Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

Challenges and Opportunities for Sustainable Rural Development in Saudi Arabia: A Case Study of Jowf Bani Hajer

Zuhair Ali Alabbasi
engzuhair89@gmail.com
Prof. Faez Saad Al-shihri
Fshihri@iau.edu.sa
Prof.Abdulkarim k.Alhowaish
ahowaish@iau.edu.sa

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

Abstract: Saudi rural economies have shifted away from agriculture and towards tourism, industry, and service industries. Saudi rural communities face many challenges despite these changes. Water scarcity, soil degradation, limited job opportunities, migration from rural areas, lack of basic services, and difficulty accessing them due to weak infrastructure, climate change, and lack of awareness of sustainable development, weak population participation, and lack of cooperation between rural development professional bodies are the biggest challenges to true sustainable development. These issues have threatened rural communities' survival, especially in Jawf Bani Hajer, Eastern Province. Thus, this study examines Jawf Bani Hajer, Eastern Province, rural development opportunities and challenges. This paper aimed to assess the current situation of rural communities in the study area and identify challenges and opportunities to achieve the object. Conducting a field study using a questionnaire to collect data related to population characteristics, economic activity, urban characteristics and public services, to evaluate the current situation of rural communities in the study area, and to identify the challenges, opportunities to achieve the goals of the sustainable rural development process. A comprehensive understanding of sustainable rural development that prioritizes rural communities' needs and priorities, establishes sustainable and resilient rural systems that incorporate the best practices in local, regional, and global theoretical literature, and addresses rural communities' social, economic, and environmental needs and priorities were found. It aims to improve rural residents' quality of life and economic well-being by improving agriculture, handicrafts, small industries, and public services while preserving natural resources and the environment.

Keywords: rural development; challenges and opportunities; rural community; sustainability; quality of life.

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

1. Introduction

Environmental stewardship, economic growth, and social justice are global sustainable development priorities. Rural communities protect cultural heritage, conserve natural resources, and promote inclusive growth in this paradigm. Community progress in Saudi Arabia depends on sustainable rural development [1,2].

Saudi Arabia is implementing the Sustainable Development Goals (SDG) and aligning national plans with them with support from all government sectors, the private sector, and non-profits. To ensure accurate SDG indicator and progress data, the Authority monitors relevant authorities [3]. Saudi Arabia's Vision 2030 aligns with the Sustainable Development Goals, so the kingdom wants to lead global sustainable development from within. Goal two is to end hunger and malnutrition and achieve sustainable food production by 2030. This goal promotes large-scale sustainable agriculture, doubling productivity, increasing investment, and functioning food markets so everyone has enough, better food. The General Authority for Statistics (2021) reports 50% of this goal's indicators met [4].

Sustainable development balances economic, social, and environmental factors to meet current and future needs. Sustainable development protects natural resources and culture, boosts the local economy, and reduces social inequality, improving rural communities' well-being and prosperity. Rural communities benefit from sustainable development by improving their living conditions, cultural heritage, environmental resilience, and self-sufficiency by recognizing their vital role in national development [5].

Saudi Arabia prioritizes sustainable rural development, as do other governments. The Kingdom actively promotes rural sustainability. Sustainable rural development, including Saudi Vision 2030 and the National Transformation Program 2020, is needed to address these issues because rural areas are vital to society. Third-dimensional program initiatives emphasize resource sustainability. Sustainable rural development extends regional development, its core [6]. Because rural development involves a three-way interaction between the natural environment, available technologies, and social and economic organisations, rural development depends on the rural environment, which varies by country and even within it. Most imported models in rural developing countries fail [7].

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

Rural development in Saudi Arabia requires understanding economic growth, social cohesion, and environmental protection. In line with Vision 2030, rural sustainable development promotes inclusive growth and social well-being through lasting positive change. The Saudi Green and Middle East Green initiatives can transform Saudi Arabia's agricultural and rural sectors by reducing carbon emissions, afforestation, land reclamation, and marine protection. The Saudi Green Initiative launched in 2021 and has implemented over 80 initiatives to continue working and progress. A comprehensive approach to sustainable rural development can help rural areas achieve economic, social, and environmental sustainability [8].

Jawf Bani Hajer in the Eastern Province shows that rural Saudi Arabian sustainable development goes beyond economic metrics. A holistic approach that values rural life, conserves resources, and empowers communities is needed. This study examines rural communities in Jowf Bani Hajer to understand how local challenges and opportunities shape rural development in the Kingdom. This research provides a deep analysis and a solid framework to develop sustainable strategies and policies to support rural communities for growth and well-being.

2. Related Works

Since agriculture and other sectors make up the rural economy, developing countries need the term "rural development" to describe rural communities' demographic, living, and economic conditions. Overall development must be prioritized to improve rural lives. Rural development coordinates and unites individuals and government agencies to improve rural communities' economic, social, and cultural conditions, making them part of the state. It aids development and meets basic and social needs. Since humans are the main beneficiaries of development, the goal is to develop the population's abilities to help them fulfil their social and productive roles [9].

The rural communities have its own social and economic characteristics, making planning relevant to rural populations, their activities, and their relationship with land use, the labor force, and rural urbanization to achieve social development and raise rural populations' economic and social standard of living. Sustainable rural development creates sustainable livelihoods in rural areas' economic, social, and agro-ecological

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

conditions to eliminate poverty, empower people living in poverty and their organisations, and increase their access to productive resources, services, and public institutions, such as land, employment, credit, education, and health [10].

In its broadest sense, rural development is defined as "planned progressive change" that advances local communities in rural areas economically, socially, culturally, and environmentally. The goal is to integrate official and popular efforts to transform natural and human resources, promote justice in the distribution of development returns and reap its benefits within communities, and integrate national development efforts. The Arab Organization for Agricultural Development [11] agreed with Singh [12] that rural development is "the comprehensive development of rural areas that aims to improve the quality of life for rural people." This complex concept can be viewed as a process, phenomenon, or strategy. Chambers' 1980s definition of rural development: "Rural development helps poor rural men and women get more of what they want and need for themselves and their children. It also involves helping the poorest who want to live in rural areas gain more control over rural development benefits. This group includes small farmers." This definition implies several concepts and frameworks that are increasingly used in development and rural development. These include economic, social, and environmental sustainability; governance, inclusiveness, and integration; sustainable livelihoods and rural quality of life in its dynamic framework and all its components; targeting and pro-poor bias; and the need to strengthen local communities and rural livelihoods' crisis response and recovery.

Future Arab rural development requires intensified and integrated efforts to adopt and activate such concepts and frameworks, as well as all new accumulated experiences, as quickly and on the broadest scale as possible. A 2003 UN Food and Agriculture Organization and UNESCO study defined rural development as "agriculture, education, infrastructure, health, capacity building, and rural institutions. To achieve sustainable rural development in the Arab region, rural development must incorporate several key dimensions, including [13]:

1. The economic dimension, dedicated to advanced and sustainable economic growth. This dimension is based on agricultural development and linked to rural economic, social, and cultural activities.

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

2. The social dimension, which seeks social justice and poverty reduction by expanding productive employment opportunities, narrowing economic disparities between social groups in rural areas, narrowing development disparities between rural and urban areas, and improving the standard of living and incomes of the poorest groups.

3. Human development, which includes health services, education, training, capacity development, and empowering vulnerable groups to participate in planning, decision-making, project management, and implementation.

4. The environmental dimension, in which the associated programs aim to achieve sustainable rural development by protecting the environment and available natural resources, such as water, land, plant, and animal life, and harnessing and using them in a way that ensures their sustainability and rationalizes their handling.

Rural development is a crucial process that aims to combat rural migration, distribute wealth and power, integrate economic sectors, and promote national political objectives. It involves various aspects such as agriculture, irrigation, property distribution, and services. A study [14] highlights the importance of utilizing arable land, improving life in rural areas, providing basic needs, contributing to economic support, and working to provide public educational institutions. The United Nations' primary goal of sustainable agricultural and rural development is to increase food production and enhance food security, including educational initiatives, economic incentives, and the development of new technologies. This ensures the stability of nutritionally adequate food supplies, employment and income generation for poverty alleviation, and natural resource management and environmental protection. The United Nations' Millennium Development Goals 2015 emphasize the importance of promoting sustainable agricultural and rural development in rural areas [15].

