded that plant and mushroom species of NTFPs were used for medicine, ornamental, ceremonial, and edible purposes, and half of them were commercialised in the municipal market. The commercialised species generated an average annual net income of USD 3924 per family, with five species contributing the most. Similarly, in Ethiopia, the study demonstrates that by utilising coffee (agricultural sector) as one of the essential tourism products in Ethiopia, coffee has the potential to improve the socio-economic conditions of the local communities who rely on coffee to sustain their livelihoods (Degarege & Lovelock, 2021).

In Indonesia, bamboo has been part of the socio-cultural and economic tools to enhance the livelihood of the communities, as bamboo has been recommended as the

potential species that could be utilised for community-based development, particularly in rural areas (Ekawati et al., 2022). Further emphasising the economic potential of bamboo, Alemayahu and Hido (2023) demonstrate that in Ethiopia, the *Oldeania alpina* (highland) and *Oxytenanthera Abyssinia* (lowland) bamboo are two Indigenous bamboo species and are growing vigorously in both highland and lowland. The study concurs that bamboo plays a variety of socio-economic, ecological, and traditional roles in the community. Bamboo has been regarded as an important source of agricultural-related tasks for communities, and it provides considerable cash income. For instance, it includes material for house and fence construction, furniture, wood fuel, and musical instruments. In addition, bamboo is also used as a source of food, medicine, and fodder and also for soil and water conservation, biodiversity functioning, and mitigating global climate change, as well as an alternative source of timber and non-timber products for rural and urban people, forest industries, construction, and energy sectors.

In Peru, Blanco-Jimenez et al. (2024) demonstrate that the production of algarrobina from carob trees generates income, which in turn contributes to the economic development of the locals. The revenue generated from producing the algarrobina has been able to provide communities in Piura and Lambayeque access to better services in education and healthcare. In addition, the algarrobina production also creates positive impacts on employment opportunities as labour is required to harvest and process the carob trees. Similarly, Johnston et al. (2020) demonstrate that Mabe pearl production in Tonga, which offers a low-cost and low-technology alternative for pearl making, has proven profitable and provides significant economic opportunities and socio-economic support for rural communities through handicraft and jewellery production. Further, Kainyande, Auch, and Okoni-Williams (2022) illustrate that local communities benefit from forestry plantations through employment, improved road conditions, and the construction of water wells.

Contrastingly, Hofflinger (2021) highlighted the social impact of the forestry plantation on the local communities as the forest plantations have expanded globally due to increasing demand for wood products. However, the study findings were quite unpredictable, whereby the findings demonstrate that forestry expansion has yet to be able to reduce unemployment or even improve income for the communities. In fact, it has increased the poverty and inequality between them. These findings align with C et al. (2021), who observed a reduced dependency on forest products such as firewood, fodder, and timber among the households. The declining need for forest products and lack of economic incentives for active forest management are among the factors that lead to reduced interest in the community forest, leading to less intensive and infrequent forest management.

Sustainable Rural Development through Resource Management and Economic Opportunities

Jayasooriya et al. (2023) notes that since micro-livestock farming is the least considered farming practice in Anuradha Pura district in Sri Lanka, this study was conducted to provide suggestions to popularise micro-livestock farming as an income-generation option for the villagers and as a tool to enhance their livelihood. The study concludes that there is potential for micro-livestock farming as a remedy for malnutrition and low income among rural households. Similarly, in Western Iran, resin extraction from wild pistachio trees is an existing agroforestry practice that plays a significant role in developing the socio-economic status of rural communities. However, (Yousefi et al., 2020) argue that the effects of resin extraction on tree survival and the long-term existence of the forest are still unknown. A study conducted by Kamwi, Endjala and Siyambango (2020) examines the relationship between socio-economic and demographic factors and Non-Timber Forest Products (NTFPs) dependency among the rural communities of the Mukwe Constituency, Kavango East Region, Namibia. The results of the study indicate that wild fruits, mushrooms, honey-bees, mopane worms, insects, medicinal plants, wild meat, ropes, reeds, thatching grasses and devil's claws were the NTFPs prevalent in the areas of study. Furthermore, the results demonstrate that 71 % of the respondents relied on NTFPs to sustain their livelihoods. Hence, more effective forest management interventions are necessary to reduce poverty and ensure sustainable forest management in Namibia effectively.

