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Evaluation of Planned Sustainable Urban Development Projects in Al-Baha Region Using Analytical Hierarchy Process

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Abstract: This paper presents and illustrates planned urban projects in the Al-Baha region with the potential to contribute to developing a sustainable local environment and economy in alignment with Saudi Arabia's 2030 national vision and future needs. Al-Baha is characterized by a wealth of renewable energy, a cooler environment relative to many other Saudi regions, as well as multiple heritage villages and wildlife habitats set amid mountainous topography. The approach used here is the analytical hierarchy process (AHP), which employs an expert consultation analysis to identify the best future projects for the Al-Baha region. About 52 experts were invited, each selected according to specific criteria to include decision-makers, developers, and academics in the fields of the built environment, engineering, and investment. The findings of the study are evaluated and culminate in suggestions for future projects in the tourism; renewable energy; agriculture and farming; health and education; and wildlife and forest protection sectors. It has been found that the most important future projects are those related to the tourism and agricultural and farming sectors. The other projects proposed are unique to the Al-Baha region due to its location and traditions. The study concludes with key recommendations for developers and decision-makers.

Keywords: urban projects; renewable energy; urban planning; AHP; Al-Baha; Saudi Arabia

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1. Introduction

Urban projects play a significant role in the local economy and encourage urban sprawl [1]. The environmental ramifications of urban projects are a unique concern given the effects of climate change and the associated social phenomena, and the diversity of public opinion regarding it [2]. Expanding research interest in multi-stakeholder investment in metropolitan planning has revealed that stakeholders can sway the decision-making process of urban-scale development projects [3,4]. In Europe, specifically France, numerous urban development projects (UDPs) have been instigated on lands owned by public bodies and organizations, as well as publicly owned firms [5].

The Al-Baha region is situated in the southwest of Saudi Arabia between the Makkah region and Aseer region, as shown in Figure 1. The Al-Baha region has distinct topographical and climatic conditions; compared with the many other regions of Saudi Arabia, it is more mountainous, benefits from cooler climatic conditions, and has forestry and wildlife habitats [6]. Al-Baha city is situated in an area surrounded by natural trees and farming plateaus. The region is popular among tourists for its delightful woodlands, wildlife regions, valleys, and mountains. It contains more than 53 notable woodlands abounding with Juniperus procera, among them Raghdan, Ghomsan, Fayk, Skaran, and Aljabal.

Figure 1. Location of Al-Baha region in Saudi Arabia.

The Al-Baha region is partitioned topographically into three unique parts: the high mountainous Al-Sarah district, with a rich plant variety due to its relatively high yearly precipitation; the Eastern Tehama lowland beachfront region with an extremely hot and humid climate and very low average precipitation; and the Eastern hills with cool winters, hot summers, and scanty vegetation cover [7].

The variation in topography influences the climate of the region. The Al-Sarah area is exposed to the formation of clouds and fog, and this often happens in winter because of air masses coming from the Red Sea, accompanied by thunderstorms. In spring and summer, the climate is mild and pleasant, and the region receives a sufficient amount of rainfall during these seasons. The climate in the area of the Tehama is different from that in Al-Sarah, although they are separated by no more than 25 km (16 miles). The Tehama is an undulating coastal plain, hot in summer, warm in spring, and mild in winter. The climate in general falls in the arid zone. The relative humidity varies between 25 and 55%, with a maximum mean temperature of 26 °C and a minimum mean temperature of 13 °C. Some of the basic climatic figures are shown below in Table 1.

Table 1. Long-Term Mean Monthly Climatic Variables in Al-Baha during the Period 1985–2010.

Month	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Rainfall (mm)	10.9	1.1	16.5	36.3	24.1	6	10.2	10.8	2.9	7.2	8.1	4.0
Humidity (%)	55	48	46	45	35	25	27	28	25	30	46	53
Temp. (°C)	13.0	14.5	17.0	19.8	23.0	25.7	26.1	26.0	24.0	23.0	19.4	16.5

The urban structure of the Al-Baha region comprises several towns and many villages distributed across the territory and in areas where the forests and wildlife require protection [8]. Furthermore, the region's plant species composition configurations and vegetation types occur along elevated gradients; sandy plains, channels, drainage lines, rocky outcrops, hills, and fallow terrains occur over a wide geographic reach, encompassing an immense variety of plant species and communities among these distinctive ecological sites [9]. The region can be classified in terms of its characteristics within the dimensions of tourism, agriculture, and renewable energy investment. It is wealthy in terms of agriculture and vegetation coverage, as well as in terms of its natural resources in the forms of wind energy and solar radiation.