The Arab region faces challenges in rural development programs, including high poverty rates, hindered equitable distribution of opportunities, and exploitative methods of natural resources. These issues contribute to the spread of poverty, land tenure policies, resource degradation, and climate change. Weak infrastructure in rural areas and job shortages further exacerbate the situation. High rates of rural-urban migration, particularly among educated rural youth, and policies limiting rural women's participation in economic, social, and political activities further exacerbate the situation.

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

Lack of financial and technical support from local, regional, and international sources further exacerbates these challenges [16].

Rural planning and development are crucial for achieving sustainable development in rural areas. These strategies involve the establishment of appropriate international agreements, a favorable development climate, appropriate administrative structures, teamwork training, public relations, serious decentralization, and popular participation at all levels. Rural planning and development require meeting the needs of present generations without compromising the needs of future generations. This requires considering environmental, social, and economic aspects during development stages and developing indicators that must be taken into account when implementing programs, plans, and policies to achieve sustainable development [17].

A study [18] identifies Rural tourism as a key input for sustainable rural development that encompasses a wide range of activities such as natural or man-made landmarks, amenities, transportation, marketing, and information systems. It can bridge the gap between urban and rural areas, increasing demand for agricultural products and direct marketing, creating added value for rural areas, improving regional marketing, and providing economic incentives for farmers to remain in agriculture. Other dimensions of rural tourism include ecotourism, hiking, climbing, sports and health tourism, hunting and fishing, educational travel, arts, heritage tourism, and other tourism alternatives. Another study [19] highlights shared vision and community participation as community indicators for rural community development. The framework for systematic community indicators for rural community development is an interactive and iterative learning process, focusing on a comprehensive goal that includes the community system as a whole and reflects the integrated values and priorities of the community. The stronger the indicators, the greater the leverage that can move the community towards sustainability.

The researcher believes that achieving sustainable rural development requires clear, scientifically based planning by integrating efforts across various sectors, such as agriculture, industry, tourism, and services. It also requires community participation and cooperation from all relevant stakeholders. In conclusion, rural planning and development require a comprehensive approach that includes international

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

agreements, a favorable development climate, appropriate administrative structures, teamwork training, public relations, and popular participation at all levels. By addressing these factors, rural communities can work together to create a more equitable and sustainable environment for all. As the Arab Organization for Agricultural Development emphasizes, intensified efforts to adopt and activate concepts such as sustainability, governance, inclusiveness, and integration, sustainable livelihoods, and quality of life in the countryside are necessary for achieving sustainable development in rural areas [11].

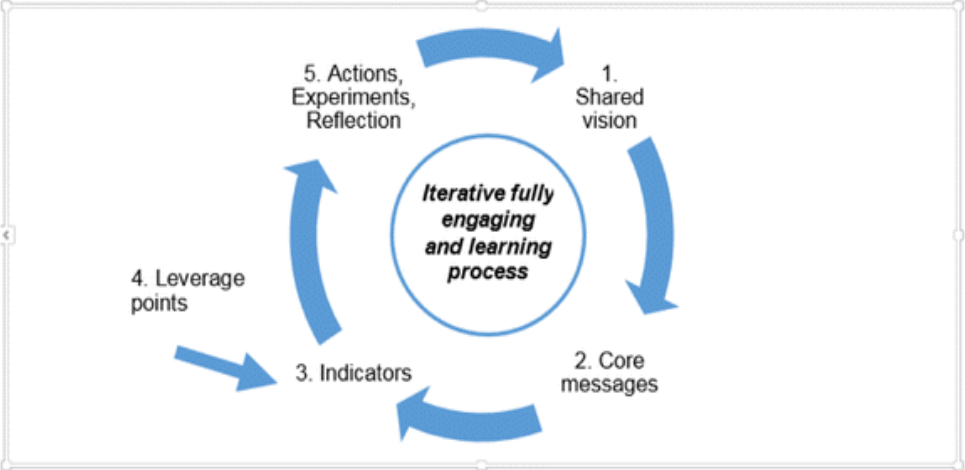

Figure 1. Systematic Community Indicators Framework for Rural Community Development [19,20].

Addressing environmental and social challenges together can lead to positive outcomes and synergies for development in rural areas. Investing in water management infrastructure and social protection in rural areas can generate jobs, stimulate incomes, increase agricultural productivity, and improve resilience to climate change. Sustainable rural development programs achieved self-sufficiency in various agricultural products in 2020. The Ministry of Environment, Water, and Agriculture approved an expansion plan for the plant wealth and greenhouses sector, with new investments worth 4 billion riyals during 2023-2025 [21].

The National Water Strategy 2030 [22] developed an optimal scenario for water conservation, with two approaches pursued: stopping fodder cultivation on farms exceeding 100 hectares and irrigation improvement initiatives. The conservative scenario ensures water conservation and successful implementation of the decision to stop green fodder

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

cultivation in reducing water consumption in the agricultural sector. The conservative scenario estimates all improvements in irrigation practices will be achieved by 2030, and needs are estimated to decline by 13%. After analysis and consultations with stakeholders, the conservative scenario was adopted as the baseline strategy for the strategy. Cabinet Resolution No. (227) of 6/5/1439 AH (corresponding to January 23, 2018) approved the National Water Strategy 2030. To promote sustainable development in rural communities, several measures can be taken, such as investing in education and training, sustainable agricultural development, non-Agricultural economic development, water demand efficiency and diversification of water sources, and government support and cooperation of specialists.

A study [23] found that natural resources in the Kingdom of Saudi Arabia face various pressures, and scientists are seeking ways to use them wisely and sustainably. Sustainable agricultural extension programs are mandated to promote the implementation of sustainable agriculture practices, and extension agents must implement these programs required for sustainable agricultural extension. The study identified perceptions of sustainable agriculture among agricultural extension agents in the Riyadh region of Saudi Arabia. The results showed that there is a partial degradation of natural resources in the Kingdom based on the conflict between agricultural production and the environment, and extension agents generally have a positive perception of sustainable agriculture concepts. There were no statistically significant differences between the overall averages of extension agents' perceptions of sustainable agriculture concepts and their ages. A rural/urban background or educational background was found to provide positive perceptions of extension agents regarding sustainable agriculture and the significant need to provide sustainable agricultural extension programs to farmers.

A study [24] aimed to review and explore the various experiences in rural development and the efforts made in the field of rural planning and development in several Arab countries. It also monitored the rural development strategies, policies, and planning programs in place to overcome rural development planning problems and achieve sustainable rural development. The study extracted some appropriate mechanisms that will hopefully contribute to formulating a comprehensive and sustainable rural development strategy in

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

the Kingdom of Saudi Arabia, thus achieving a comprehensive rural development strategy to achieve the objectives of the Kingdom's development plans.

A study [25] highlighted the importance of sustainable agriculture and the potential role of extension and education in transforming agricultural production towards sustainable practices in the Kingdom. The results indicated that by utilizing adequate irrigation, the Kingdom was able to produce a surplus of wheat and reach source level, which not only severely depleted the Kingdom's water resources but also required the use of massive amounts of chemical fertilizers to boost yields that were unsustainable. The Kingdom should focus only on sectors capable of achieving sustainability and improving crop yields and rural livelihoods for agricultural communities.

To achieve sustainability, the three areas of sustainable agriculture, rural development, and agricultural extension go hand in hand and are interconnected. The Kingdom must focus on these three essential components of production and development and give them equal importance in national policies and agendas. There is a need to initiate in-service training programs for extension agents and provide opportunities for extension agents to pursue higher education, with a focus on extension education and/or technical agricultural fields, in addition to environmental concepts. Extension educators need to develop sustainable agriculture programs to educate farmers on sustainable agriculture and farming techniques to achieve sustainable rural development [25].