In a related context, (Dowling and Pforr, 2021) concluded that Namibia's tourism could be a valuable, sustainable development vehicle through the generation of economic revenue, community well-being and conservation as it possesses geological assets and landscape. Similarly, in India, forest resources play an important role in the livelihoods of rural communities, as India relies heavily on the production of non-wood forest products, with 60% of it consumed locally (Bisui and Shit, 2023). In fact, Živojinović et al. (2020) concur that the integration of traditional skills with demands for non-wood forest products has created new market opportunities and social value.

As the local resources in Desa Cileuksa, a developing village in West Java, Indonesia, have yet to be effectively popularised, a study has been conducted by Hidayati et al. (2020) to investigate the business potential of existing resources in this village. The results of the survey indicate that seven potential local resource-based businesses have been developed and hence have the potential for commercialization, such as paddy, banana, village chicken, mangosteen, durian, capsicum and African woods. Similarly, Aguilera and Toledo (2024) have demonstrated that the consumption of cultivated berry species (e.g., strawberries, blueberries) has increased dramatically in the last two decades

after consumers appreciated them as flavorful, convenient and healthy fruits. Wild berries and similar small wild fruits are traditionally consumed around the world by local people as safe, nutritious, tasty, and versatile foods. These wild fruits played a significant role in the nutrition and bio-cultural aspects of rural communities. Similar to their business counterparts, wild berries contain important nutrients and bioactive compounds that may prevent or delay some chronic diseases attributed to oxidative stress and chronic inflammation. Additionally, wild berries and similar wild small fruits are novel food sources that inspire applications in culinary products, processed foods, and nutraceuticals. Similarly, Hudson et al. (2020) note that in rural African communities, incomes come from *Uapaca Kirkiana* fruits (sugar plum) in some communities and *Strychnos Madagascariensis* (the black monkey orange) in others, while some communities earn money from *Cyperus* spp. Mats (nutsedge), whilst others use *Phragmites Mauritius* (reed grass) to generate more income. Less marketed items included baskets made from numerous species, including savanna bamboo and wooden products used to process, store and transport the maize.

In Bihar and Jharkhand, two different states in India, the use of fermented foods is favoured as it can improve shelf life, better digestibility and palatability. Rural people commercially prepare fermented foods like jalebi and Dhaka for sale purposes, and the rural products can be seen at different food stalls in the market. In Bihar, the consumption of toddy was popular among people with lower socio-economic status. (Singh, Singh and Kamal, 2020) suggested that the commercial production of these foods must be promoted under a proper and organised system as these foods give rural communities employment opportunities and provide them with nutritious food.

In Acapulco, Mexico, a study by Anzaldúa-Soule et al. (2021) examined the landscape of the Coyuca de Benítez Lagoon, and it is believed that this lagoon possesses tourism potential to produce sustainable products. The results of the study indicate five landscape units with tourist potential, classified as rural, natural and urban landscapes. Even though this island still has a wide territorial extension without human alterations, it is an area that tourists continuously use. The study concludes that it is essential to promote the participation of communities and enforcement of environmental protection policies to make the identified areas ecologically and economically viable and sustained.