Due to the huge potential of development, the related governmental authorities have many urban projects in the pipeline under various development sectors. This research aims

to examine specific urban projects across the region that may contribute to the local economy and serve to manage urban expansion. The projects of interest can be subdivided into new facilities related to tourism, agriculture, the restoration of heritage villages, education and health facilities, and forest protection. Thus, it is essential to involve experts who have expertise and knowledge about the region, its social and urban structure, and the challenges it faces. The research aims to answer the following research questions:

- RQ-1. What are the best future projects to contribute to a sustainable local economy in the Al-Baha region?
- RQ-2. How can the existing infrastructure in Al-Baha be managed and protected for achieving sustainability?
- RQ-3. How can the proposed future projects align with the sustainable development goals of Saudi Vision 2030 and support the local economy of the Al-Baha region?

Therefore, to develop and evaluate future urban projects to support the local economy, protect the environment, and control the ecosystem, experts were involved in the process who are decision-makers in the region and knowledgeable about its needs.

2. Methodology

Many approaches can be applied to answer the above research questions, including Artificial Neural Network (ANN), which can be used to compare the weighting of key factors and criteria; analytical hierarchy process (AHP) as a potential decision-making analysis methodology [10,11], and focus group discussion from expert panels methodology [11–13]. In this research, AHP has been applied. This method requires access to experts who are knowledgeable about the Al-Baha region and eminent in the fields of the built environment, engineering, and investment. The selection criteria for the expert panels include knowledge about the region and its current condition; holding a decision-making role; being an academic, engineer, or specialist in any field related to the construction industry.

2.1. Analytical Hierarchy Process Workflow

The analytic hierarchy process (AHP) is a well-known multi-criteria choice strategy [14]. Specifically, it is a selective assessment procedure that generates decisions by gathering together pertinent decision-makers and making a hierarchical determination to infer a set of ratio-scaled utility measures for choice alternatives [15,16]. AHP is a disintegration Multiple Criteria Decision-Making (MCDM) technique. It was created by Saaty [17] to address the human decision-making process and assist in making better decisions in light of hierarchical pairwise evaluations, judgment scales, allocation of criteria weights, and selection of best options from a limited number of variations by estimation of their utility capacities [15]. One of the most notable features of the AHP technique is its capacity to assess quantitative and qualitative criteria and options on a preferential scale. These criteria can be mathematical, verbal, or graphical. The utilization of verbal reactions is intuitive. It might likewise permit a few uncertainties in non-trivial contrasts [15].

AHP is designed to enable the evaluation of both qualitative and quantitative factors and alternatives on the same preference scale. Due to its pairwise contrasts, AHP needs ratio scales. Saaty [17] stated that ratio scales are the best conceivable estimation method to provide the option of total measurements, as in a weighted sum. Many researchers have used AHP analysis as a major tool for decision-making problems [18–20].

An investigation form was designed to categorize all the information into five main areas: tourism investments, renewable energy investments in light of the Saudi 2030 national vision, agriculture and farming investments, healthcare and education investments, and wildlife and forest protection investments. Each expert panel suggested and evaluated the future projects with the greatest potential value in each category.

2.2. AHP Evaluation Process

As sustainable building evaluation criteria are for the most part considered multi-dimensional criteria [21,22], an agreement-based method is optimal for the advancement of

comprehensive and effective building environmental evaluation categories and criteria [23]. Moreover, a dependable weighting framework should be designed to recognize and regulate the significance of these categories and criteria [24]. The weighting framework of these categories is critical to the effectiveness of any appraisal technique [25]. The pairwise contrast technique is a significant phase of AHP. It includes a numerical structure (matrices) based upon paired contrast of every category with one other [26]. It uses the specialists' judgment of the strength of significance, following Saaty's nine-point scale as introduced in Table 2 below [17].

Table 2. Nine-Point Saaty's Assessment Expression of AHP [17].