A study [26] addressed the main goal of rural development planning, which is to correct the various sectors of rural society to move from economic stagnation and backwardness to a dynamic and steadily growing balance. By drastically changing production and consumption patterns in various sectors. Rural communities require a technical tool to determine potential and production and to distinguish between priorities for sustainable development because the main challenge in any rural community is aligning limited resources, both quantitatively and qualitatively, with unlimited needs and desires to maximize satisfaction and the best possible exploitation of those resources. Integrated rural development planning is the best way to predict the future because it considers all goals within available resources. The study suggests developing rural areas with sustainable rural

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

development planning, or neighborhood rural development projects. It should affect all Algerian countryside parties, directly or indirectly, not just farmers and rural interests. For "From Rural Localization to Sustainable Development." rural planning, all rural development work and arrangements must be properly framed. Sustainable rural development requires listening to rural residents to understand their social and economic situation and providing them with housing through real estate or rural support programs. Banks and other lenders help farmers, investors, and tourism projects finance agricultural projects if unified. Only legal means can ensure rural development.

A study [27] defined rural development as addressing population needs and all aspects of rural life. Agricultural development is part of rural development. Asir's climate makes it one of southwest Saudi Arabia's most important agricultural regions. Rural areas are also home to them. Asir's rural agricultural development in reality? How can Asir benefit from the Ministry of Environment, Water, and Agriculture's Sustainable Agricultural Rural Development Program (2018-2025)? Asir rural agricultural development is studied. We selected the Ministry of Agriculture's Sustainable Rural Development Program's most important programs for Asir agricultural rural development. To achieve research goals, Asir agricultural rural development was described and analysed using descriptive-analytical methods. For sustainable development and Asir's rural population, agricultural rural development program areas were found.

A study [28] examined agritourism as a rural tourism strategy. Rural development, especially agriculture, promotes rural areas. To achieve sustainable rural development, support agricultural enterprises. Many recent studies have focused on agritourism as a rural development tool. This strategy diversifies agriculture, creates jobs, protects landscapes, prevents population migration and cultural abandonment, and provides more sustainable technologies. It benefits biodiversity and resources. Numerous studies have identified agritourism as important for rural development, but few have examined its determinants. Given agritourism's overall benefits, it's important to examine its best drivers. Authentic products strengthen consumer-agritourism farm relationships, increasing visitor numbers and spending. Networks help agritourism farms leverage relationships to boost economic performance and create new growth opportunities. Partnered

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

agritourism farms perform better than those operating alone. Social media promotion boosts agritourism performance in terms of new customers and profit goals, according to the study.

A study [19] examined how community indicators affect community development and their importance to researchers worldwide. It also found that rural communities' complex systems present unique challenges for identifying sustainable development indicators, especially in developing countries. According to the research, systematic community indicators support sustainable development in rural communities, and full community participation is needed to design, implement, and monitor development activities. We addressed the conceptual and empirical stages of developing a systematic framework for identifying indicators for developing country rural communities. Workshops and in-depth interviews with original fieldwork participants ensured participatory and critical field research. The framework increased communities' human and social capital, but the study found several implementation weaknesses. The research thought-basely refined the framework and discussed principles for applying it in rural developing economies.

A study [29] examined rural issues in developing countries and used regional planning and integrated rural development to balance urban and rural areas. The study addresses rural population migration to cities due to dissatisfaction with rural services, lower living standards in rural areas compared to urban areas, and rural area neglect in previous development strategies. The study found that rural areas in developing countries are important demographic factors that indirectly contribute to social balance because they provide food safety and unskilled labour. Most developing countries ignore the rural economy, which includes agriculture and animal husbandry, and fail to achieve this balance. Substandard investment in these sectors has led to proposals that suppress social demands without promoting rural welfare and development. Some countries have acknowledged this role and developed development strategies to improve. These strategies have balanced urban and rural development, allowing rural populations to participate in and achieve social and economic development. Development strategies for Egypt and Saudi Arabia have recently gained popularity. To achieve social and economic balance and allow rural areas to participate in development, development disparities between

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

rural and urban communities must be eliminated and rural populations' social and economic status increased.

The findings showed that rural development is crucial to social and economic balance, especially in developing nations like Egypt and Saudi Arabia. Egyptian integrated rural units, which provide economic, social, health, and educational services to villages, have improved public welfare and addressed rural issues. Integration and effective preparation across economic, social, and administrative planning dimensions to support sustainable development require regional planning technology training. Successful rural development projects align national timelines with local projects to meet the economic and social policy requirements of the national general plan and emphasise the need to coordinate actions. They also emphasised the importance of promoting rural economic development through tailored services for workers in various rural projects to promote economic growth and improve living standards in rural areas [29].

A study [30] found that Saudi Arabia's agricultural development has changed greatly since the 1970s due to food security policies that built thousands of pivot irrigation fields. Little is known about the fields' number, area, and changing dynamics. A hybrid machine learning framework was used to identify national hub fields in Saudi Arabia using Landsat imagery from 1990 to bridge the knowledge gap between policy drivers and field responses. Density-based spatial clustering with noise, neural networks, and spectral clustering were implemented stepwise. The number, area, and volume of central hub fields, as well as the first and last year of field discovery since 1990, were used to study Saudi Arabia's agricultural development over decades. Saudi Arabia's agricultural development has had four phases: preparation before 1990, contraction from 1990 to 2010, expansion from 2010 to 2016, and contraction since 2016. Saudi Arabia was the sixth largest wheat exporter in the 1980s due to policy initiatives to increase wheat production, and most of the fields predate 1990, covering over 8,800 square kilometers. A downward trend was observed from 1990 to 2010, with an average of 8,011 square kilometers of field area discovered. Following the 1990 wheat phasing out policy, this occurred. Fields increased rapidly from 2010 to 2015 due to fodder crop cultivation to boost the dairy industry, peaking in 2016 with 33,961 fields covering 9,400 square kilometers. Agriculture has been declining since 2016, with 2020 levels below 1990 levels.

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

This decline was linked to Saudi Vision 2030 sustainable policy initiatives. An upswing in 2021 and an ongoing analysis for 2022 may be a response to global influences like the COVID-19 pandemic and the Ukraine conflict, which have disrupted international agricultural supply. The results provide a historical account of agricultural activity across the Kingdom and inform sustainable irrigation and agricultural practices, helping to protect and manage the country's threatened groundwater resources and revealing the Saudi food system's resilience to global disruptions.

The previous studies discuss sustainable rural development in the Kingdom of Saudi Arabia, specifically focusing on the case of Jawf Bani Hajer in the Eastern Province. Previous studies have highlighted the importance of rural development in achieving social and economic balance, providing food security, and enhancing societal stability. Challenges faced by rural areas include lack of investment in infrastructure, poor basic services, youth migration to cities, deterioration of natural resources, and reliance on unsustainable traditional agricultural methods. Agriculture in Saudi Arabia faces significant challenges due to climatic conditions and limited resources, necessitating the urgent need for sustainable agricultural extension programs for farmers. Comprehensive planning is essential for rural development, considering local resources, community needs, climate change, infrastructure, social services, and tourism. Diversity in challenges and opportunities varies across regions, necessitating customized plans for each context or flexible plans that suit most communities. Community participation is crucial for enhancing ownership and responsibility.

Sustainability is emphasized through the optimal use of natural resources and environmentally friendly agricultural practices. Integration of sustainable agriculture, rural development, and agricultural extension is crucial. Urban-rural balance is essential in the planning process, and the sustainable agricultural sector is a driver of sustainable rural development. Agricultural extension workers play a vital role in spreading awareness and providing technical support to farmers. Training and qualification are necessary for building human capacity in rural areas. Rural tourism diversifies agricultural activities, increases employment opportunities, protects natural landscapes, and prevents population migration and the abandonment of traditional cultures. Improving infrastructure in rural areas is also essential. Successful rural development

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

initiatives, such as integrated projects providing multiple services to rural communities, are provided.

3. Materials and Methods

The study adopted the descriptive survey approach, which includes field survey methods designed by the study sample of officials, academics, and decision-makers in the Kingdom of Saudi Arabia, designing the questionnaire that will be used to collect original information from the study sample, field visits for photographic surveys, and other methods. By applying the questionnaire tool with its application on a sample (86 Participants) of the research community of officials, academics, decision-makers and experts in the Kingdom of Saudi Arabia, with a focus on Jowf Bani Hajer as a case study, and field monitoring of the region and collecting data related to population characteristics, economic activity, urban characteristics and public services, to assess the current situation of rural communities, to assess the current situation of rural communities in Jowf Bani Hajer in terms of sustainable development, and to identify the challenges facing rural communities in the Kingdom of Saudi Arabia, with a special focus on Jowf Bani Hajer communities in the Eastern Province.