Koffi et al. (2020) concur that wild tree resources are known to play a significant role in local stakeholders' livelihoods, particularly in terms of the food and nutrition security of people living in semi-arid sub-Saharan Africa. A study by Maroyi (2022) highlights the significance of wild and tended plant resources to the well-being and livelihood of local communities in the Eastern Cape within the context of the provision of ecosystem services such as food, medicinal products, construction materials, support

and cultural services. The study also demonstrates that provisioning ecosystem services was the most cited, with at least 25 plant species contributing towards the generation of cash income, food, and traditional and ethnoveterinary medicines. Neupane et al. (2023) assessed the financial contribution of *Zanthoxylum armatum* (winged prickly ash or rattan pepper in English), a species that is traditionally used as a medicinal plants in managing various health conditions (such as snake bites, stomach problems, skin lesions, inflammation, and parasitic diseases) in Ghatan of Beni Municipality, Myagdi District, Nepal. The study found that the average annual income per household from the sale of winged prickly ash was found to be the highest among Brahmin/Chhetri communities. Similarly, Joseph et al. (2021) found that families that depend on crops as the main sources of income and livelihood have a greater intention when it comes to restoring forest areas. In Peru, the rural communities perceived the Polylepis forest areas as important sources of products for family subsistence, especially for the existence of water sources.

Sustainable Resource Management and Climate Change Adaptation in Rural Communities

Although rural resources are important for community livelihood, over-reliance on rural resources might lead to overexploitation, resource depletion and environmental degradation. Bista et al. (2022) note that since rural communities highly depend on forest and agriculture resources to sustain their livelihoods, the findings indicate that the return of migrants due to losses of jobs in the city, especially during the crises likely increases the consumption of forest products and intensifies the agriculture practices hence, this had increased the pressure on forest resources. The positive aspect of the return of the migrants is that the abandoned land started to decrease, and the livestock number and forest product use have increased as well. Similarly, in rural African communities, wild plant species are a valuable resource that is often threatened by agricultural conversion and overexploitation (Hudson et al., 2020). In Sundarbans, West Bengal, it is agreeable that populations with poor economic status and high dependency on natural resources in coastal areas of rural India are extremely vulnerable to flood hazards. Therefore, the study suggests a policy is necessary to be formulated to reduce the coastal flood risks as this kind of catastrophic event can cause severe damage to the local communities in relation to food security, infrastructure and socio-economic conditions (Narendr et al., 2022).

In Niger Delta, Nigeria, mangroves serve as habitats for a variety of types of fish, provide a variety of plant products, ensure coastal stabilization and provide fish for the local communities. Mangroves also serve as a source of biofuel, medicinal ornaments and honey for the local population. A study conducted by Onyena and Sam (2020) reviews the impacts of land contamination on mangrove ecosystems and the socio-economic

activities of local communities in the Niger Delta Region of Nigeria. Despite the benefits that mangroves can provide to improve the socio-economic conditions of rural communities, multiple issues have arisen, such as overexploitation, oil spills and crude oil exploratory operations. These issues have become a concern as these activities have affected the livelihood structures, global warming control measures and the coastal system stabilization. Newton et al. (2020) concur that forests' existence around the globe is crucial to supporting the livelihood of people who live nearby. For cooking purposes, people rely on fuelwood. Sources of income can be generated from harvesting and selling timber, fruits, and other forest products. However, Singh et al. (2021) demonstrate that in many developing countries, fuelwood can contribute from 50 to 90% of all household energy, with 2.6 billion individuals dependent on it to meet their daily cooking necessities. This dependency, unfortunately, may lead to negative impacts on forest stocks and climate change. Therefore, in order to have a long-term supply, a transition to cleaner cooking and sustainable management of forest resources are essential.

Many studies have been conducted to examine the impact of climate change on agriculture. This focus is likely due to the vulnerability of agriculture to climate change, which can result in significant and destructive effects on crops and, thus, consequently, affect the socio-economic conditions. The study by Abas et al. (2020) concurs that the uncertainties of climate change today have severely impacted the socio-economic condition of rural communities, especially those highly dependent on paddy production for survival, as the climate has become the primary determinant of paddy production. The results of this study demonstrate that 90% of the respondents are well aware of climate change and its impact on paddy plantations and production. Proper adaptation and mitigation measures are necessary to avoid the future impact of climate change, as well as the role of government is crucial in ensuring that communities are able to adapt and mitigate climate change.