Scale	Definition
1	Indicator *i* and indicator *j* are of equal importance
3	Indicator *i* is less important than indicator *j*
5	Indicator *i* is more important than indicator *j*
7	Indicator *i* is demonstrably more important than indicator *j*
9	Indicator *i* is absolutely more important than indicator *j*
2, 4, 6, 8	Intermediate values between the above pairs of adjacent judgments

The extraction of the weighting framework includes various estimations and examination of the information. It is likewise critical in decision-making processes to know how dependable and substantial those choices are. The results of the survey responses received from the experts can be converted to a weighted average which helps in determining the priority of each criterion above another. The weighted average can be calculated by using the following formula.

$$A_w = \frac{\sum(R_i\, n)}{\sum R_i} \tag{1}$$

where A_w is the weighted average, R_i is the number of respondents for a specific level n of the Likert scale, and n ranges from 1 to 9.

On the basis of the weighted average of each criterion, the pairwise comparison can be performed which provides the criterion weight and the consistency analysis can be performed. In AHP, the general consistency of judgment is estimated through the consistency ratio (CR) which is the ratio of the Consistency Index (CI) and Random Consistency Index (RCI) whose value is fixed for a particular set of criteria. For a set of 5 criteria involved in an AHP solution, RCI is taken as 1.12 [27]. The consistency ratio is derived to determine the level of logical inconsistencies in the decision-makers decisions [24]. As Saaty states, a CR value under 0.1 is adequate [27]. The value of CR can be calculated by the following equation.

$$\mathrm{CR} = \frac{\mathrm{CI}}{\mathrm{RCI}} \tag{2}$$

where CI can be calculated by the following equation.

$$\mathrm{CI} = \frac{\lambda_{max} - n}{n - 1} \tag{3}$$

where λ_{max} is the average of the ratios of weighted sum and criterion weight for all criteria and n is the number of criteria involved in the AHP.

2.3. Identification of AHP Criteria for Future Urban Projects

Future projects in any city vary depending on its economic strength and its role among the urban systems of surrounding cities and regions. Al-Baha region has a comparative advantage in the agriculture industry, tourism, wildlife habitat, and wealth of renewable energy. Accordingly, future projects and urbanization should be planned in these directions. A total of 50 proposed developmental projects were considered to be discussed with the experts and their opinion on the importance of each was sought. The dimensions of these

selected future projects in the Al-Baha region can be categorized based on the involvement of a particular development sector, each of which is described below in subsections. Each subsection is considered a separate criterion for the AHP analysis.

2.3.1. Tourism Sector

Selected projects related to tourism and heritage development have been investigated and analyzed. These projects are related to developing heritage villages and restoring historical buildings across the region. This dimension includes the establishment of tourism infrastructure, including accommodation and entertainment facilities. In addition, due to the potential utilization of the topographical climatic conditions of the Al-Baha region for the therapeutic industry, selected sites have been evaluated for the construction of therapeutic villages across the region. Designing and constructing therapeutic villages across the Al-Baha region is a key goal that will potentially contribute to the local economy at the sites recommended.

2.3.2. Renewable Energy Sector

Experts have reviewed and evaluated renewable energy projects that exploit natural resources in wind and solar energy. This evaluation covers the allocation of solar radiation fields in different sites across the region, highlighting the area of each field based on its wealth of alternative energy and the number of remote villages that need to be covered by the electricity grid. Furthermore, the allocation of wind energy generation fields across the region has likewise been evaluated and ranked based on the wealth of wind energy and its speed. These projects will lead the researcher to rank each renewable energy project for the Al-Baha region.

2.3.3. Agriculture and Farming Sector

Due to the Al-Baha region being an agricultural area with some fruit production, selected projects in the agriculture industry have been investigated and evaluated, as these should play a significant role in the local economy and support farmers in Al-Baha. The suggested projects evaluated by expert panels involve the allocation of lands to be central farms for pomegranates in areas across the region. Furthermore, the development of selective agricultural terraces in domed mountainous areas has been ranked based on the condition of these agricultural terraces and the ability of local farmers to develop these terraces for their products. Selected lands have also been allocated for development as locations for juice factories and other products that can be made by local fruit producers. On the other hand, animal production is an important factor to take into account due to the composition of the agriculture industry of the Al-Baha region. As a consequence of the high number of livestock breeders, this industry needs to be supported and encouraged. Therefore, in this study, the experts proposed and evaluated some livestock projects that are to be established in coastal zones.