After reviewing previous studies, numerous educational journals and magazines, and research related to the research problem, which addressed the research area, as well as interviewing specialists in the field of research, both from within and outside the university, and based on the nature of the data and the methodology followed in the study, it became clear that the most appropriate tool for achieving the study's objectives was the questionnaire. The questionnaire is defined as: "A form containing a set of questions or written statements with their answers, possible opinions, or a blank space for answering. The respondent is asked to indicate what they consider important, or what applies to them" [31].

The questionnaire is also one of the most prominent tools used in scientific research. It is the researcher's means of obtaining data and information related to the study's components, whether the research is a survey or partial. The questionnaire was used to identify the orientations of the study sample. After taking into account the recommendations of the arbitrators and the directions of the Scientific Supervision Committee and making the necessary amendments, the questionnaire, in its final form, consisted of two parts:

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

Part One: Basic data and variables of the study sample, including:

(gender, age, educational qualification, employer, and years of experience).

Part Two: Study axes, including two axes:

(1) The most important problems (challenges) facing the process of sustainable rural development in the Kingdom of Saudi Arabia.

It included the following five dimensions:

1) Challenges to achieving economic sustainability, which included (6) statements.

2) Challenges to achieving social sustainability, which included (6) statements.

3) Challenges to achieving environmental sustainability, which included (6) statements.

4) Challenges to achieving technological/technical sustainability, which included (6) statements.

5) Challenges to achieving institutional (administrative and legal) sustainability, which included (6) statements.

(2) The most important proposals/policies for achieving sustainable rural development in the Kingdom of Saudi Arabia. It included the following five dimensions:

1) Proposals/policies for achieving economic sustainability, which included (6) statements.

2) Proposals/policies for achieving social sustainability, which included (6) statements.

3) Proposals/policies for achieving environmental sustainability, which included (6) statements.

4) Proposals/policies for achieving technological/technical sustainability, which included (6) statements.

5) Proposals/policies for achieving institutional (administrative and legal) sustainability, which included (6) statements.

To measure the reliability of the study tool (the questionnaire), the researcher used the Cronbach's alpha equation. Table (1) shows the reliability coefficients for the study's dimensions and axes. By reviewing the results shown in Table (1), it is clear that the reliability coefficients for the questionnaire's axes are high, ranging between 0.751 and 0.843 for the dimensions of the first axis, and between 0.786 and 0.912 for the dimensions of the second axis. The overall reliability of the questionnaire is 0.811, indicating that the questionnaire enjoys a high degree of reliability and can therefore be relied upon in the field application of the study.

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

The researcher utilized the Statistical Package for Social Sciences (SPSS) program to analyze data on the use of social media networks among study members. They used frequencies and percentages to identify personal and functional characteristics, and mean to determine the extent of high or low responses. The frequency of responses was calculated and converted to scores, and Pearson Correlation Coefficient was used to calculate internal validity. Cronbach's Alpha was used to determine reliability, and standard deviation was used to measure the extent of deviation in the responses of the study members.

Table 1. The reliability coefficients for the study's dimensions and axes.

Axes and dimensions			Items no.	Cronbach's alpha	Reliability
1st axis	1st Dimension	Challenges to Achieve Economic Sustainability	6	0.751	0.789
	2nd Dimension	Challenges to Achieve Social Sustainability	6	0.802	
	3rd Dimension	Challenges to Achieve Environmental Sustainability	6	0.731	
	4th Dimension	Challenges to Achieve Technological Sustainability	6	0.822	
	5th Dimension	Challenges to Achieve Institutional Sustainability	6	0.843	
2nd axis	1st Dimension	Proposals/Policies to Achieve Economic Sustainability	6	0.821	0.833
	2nd Dimension	Proposals/Policies to Achieve Social Sustainability	6	0.786	
	3rd Dimension	Proposals/Policies to Achieve Environmental Sustainability	6	0.842	
	4th Dimension	Proposals/Policies to Achieve Technological Sustainability	6	0.912	
	5th Dimension	Proposals/Policies to Achieve Institutional Sustainability	6	0.792	
		Total	60	-	0.811

4. Results and Discussion

4.1. Demographic Results

The demographic results show the distribution of study individuals according to the variables of gender, age, educational qualification, employer, and years of experience, and according to local and non-local experts. Regarding gender, (84) participants of the study individuals represent 97.7% of males, meaning that the vast majority of the study

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

sample are males, while (2) of them represent 2.3% of the total study individuals who are females.

As for age, (2) participants of the study participants, representing 2.3%, were under 30 years old, while (49), representing 57%, were aged between 30 and under 40 years old. Moreover, (23) participants, representing 26.7%, were aged between 40 and under 50 years old, and (12) participants, representing 14%, were aged 50 years or older. As for educational qualification, (38) participants of the study subjects, representing 44.2%, hold a bachelor's degree, while (32) participants, representing 37.2%, hold a master's degree, while (13) participants, representing 15.1%, hold a doctorate, while (3) participants, representing 3.5%, hold an intermediate or higher diploma.

Regarding employer, (69) participants of the study subjects, representing 80.2%, work in the government sector, while (15) participants, representing 17.4%, work in the private sector, while (2) participants, representing 2.3%, work in Aramco.

As for years of experience, (2) participants of the study subjects, representing 2.3%, had experience ranging from one year to less than 5 years, while (8) participants representing 9.3% had experience ranging from 5 years to less than 10 years, while (39) participants representing 45.3% had experience ranging from 10 years to less than 15 years, while (37) participants representing 43% had experience ranging from 15 years or more.

Regarding local and non-local experts, (25) participants of the study subjects, representing 29.07%, were local experts in the Jowf Bani Hajer area, while the number of non-local experts from outside the Jowf Bani Hajer area was (61), representing 70.93% of the total sample.

4.2. Challenges facing the sustainable rural development process in the Kingdom of Saudi Arabia

According to the responses of the sample members related to the first question, which tried to extract the most important problems facing the process of sustainable rural development in the Kingdom of Saudi Arabia, the answer to the question was presented based on the presentation and analysis of the results of the field study, which showed the statistical processing of the responses of the sample members regarding the results, where the total sum of the responses, arithmetic means, standard deviations and the degree of response were

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

extracted (to identify the most important problems facing the process of sustainable rural development in the Kingdom of Saudi Arabia).

Table (2) reveals the study sample's responses on the challenges of sustainable rural development in Saudi Arabia, across all dimensions. Agreement with a mean of (3.96) and a standard deviation of (0.86) was the average response to this axis. The standard deviation shows that participants' responses were similar. On average, axis statements ranged from (4.17 to 3.74), with a response level of (agree) for all dimensions.

The fourth dimension with the most responses was technological/technical sustainability challenges. With an arithmetic mean of 4.17 and a response level of "agree," "technological/technical" challenges were the biggest obstacles to sustainable rural development. In rural areas, the lack of modern technology and technical skills hinders sustainable development.

The second dimension, "Challenges to Achieving Social Sustainability," ranked second with an arithmetic mean of 4.03 and a response level of "agree," indicating that social issues like education, health, and social cohesion must be addressed to achieve sustainable development.

The first dimension, "Challenges to Achieving Economic Sustainability," ranked third with an arithmetic mean of 3.98 and a response level of "agree," indicating that economic issues like joblessness and weak economic infrastructure hurt rural development.

The third dimension, "Challenges to Achieving Environmental Sustainability," was fourth. The response level was "agree," with an arithmetic mean of 3.90, indicating that desertification, water scarcity, and pollution must be addressed to sustainability natural resources.

The fifth dimension: "Challenges to Achieving Institutional Sustainability (Administrative and Legal)." Despite challenges, the administrative and legal framework was ranked fifth and last with an arithmetic mean of 3.74 and a response level of "agree," indicating less of an obstacle than technological and social dimensions.