Suryanto et al. (2022) concur that climate change has affected human life, especially farmers in rural areas. Their livelihoods rely on the climate; for instance, if there is a risk of crop failure due to climate change, the community becomes more vulnerable to poverty and hunger. This study determines the livelihood vulnerability of smallholder farmers in Wonogiri District, Indonesia (the sub-districts of Girimarto, Eromoko, and Tirtomoyo) due to climate change. The results of the study conclude that climate change has the potential to cause poverty levels in these three sub-districts to increase. In terms of resilience, the farmers in these three districts are quite resilient because they do not highly depend on government assistance. However, the farmers' level of resilience will also decrease as a result of the continuous crop failures caused by climate change. Since the crop's survivability is highly dependent on the climate, thus more studies have been conducted to see how rural communities are able to mitigate

climate change. Olagunju et al. (2022) examines the farmers of arable crops, and their adaptation strategies in Akoko, Nigeria, to perceived climate unpredictability, and the study demonstrates that a better understanding of climate change would help farmers to have better adaptation strategies, which consequently will improve their livelihoods and eradicate the poverty levels in rural areas. The findings also indicate that farmers who are severely constrained by insufficient suitable irrigation systems and lack of government support have affected production, which results in less income and leads to poverty.

CONCLUSIONS

Rural resources play a crucial role in economic empowerment, as they provide a means of livelihood for many communities, especially in rural areas. The utilization of these resources can be highly profitable as it contributes significantly to local economies, for instance, through the sale of timber, fruits, fuelwood, jewellery, and other non-timber forest products (Ullah et al., 2021). Rural resources also contribute to fields of wellness by increasing access to sustainable, organic, and healthy food supplies (Viana et al., 2022). This access supports both nutritional needs and overall well-being, demonstrating the importance of maintaining these resources sustainably.

Despite the positive aspects of utilizing rural resources, the economic gain may come with negative social impacts. For instance, over-dependence on these resources can lead to resource depletion, environmental degradation, and other social consequences, and thus, this has created a complex situation for rural communities (Huo & Peng, 2023). The impact of climate change further compounds the issues surrounding rural resource dependency. Thus it creates an ironically inevitable situation where the very urban and industrialized areas that contribute most significantly to climate change must reciprocate positively by supporting rural areas through green initiatives and sustainable practices (Pandey & Ghosh, 2023). Such efforts could include promoting cleaner cooking methods, sustainable agricultural practices, and reforestation projects, all aimed at reducing the pressure on rural resources and mitigating the effects of climate change (Newton et al., 2020; Singh et al., 2021; Abas et al., 2022). It is crucial for policies and initiatives to address these interconnected issues holistically, ensuring that economic empowerment through rural resources does not come at the cost of environmental sustainability and social equity. By fostering a collaborative approach between urban and rural areas, we can work towards a balanced and sustainable future that benefits all communities.

In conclusion, while numerous studies have demonstrated the positive impacts of leveraging rural resources for economic and social empowerment, it is important to recognize that the effectiveness of these initiatives is highly context-specific. Each rural area possesses unique products and resources that require tailored strategies to realize

their potential and achieve desired goals fully. Therefore, more than a one-size-fits-all approach is needed. Instead, a nuanced understanding of the local context, including the specific resources available, cultural practices, and socio-economic conditions, is essential for developing effective and sustainable interventions. By adopting a particular approach that considers these unique characteristics, policymakers and development practitioners can better address the challenges and opportunities within each rural community, ensuring that the benefits of rural resource utilization are maximized while minimizing potential negative impacts. This context-specific strategy will ultimately lead to more sustainable and inclusive development outcomes for rural areas globally. At the same time, addressing rural resource dependency and the impacts of climate change requires a holistic approach. Urban and industrial areas, which contribute significantly to climate change, must support rural regions through sustainable practices like sustainable agriculture and reforestation. Effective policies must balance economic empowerment with environmental sustainability and social equity to mitigate the complex challenges faced by rural communities.

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