2.3.4. Healthcare and Education Sector

The selected experts are knowledgeable about the region, and some of them are decision-makers in the healthcare and education sector. Hence, some projects have been selected based on the current availability of facilities, and future needs are extrapolated from current demand. The importance of the selected projects has been evaluated based on the proximity of other healthcare facilities, the local population, and the presence of tourism accommodations and facilities. Planned projects include new local hospitals, healthcare centers, and colleges across the towns and villages in the Al-Baha region.

2.3.5. Wildlife and Forest Protection Sector

Many forests are distributed across the Al-Baha region, resulting in widespread plant coverage, and many different kinds of trees and wildlife. Many projects and protocols have been suggested and evaluated by experts to protect the environment and ecosystem.

Furthermore, the Al-Baha region has a unique wildlife habitat due to its climatic conditions, topography, mountains, and forested areas. Some projects have been recommended and evaluated by expert panels that aim to protect the ecosystem and animals in the region from the effects of human and urban sprawl.

3. Results

About 52 experts participated in the study, including decision-makers, academics, and developers with different education levels. The experts are renowned specialists in the built environment, engineering, or working representatives of the health and education sectors, either affiliated with the government ministries or universities. Figure 2 below shows the demographic details of the experts involved in the study.

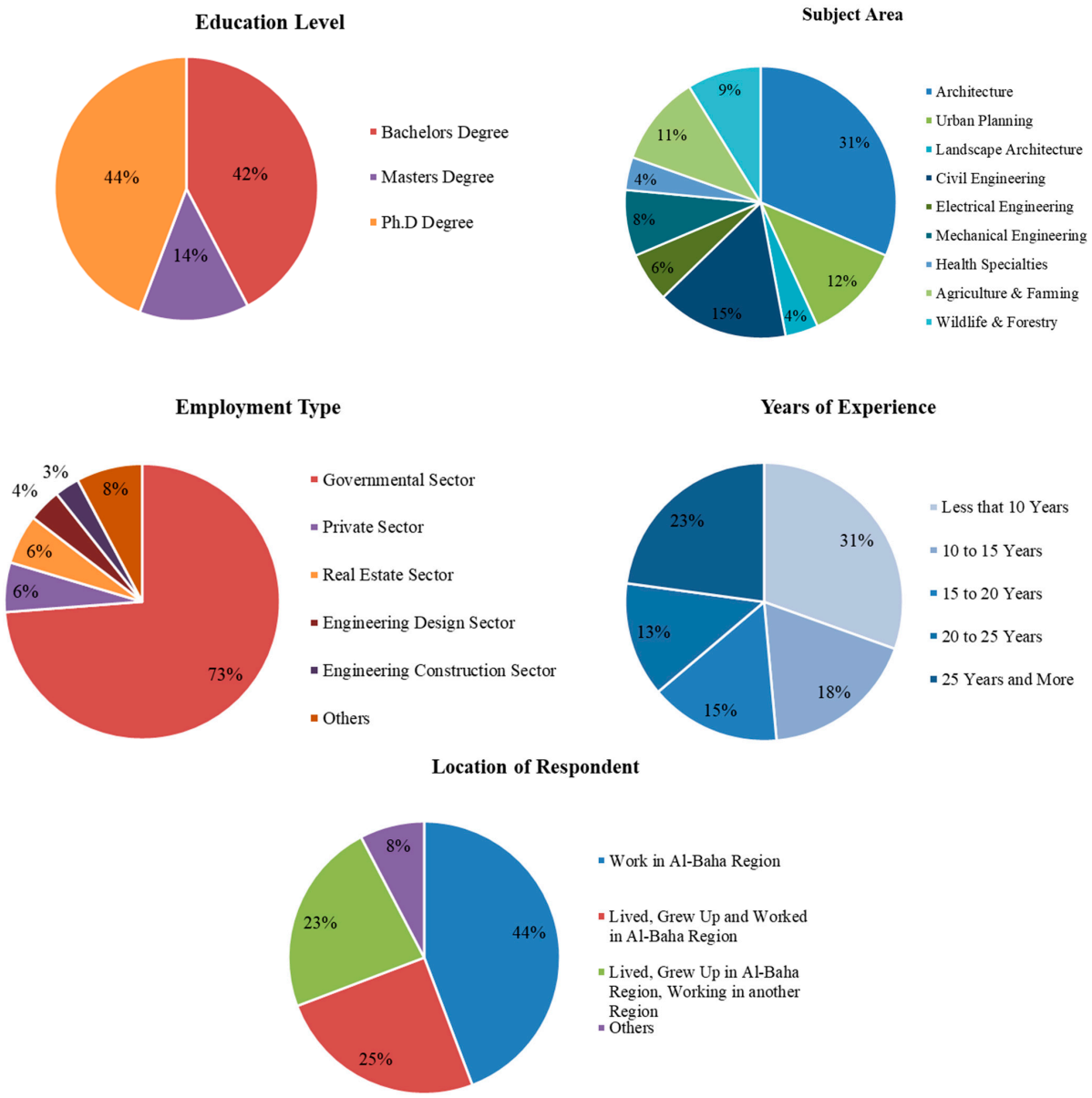

Figure 2. Demographic Statistics of the Respondents.

As per the developer of the AHP analysis, Thomas L. Saaty, the number of required experts cannot be fixed. He says that even one expert could be sufficient for a specific scenario given that they have relevant practical experience and knowledge about the subject [28]. It is essential to mention that all the experts were knowledgeable about the

Al-Baha region and contributed based on their points of view and experience of the social structure, infrastructure, and challenges being faced in the region.

The analysis of the results is structured into five main categories and covers the different aspects of the projects. All the experts provided their opinion on the priority of the projects based on the needs of the region. Their response as a Level of Importance on a scale of 1 to 9 for each development sector is shown in Figure 3.