The results also show that all five dimensions challenge sustainable rural development, with varying degrees of impact. These findings can help policymakers prioritize and develop effective strategies to address these challenges, especially in rural areas like Jawf Bani Hajer, to promote sustainable development in Saudi Arabia. With an overall arithmetic mean

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

of 3.96, sample members "agree." that sustainable rural development faces challenges in all dimensions.

Table 2. challenges facing the sustainable rural development process in the Kingdom of Saudi Arabia, ranked in descending order according to arithmetic averages according to all dimensions.

S.	Dimension	Total Responses	Mean	Standard Deviation	Score	Rank
4	Challenges to Achieve Technological Sustainability	2872	4.17	0.79	Agree	1
2	Challenges to Achieve Social Sustainability	6927	4.03	0.86	Agree	2
1	Challenges to Achieve Economic Sustainability	6502	3.98	0.87	Agree	3
3	Challenges to Achieve Environmental Sustainability	4345	3.90	0.88	Agree	4
5	Challenges to Achieve Institutional Sustainability	4067	3.74	0.82	Agree	5
Total		24713	3.96	0.84	Agree	

The researcher attributes this result, which indicates that participants agree on the existence of problems and challenges facing sustainable rural development in the Kingdom of Saudi Arabia in all its aspects. He points out that these problems and challenges are already present in various aspects and dimensions of development, such as economic, social, environmental, technological, and administrative aspects. This is explained by the participants' perception that these problems are real and influential, and by their desire to take effective measures to address them and overcome the challenges to achieve sustainable rural development in the Kingdom. This result can also be attributed to the focus of development processes on urban areas. Development policies in the Kingdom may be more directed toward urban areas, leading to a lack of focus on rural areas and their relegation to secondary status. This result can also be attributed to the lack of integrated planning. Development efforts may be incomplete, leading to a failure to address all dimensions in a balanced manner, in addition to the weakness of local community participation in the planning and implementation of development projects.

The researcher also attributes the occurrence of the fourth dimension: (Challenges to Achieving Technological/Technical Sustainability) The first-place ranking is due to the fact that

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

rural communities in the Jowf Bani Hajer region suffer from a lack of the technology and technical skills necessary to achieve sustainable development. This may include a lack of technological infrastructure, such as communications networks and the internet, which hinders the adoption of modern technologies. This may also include a lack of training and qualifications in the use of modern technologies, a lack of access to information and knowledge, and the high cost of technology. The cost of obtaining modern technologies may be high for rural communities, hindering their adoption.

The researcher also attributes the second-place ranking of the second dimension (Challenges to Achieving Social Sustainability) to the presence of social problems that impact sustainable development in rural areas, such as poverty, unemployment, poor equal opportunities, poor healthcare, and a lack of educational services. Rural areas generally suffer from a shortage of schools and health facilities, which impacts quality of life and the ability to develop. This also includes weak community participation due to a lack of awareness, fear of participation, or passivity, which leads to a decline in community participation in decision-making. This result may also be attributed to rural-urban migration, as the migration of young people to cities may lead to a shortage of qualified workers in rural areas.

The researcher attributes the third-ranking of the first dimension: (Challenges to Achieving Economic Sustainability) to the presence of economic challenges that impact development. These challenges include: a lack of investment directed towards developing economic sectors in rural areas, difficulty accessing markets, a lack of sufficient job opportunities, and weak economic diversification, as rural areas rely heavily on agriculture, herding, or handicrafts, making them vulnerable to economic and climatic fluctuations. This result can also be attributed to weak economic infrastructure, as roads, transportation, and communications may be insufficient, impeding the movement of goods and services. Furthermore, rural areas suffer from high rates of unemployment and poverty, which hinders their ability to achieve development.

As for the third dimension: (Challenges to Achieving Environmental Sustainability), the researcher attributes its "Agree" response level and fourth-ranking to the presence of environmental problems that impact development, such as: desertification, which leads to the degradation of agricultural

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

lands and pastures; water scarcity, as the Kingdom suffers from a scarcity of water resources, especially in rural areas, which impacts agriculture and development; pollution resulting from unsustainable and non-recycled agricultural or industrial activities; and climate change, which significantly impacts the availability of natural resources and increases the severity of drought. This result is consistent with the study [23], which showed a partial deterioration of natural resources in the Kingdom based on the conflict between agricultural production and the environment.

Although the fifth dimension, "Challenges to Achieving Institutional Sustainability (Administrative and Legal)," ranked fifth and last, it achieved a response level of "Agree." This is due to challenges in the administration and laws related to rural development, such as weak coordination between institutions and the need for clear laws. Additionally, some local administrations suffer from a lack of trained and qualified human resources or the resources necessary to implement development projects. Administrative bureaucracy also exists, as administrative procedures can be complex and slow, hindering project implementation and requiring long approvals. This result may also be interpreted as indicating that current legislation may be insufficient to support sustainable rural development.

These results are consistent with the study [26], which emphasized the need to achieve a dynamic and steadily growing balance by correcting the various sectors of rural society. This can be achieved by radically changing production and consumption patterns across various sectors, leveraging rural support programs and financing agricultural projects. These results are also consistent with the study [29], which emphasized that issues such as the migration of rural residents to cities due to dissatisfaction with rural services, lower living standards in rural areas compared to urban areas, and the neglect of rural areas in previous development strategies are considered key concerns for rural development according to planning strategies.

4.3. Proposals (policies) to achieve Sustainable Rural Development in the Kingdom of Saudi Arabia

Table (3) shows that across all dimensions, the study sample's responses to the most important proposals (policies) for sustainable rural development in Saudi Arabia:
- The study sample "strongly agree" with all levels of

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

sustainable rural development challenges in Saudi Arabia. The average response to this axis was "strongly agree," with a 4.49 arithmetic mean and 0.63 standard deviation. The standard deviation shows that participants' responses were similar and not significantly different.

The axis statements had an average value of 4.47 to 4.44, with a "strongly agree" response for all dimensions. The fifth dimension, "Proposals/Policies to Achieve Institutional (Administrative and Legal) Sustainability," ranked first with a mean of 4.47 and a "Strongly Agree."

The first dimension, "Proposals/Policies to Achieve Economic Sustainability," ranked second with a mean of 4.46 and a "Strongly Agree." The fourth dimension, "Proposals/Policies to Achieve Technological/Technical Sustainability," ranked third with a mean of 4.55 and a "Strongly Agree." The third dimension, "Proposals/Policies to Achieve Environmental Sustainability," ranked fourth with a mean of 4.51 and a "Strongly Agree." The second dimension, "Proposals/Policies to Achieve Social Sustainability," was fifth and last with a mean of 4.44 and a "Strongly Agree."

All five dimensions are agreed upon as policies for sustainable rural development in Saudi Arabia. Saudi Arabia, where sample members' acceptance of proposed proposals has a low standard deviation, indicating relative agreement on the policies' effectiveness, with varying degrees of impact for each dimension. These findings can help Saudi Arabian policymakers prioritize and implement these proposals, especially in rural areas like Jowf Bani Hajer, to promote sustainable development. The overall arithmetic mean for the axis is 4.49, indicating a "strongly agree" response level, and sample members believe the proposed policies contribute significantly to sustainable rural development in Jowf Bani Hajer.

Table 3. Proposals (policies) to achieve the sustainable rural development process in the Kingdom of Saudi Arabia, ranked in descending order according to arithmetic averages according to all dimensions.

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

S.	Dimension	Total Responses	Mean	Standard Deviation	Score	Rank
5	Proposals/Policies to Achieve Institutional Sustainability	4612	4.47	0.67	Strongly Agree	1
1	Proposals/Policies to Achieve Economic Sustainability	7281	4.46	0.63	Strongly Agree	2
4	Proposals/Policies to Achieve Technological Sustainability	3130	4.55	0.58	Strongly Agree	3
3	Proposals/Policies to Achieve Environmental Sustainability	5037	4.51	0.63	Strongly Agree	4
2	Proposals/Policies to Achieve Social Sustainability	7641	4.44	0.65	Strongly Agree	5
	Total	27701	4.49	0.63	Strongly Agree	

The researcher attributes this result, which indicates that the participants agree on the most important proposals (policies) for achieving sustainable rural development in the Kingdom of Saudi Arabia in all its aspects, and indicates that these most important proposals (policies) will work to solve problems and challenges and achieve sustainable rural development in the Kingdom of Saudi Arabia in various aspects and dimensions of development, such as: economic, social, environmental, technological, and administrative aspects. This is explained by the fact that the participants believe that these proposals are realistic and implementable and include effective mechanisms and procedures for addressing these problems and overcoming challenges to achieve sustainable rural development in the Kingdom.

The researcher attributes the fifth dimension (Proposals/Policies to Achieve Institutional (Administrative and Legal) Sustainability, which ranked first, to the fact that participants believe that improving management and governance and developing laws and legislation related to rural development are crucial factors for achieving sustainable rural development. This could also be due to the fact that participants believe that administrative and legal problems hinder the development process, such as weak coordination between government agencies, the lack of a clear rural development strategy, complex procedures, and the lack of oversight and accountability mechanisms.

The researcher attributes the first dimension (Proposals/Policies to Achieve Economic Sustainability), which ranked second, to the fact that participants believe that providing job opportunities, increasing income, improving the

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

standard of living, diversifying sources of income, supporting small and medium enterprises, and encouraging investment are essential factors for achieving sustainable development. This could be due to the fact that participants suffer from economic problems, such as poverty, unemployment, and the weak competitiveness of local products.

The researcher attributes the fourth dimension (Proposals/Policies to Achieve Technological/Technical Sustainability), which ranked third, to the fact that participants believe that adopting modern technologies in agriculture, industry, and services, and developing communications and information infrastructure, The use of renewable energy is an important factor in achieving sustainable development. This may be due to the fact that participants believe that technology can contribute to improving production efficiency, reducing costs, improving product quality, and creating new job opportunities.

The researcher attributes the third dimension (Proposals/Policies for Achieving Environmental Sustainability), which ranked fourth, to the fact that participants believe that conserving natural resources, combating desertification and pollution, and rationalizing water and energy consumption are essential factors for achieving sustainable development. This may be due to the fact that participants suffer from environmental problems, such as water scarcity, desertification, pollution, and deteriorating soil quality.

The researcher attributes the second dimension (Proposals/Policies for Achieving Social Sustainability), which ranked fifth, to the fact that participants believe that improving education and health standards, providing basic social services, and enhancing community participation are important factors for achieving sustainable development. This may be due to the fact that participants suffer from social problems, such as a lack of education and health services, weak community participation, and high poverty rates. This finding is consistent with the study [13] in establishing mechanisms to contribute to formulating a comprehensive and sustainable rural development strategy in the Kingdom of Saudi Arabia. This strategy aims to achieve the objectives of the Kingdom's development plans. This finding is also consistent with the study [30], which emphasized the need to make informed decisions regarding sustainable irrigation and agricultural practices in the Kingdom of Saudi Arabia, as well as with the

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

proposals for sustainable policy initiatives implemented to achieve Saudi Vision 2030.

The results of the study reached according to the responses of the sample members related to the two axes: the first: the most important problems facing the sustainable rural development process in Jawf Bani Hajer in the Eastern Province of the Kingdom of Saudi Arabia, and the second: the most important proposals (policies) to achieve sustainable rural development in Jawf Bani Hajer in the Eastern Province according to the variable of local and non-local experts. There are no statistically significant differences at a significance level of (0.05) in the dimensions of the first axis: the most important problems (challenges) facing the sustainable rural development process in Jawf Bani Hajer in the Eastern Province of the Kingdom of Saudi Arabia, where the difference between the two means is 3.94, and despite the existence of a difference between the two means, the (t) test showed that there is no statistically significant difference between the two groups, because the (t) test showed a value of -0.57. This means that the difference between the two means is not large enough to be considered statistically significant. This means that the difference between the two means is not large enough to be considered statistically significant. That is, the study sample of local and non-local experts agree on the problems (challenges) facing the sustainable rural development process in Jowf Bani Hajer in the Eastern Province of the Kingdom of Saudi Arabia spans all dimensions, and the views of local and non-local experts are consistent.

The results also indicated that there were no statistically significant differences at a significance level of 0.05 in the dimensions of the second axis: The most important proposals (policies) for achieving sustainable rural development in Jowf Bani Hajer in the Eastern Province, based on the local and non-local experts variable. The difference between the means is 6.62. Despite the existence of a difference between the means, the t-test showed no statistically significant difference between the two groups. The t-test yielded a value of 0.89, which means that the difference between the means is not large enough to be considered statistically significant. This means that the study sample of local and non-local experts agree on the problems (challenges) facing the sustainable rural development process in Jowf Bani Hajer in the Eastern Province of the Kingdom of Saudi Arabia in all dimensions, and the views of local and non-local experts are consistent.

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

The researcher attributes this result to the fact that experts from both groups may have a common understanding of the main challenges facing the region, given their experience and knowledge of the local reality. They may also have similar experiences in rural development, leading them to agree on the importance of some challenges. Alternatively, the challenges presented in the questionnaire may be clear and tangible, such that views on them do not differ significantly. The challenges may also be the result of common factors affecting the region in general, such as climate change or national policies.

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

5. Conclusions

The study focuses on the situation of rural communities in the Bani Hajer area of the Eastern Province of Saudi Arabia, with the findings applicable to other rural areas in the Kingdom. It provides a detailed analysis of the current situation and its challenges, paving the way for a synthetic study aimed at building a conceptual framework for sustainable rural development in the Kingdom of Saudi Arabia.

The five dimensions of the first axis pose challenges to achieving sustainable rural development, with varying degrees of impact for each dimension. The five dimensions of the second axis represent proposals for achieving sustainable rural development, with varying degrees of impact for each dimension. These findings can help policymakers set priorities and develop effective strategies to address these challenges.

The most important problems and challenges facing sustainable rural development in the Kingdom of Saudi Arabia are technological/technical challenges, social challenges, economic challenges, environmental challenges, institutional/administrative and legal challenges, and proposals for achieving sustainable rural development.

To achieve institutional, administrative, and legal sustainability, the study proposes improving management and governance, developing laws and legislation related to rural development, establishing mechanisms to contribute to formulating a comprehensive and sustainable rural development strategy, providing job opportunities, increasing income, improving the standard of living, diversifying sources of income, supporting small and medium enterprises, and encouraging investment.

Technological and technical sustainability involves developing communications and information infrastructure, utilizing renewable energy, adopting modern technologies in various sectors to improve efficiency and reduce costs. Environmental sustainability involves preserving natural resources, combating desertification and pollution, rationalizing water and energy consumption, and adopting sustainable agricultural practices. Social sustainability involves improving education and health, providing basic social services, and empowering local communities in development processes.

Additional proposals include developing mechanisms to implement rural support programs and finance agricultural

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

projects, making informed decisions about sustainable irrigation and agricultural practices, and implementing sustainable policy initiatives to achieve Saudi Vision 2030. By addressing these challenges and implementing integrated planning, the study aims to promote sustainable rural development in the Kingdom of Saudi Arabia.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/doi/s1, Figure S1: title; Table S1: title; Video S1: title.

Author Contributions: For research articles with several authors, a short paragraph specifying their individual contributions must be provided. The following statements should be used "Conceptualization, X.X. and Y.Y.; methodology, X.X.; software, X.X.; validation, X.X., Y.Y. and Z.Z.; formal analysis, X.X.; investigation, X.X.; resources, X.X.; data curation, X.X.; writing—original draft preparation, X.X.; writing—review and editing, X.X.; visualization, X.X.; supervision, X.X.; project administration, X.X.; funding acquisition, Y.Y. All authors have read and agreed to the published version of the manuscript." Please turn to the CRediT taxonomy for the term explanation. Authorship must be limited to those who have contributed substantially to the work reported.

Funding: Please add: "This research received no external funding".

Institutional Review Board Statement: In this section, you should add the Institutional Review Board Statement and approval number, if relevant to your study. You might choose to exclude this statement if the study did not require ethical approval. Please note that the Editorial Office might ask you for further information. Please add "The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) of NAME OF INSTITUTE (protocol code XXX and date of approval)." for studies involving humans. OR "The animal study protocol was approved by the Institutional Review Board (or Ethics Committee) of NAME OF INSTITUTE (protocol code XXX and date of approval)." for studies involving animals. OR "Ethical review and approval were waived for this study due to REASON (please provide a detailed justification)." OR "Not applicable" for studies not involving humans or animals.

Data Availability Statement: We encourage all authors of articles published in MDPI journals to share their research data. In this section, please provide details regarding where data supporting reported results can be found, including links to publicly archived datasets analyzed or generated during the study. Where no new data

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

were created, or where data is unavailable due to privacy or ethical restrictions, a statement is still required. Suggested Data Availability Statements are available in section "MDPI Research Data Policies" at https://www.mdpi.com/ethics.

Acknowledgments: In this section, you can acknowledge any support given which is not covered by the author contribution or funding sections. This may include administrative and technical support, or donations in kind (e.g., materials used for experiments). Where GenAI has been used for purposes such as generating text, data, or graphics, or for study design, data collection, analysis, or interpretation of data, please add "During the preparation of this manuscript/study, the author(s) used [tool name, version information] for the purposes of [description of use]. The authors have reviewed and edited the output and take full responsibility for the content of this publication."

Conflicts of Interest: The authors declare no conflicts of interest."

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

Abbreviations

The following abbreviations are used in this manuscript:

SDG	Sustainable Development Goals
SPSS	Statistical Package for Social Sciences

Appendix A

Appendix A.1: Questionnaire

The researcher is conducting research entitled: (Challenges and Opportunities for Sustainable Rural Development in Saudi Arabia: A Case Study of Jowf Bani Hajer). The research aims to achieve sustainable development for rural communities in the Kingdom of Saudi Arabia, with a focus on Jawf Bani Hajer in the Eastern Province. This approach is achieved by exploring the challenges facing rural communities and optimally exploiting available opportunities across all geographical areas. The researcher hopes that the research will contribute to the development of policies and strategies that can enhance sustainable development in rural communities in the Kingdom of Saudi Arabia.

First: Demographic Data

Gender

- ☐ Male
- ☐ Female

Age

- ☐ Under 30
- ☐ From 30 to under 40
- ☐ From 40 to under 50
- ☐ From 50 and above

Academic Qualifications

- ☐ Bachelor's
- ☐ Master's
- ☐ PhD
- ☐ Other (please specify)

Employer

- ☐ Government
- ☐ Private
- ☐ Other (please specify)

Years of Experience

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

- ☐ From 1 to less than 5 years
- ☐ From 5 to less than 10 years
- ☐ From 10 to less than 15 years
- ☐ From 15 and above

Second: Questionnaire Axis:

First Axis: Challenges to achieve the sustainable rural development process in the Bani Hajer region in the Eastern Province of the Kingdom of Saudi Arabia.

From your perspective, to what extent do you believe the following problems (challenges) hinder the achievement of sustainable rural development for rural communities in the Kingdom of Saudi Arabia in general and in Jowf Bani Hajer in particular?

Item	1	2	3	4	5
Challenges to Achieve Economic Sustainability					
1. Lack of investment in infrastructure: water, electricity, energy, and utilities.					
2. Lack of job opportunities for youth in rural areas, which drives youth migration to cities.					
3. Lack of a comprehensive and appropriate economic environment to attract investment in rural areas.					
4. Lack of adequate government support through high budgets and the use of advanced technologies and services for rural development.					
5. Fluctuations in the global economy can affect the ability to import necessary materials and implement projects.					
6. Difficulty accessing foreign markets and high transportation costs may affect the competitiveness of local products.					
Challenges to Achieve Social Sustainability					
7. Lack of sustainable agricultural extension programs to provide farmers with the skills and knowledge necessary to improve their productivity.					
8. Demographic shift due to the migration of young people to cities, leading to an aging population and a decline in population growth.					
9. Resistance from some community groups to new projects due to cultural or social differences.					
10. Lack of community participation in rural development planning and lack of local community involvement in decisions regarding the development of rural areas.					

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

11.	Limited social, economic, and service facilities and institutions aimed at promoting villages and raising the standard of living of their residents.
12.	Deficiencies in quality-of-life elements in rural areas, and the lack of parks and playgrounds for children.
	Challenges to Achieve Environmental Sustainability
13.	Drought, limited water resources, and climate change—such as high temperatures and low rainfall—adversely affect agriculture and water supply, exacerbated by poor groundwater management.
14.	Soil quality varies, with some suitable for specific crops, but high salinity and desertification lead to land loss, environmental degradation, and reduced agricultural productivity.
15.	Floods and storms damage agricultural infrastructure and hinder sustainable development, increasing the vulnerability of the region's economy.
16.	Reliance on outdated farming methods, overuse of fertilizers and pesticides, and minimal organic waste utilization hinder efficiency and environmental health.
17.	Insufficient transportation, communication, and infrastructure curb rural growth and access to markets, compounding development challenges.
18.	Scarce natural resources, lack of arable land, and limited sustainable practices restrict agricultural expansion and rural livelihood opportunities.
	Challenges to Achieve Technological Sustainability
19.	Heavy reliance on traditional agriculture (lack of application of modern agricultural technologies and reliance on traditional farming methods).
20.	Lack of use of artificial intelligence applications and electronic development in rural development.
21.	Lack of access to the wealth of electronic information in rural development.
22.	Lack of readiness of technology and communications infrastructure in rural areas.
23.	Lack of implementation of waste management technologies such as recycling and composting.
24.	Lack of renewable and clean energy plants (solar and wind) in rural areas.
	Challenges to Achieve Institutional Sustainability
25.	Complex agricultural investment procedures and the bureaucracy of licensing rural projects.
26.	Slow resolution and adjudication of economic cases.

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

27.	Lack of trust in official decisions regarding rural development.					
28.	High fees and taxes on agricultural investment (lack of tax incentives).					
29.	The problem of local residents owning land and property with official deeds.					
30.	Lack of transparency in implementing oversight and inspection systems to ensure compliance with legal standards and legislation.					

Second axis: Proposals (policies) to achieve sustainable rural development in Jowf Bani Hajer in the Eastern Province of the Kingdom of Saudi Arabia:

In your opinion, to what extent do you believe the following proposals/policies facilitate the achievement of sustainable rural development in rural communities in the Kingdom of Saudi Arabia in general and in Jowf Bani Hajer in particular?

	Item	**1**	**2**	**3**	**4**	**5**
	Proposals (policies) to Achieve Economic Sustainability					
1.	Enhance water, electricity, energy, transportation, and utility infrastructure, creating a favorable environment to attract investments in rural areas.					
2.	Diversify the region's economy through agriculture, rural tourism, handicrafts, fish farming, and processing industries, supported by government incentives and advanced technologies.					
3.	Promote sustainable farming practices by providing affordable fertilizers, attractive crop pricing, and expanding agricultural processing and non-traditional activities like livestock and fisheries.					
4.	Provide continuous employment opportunities for youth through support for agricultural projects, modern factories, handicraft training centers, and rural industries.					
5.	Offer financial services, subsidies, and policies that enhance competitiveness, reduce costs, and mitigate economic fluctuations, encouraging investment and growth.					
6.	Implement policies to preserve biodiversity, reduce ecosystem degradation, and develop sustainable solutions for environmental health and resilience.					
	Proposals (policies) to Achieve Social Sustainability					
7.	Establish rural schools, vocational centers, agricultural extension programs, and provide specialized experts to					

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

enhance skills, awareness of modern technologies, and sustainable practices.

8. Assist youth with decision-making, provide employment opportunities, support community participation, and promote awareness campaigns to prevent migration and develop a vibrant social fabric.
9. Improve public health, healthcare services, housing, and social infrastructure like parks and recreational facilities to elevate living standards in rural areas.
10. Enact laws and policies to empower women, encourage community involvement in development planning, and promote social cohesion among diverse cultural groups.
11. Raise awareness on water conservation, implement sustainable farming methods, and promote agricultural research, extension services, and environmental preservation.
12. Develop social, economic, and service facilities, improve media and social visibility of rural professions, and support new development projects to foster comprehensive rural growth.

Proposals (policies) to Achieve Environmental Sustainability

13. Provide continuous water for agriculture and using modern irrigation methods that rationalize the use of limited water resources.
14. Implement appropriate natural and artificial solutions and treatments to address the harsh climatic conditions of rural areas.
15. Develop plans to confront and reduce the impact of natural disasters on agricultural infrastructure.
16. Introduce modern agricultural methods in rural areas.
17. Encourage organic farming to utilize organic grazing waste.
18. Reduce and combat unfair practices in the use of groundwater and regulate the use of fertilizers and pesticides.

Proposals (policies) to Achieve Technological Sustainability

19. Apply modern agricultural technologies, such as artificial intelligence and electronic development, in rural development.
20. Utilize the wealth of electronic information in the world of rural development.
21. Diversify irrigation methods to suit water resources and provide modern irrigation tools such as drip irrigation and smart irrigation at subsidized prices for the first time.

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

22. Use precision agriculture technologies such as remote sensing and drones to collect data.	
23. Apply waste management technologies such as recycling and composting.	
24. Expand the use of renewable and clean energy (solar and wind) in rural areas.	
Proposals (policies) to Achieve Institutional Sustainability	
25. Enact laws and legislation that facilitate agricultural investment and simplify licensing procedures for rural projects.	
26. Enhance confidence in official decisions related to rural development and grant agricultural projects financial and administrative independence under the new systems.	
27. Enact laws to protect the property rights of local residents and guarantee their rights to land and property.	
28. Ensure transparency in implementing oversight and inspection systems to ensure compliance with legal and legislative standards.	
29. Ensure local community participation in decisions related to rural development and in project planning and implementation.	
30. Promote a sustainable national workforce by ensuring that rural projects do not exclude national localization quotas.	

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025

ISSN: 0022-1465
Online ISSN: 02779536, 18735347

References

1. Aldegheiy HA, Alosaimi HA, Alotaibi SH. The Effect of Community Participation in Reinforcing Sustainable Development in the Kingdom of Saudi Arabia. Journal of International Crisis & Risk Communication Research (JICRCR). 2024 Jul 11;7.
2. Alshuwaikhat HM, Mohammed I. Sustainability matters in national development visions—Evidence from Saudi Arabia's Vision for 2030. Sustainability. 2017 Mar 9;9(3):408.
3. General Authority for Statistics. (2022). Statistical indicators for the Sustainable Development Goals. https://2u.pw/61UtDru
4. General Authority for Statistics. (2021). Progress towards the Sustainable Development Goals. https://2u.pw/py6Hzsd
5. Voznyak H, Stasyshyn A, Koval V. Evaluation of self-sufficiency of territorial communities as the basis for ensuring their sustainable development. Agricultural and Resource Economics: International Scientific E-Journal. 2022 Dec 20;8(4):151-69.
6. Khan MB, Iqbal S. Vision 2030 and the national transformation program. InResearch, innovation and entrepreneurship in Saudi Arabia 2020 Apr 3 (pp. 146-166). Routledge.
7. Cochet H, Cochet H. "Agrarian System", Integrating Concept of Comparative Agriculture. Comparative Agriculture. 2015:19-52.
8. Ghanem AM, Alamri YA. The impact of the green Middle East initiative on sustainable development in the Kingdom of Saudi Arabia. Journal of the Saudi Society of Agricultural Sciences. 2023 Jan 1;22(1):35-46.
9. Mahmud SF. Opportunities and challenges of sustainable agricultural development in Iraq. International Journal of Social Relevance and Concern. 2021;9(1):12-24.
10. Lisocka-Jaegermann B. Sustainable rural development or (sustainable) rural livelihoods? Strategies for the 21st Century in peripheral regions. Regional Barometer. Analyses & Prognoses. 2015 Jun 1;13(1):13-20.
11. Arab Organization for Agricultural Development, League of Arab States. (2023). Arab Sustainable Rural Development Report, September 2023. https://www.aoad.org/Arab%20Sustainable%20Rural%20Development%20Report2023.pdf
12. Singh K. Rural development: principles, policies and management. Sage Publications; 2009 Jan 6.
13. Al Rubaie HD, Al Shahri AA, Al Qamashoui AA. Business Transformation-Accelerators for Sustainable Growth. Journal for Humanities, 2023; Vol. 1, No. 2271.
14. Kaposzta J, Nagy H, Zaien S, Horvath-Csikos G, Solyomfi HA. Rural development according to regional planning strategies case study (Egypt and Saudi Arabia). Engineering for rural development, Jelgava. 2019 Oct 9;22(24.05).
15. Nakai J. Food and Agriculture Organization of the United Nations and the sustainable development goals. Sustainable development. 2018 Sep;22:1-450.
16. Abu-Ismail K. Arab region: Challenges and prospects of implementing the SDGs. hanks to Our Sponsors. 2015 Sep 23:2.
17. Torre A, Wallet F. Regional development in rural areas: Analytical tools and public policies. Cham: Springer; 2016 May 14.
18. Ciani A, Vörös ML. Rural Tourism and Agrotourism as Drivers of the Sustainable Rural Development–a Proposal for a Cross-Border Cooperation Strategy. Management Tourism Culture. 2020;87.

Journal of Health and Social Behavior

Journal of Health and Social Behavior Online First 2025
ISSN: 0022-1465
Online ISSN: 02779536, 18735347

19. Nguyen PT, Wells S, Nguyen N. A systemic indicators framework for sustainable rural community development. Systemic Practice and Action Research. 2019 Jun 15;32:335-52.
20. Nguyen PT, Wells S. Systemic indicators for rural communities in developing economies: bringing the shared vision into being. Systemic Practice and Action Research. 2018 Apr;31:159-77.
21. Ahmed AE, Al-Khayri JM, Elbushra AA, editors. Food and Nutrition Security in the Kingdom of Saudi Arabia, Vol. 1: National Analysis of Agricultural and Food Security. Springer Nature; 2024.
22. Ministry of Environment, Water and Agriculture. (2018). National Water Strategy 2030. https://www.mewa.gov.sa/ar/Ministry/Agencies/TheWaterAgency/Topics/Pages/Strategy.aspx
23. Al-Subaie, FS. National Water Strategy 2030. Saudi Water Forum 2019, "Sustainable Water... for Sustainable Development"; **2019**. http://exicon.website/uploads/editor/SWF2019/Presentations/S1-speaker%201%20-%20Dr.%20Faisal%20002.pdf
24. Ghanem AM, Alamri YA. The impact of the green Middle East initiative on sustainable development in the Kingdom of Saudi Arabia. Journal of the Saudi Society of Agricultural Sciences. 2023 Jan 1;22(1):35-46.
25. Baig MB, Straquadine GS. Sustainable agriculture and rural development in the Kingdom of Saudi Arabia: implications for agricultural extension and education. Vulnerability of agriculture, water and fisheries to climate change: Toward sustainable adaptation strategies. 2014:101-16.
26. Youssef, B. Rural development planning as a strategy for achieving sustainable development - the case of Algeria. Economic Studies. 2015 Aug 1;9(2):243-59.
27. Madani, JO. Agricultural Rural Development in the Asir Region: Reality and Available Opportunities. Amarabac. 2019. Vol. 10, No. 35, pp. 73-86. https://search.emarefa.net/detail/BIM-975270
28. Domi S, Belletti G. The role of origin products and networking on agritourism performance: The case of Tuscany. Journal of Rural Studies. 2022 Feb 1;90:113-23.
29. Kaposzta J, Nagy H, Zaien S, Horvath-Csikos G, Solyomfi HA. Rural development according to regional planning strategies case study (Egypt and Saudi Arabia). Engineering for rural development, Jelgava. 2019 Oct 9;22(24.05).
30. Li T, López Valencia O, Johansen K, McCabe M. National scale agricultural development dynamics under socio-political drivers in Saudi Arabia since 1990. InEGU General Assembly Conference Abstracts 2023 May (pp. EGU-11293).
31. Al-Assaf, S. Introduction to Research in Behavioral Sciences. Obeikan Library, Riyadh. 2006, 310.