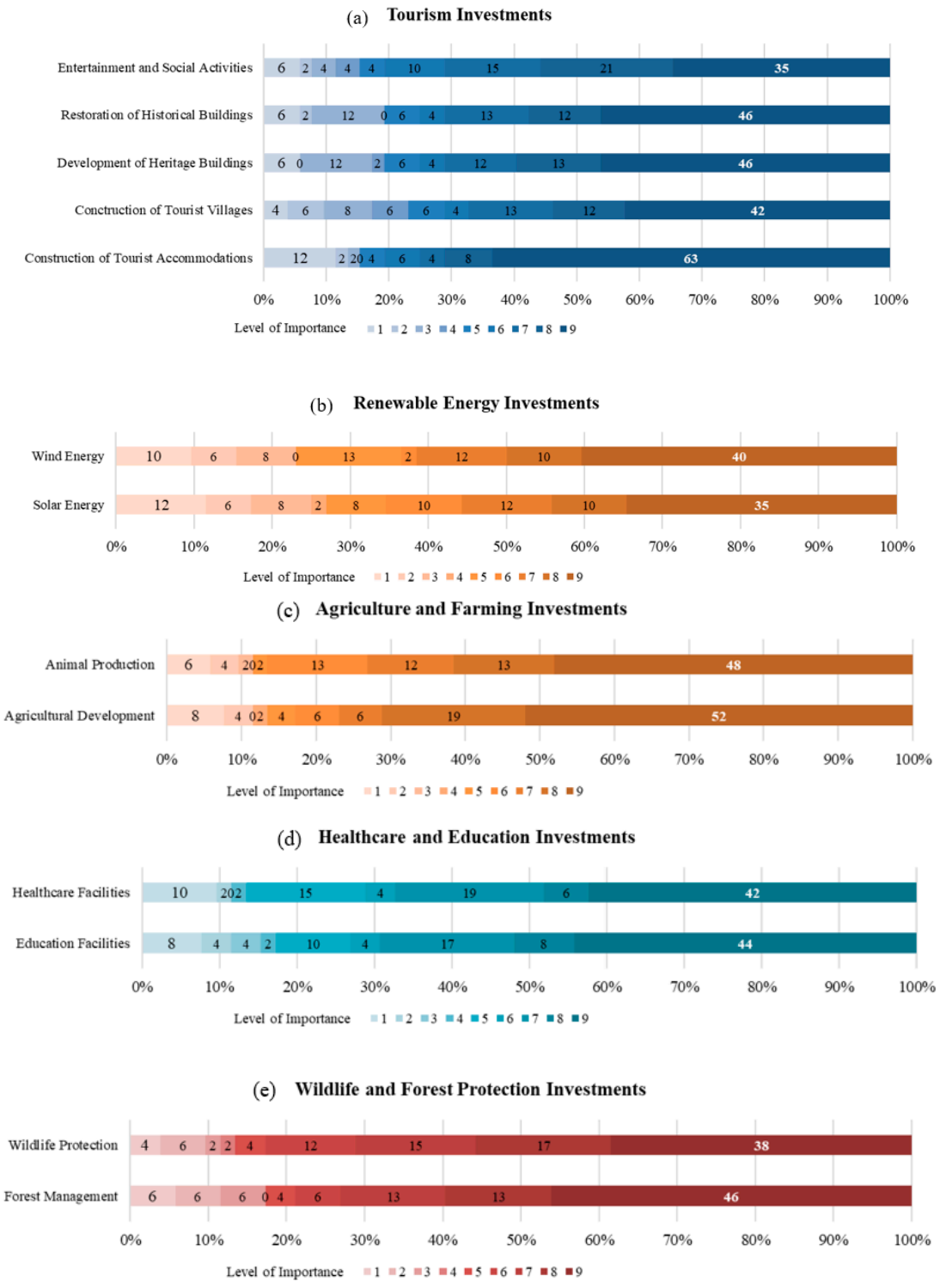

Figure 3. Responses of Experts for Each Development Sector.

The weighted averages for all the development sectors were calculated using Equation (1), based on the responses of all the experts. It can be seen that the projects related to agriculture and farming were chosen as the top priority by the experts, with a weighted average of 7.35. Wildlife and forest protection and tourism secure the second and third priority, with the weighted average values of 7.08 and 7.04, respectively. The weighted averages of all the development sectors are shown in Figure 4.

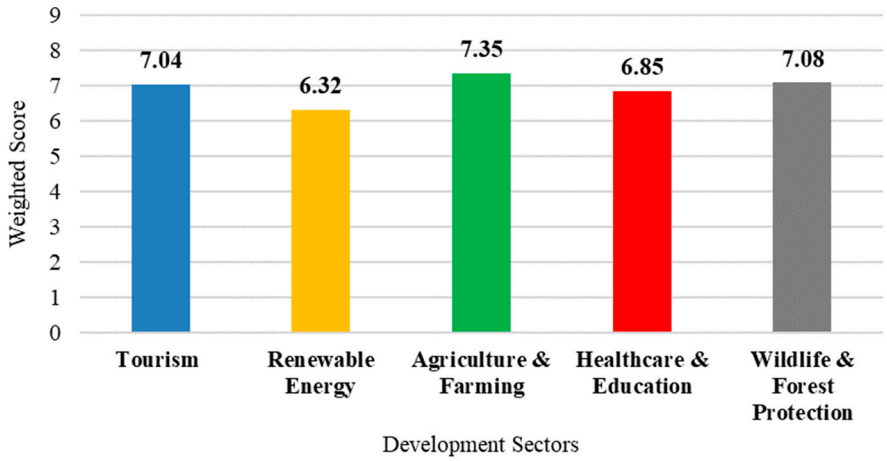

Figure 4. Weighted Averages of Development Sectors.

Tables 3 and 4 below show the pairwise comparison and consistency analysis of the AHP process based on the weighted averages of all the development sectors. Each sector is considered a separate criterion during the AHP analysis.

Table 3. Pairwise Comparison Matrix for AHP Analysis.

Categories	Tourism	Renewable Energy	Agriculture and Farming	Healthcare and Education	Wildlife and Forest Protection
Tourism	1	5	1/5	3	2
Renewable Energy	1/5	1	1/7	1/3	1/5
Agriculture and Farming	5	7	1	5	3
Healthcare and Education	1/3	3	1/5	1	1/3
Wildlife and Forest Protection	1/2	5	1/3	3	1
Sum	7.03	21	1.88	12.33	6.53

Table 4. Normalized Decision Matrix for AHP Analysis.

Categories	Tourism	Renewable Energy	Agriculture and Farming	Healthcare and Education	Wildlife and Forest Protection	Criteria Weight
Tourism	0.14	0.24	0.11	0.24	0.31	0.21
Renewable Energy	0.03	0.05	0.08	0.03	0.03	0.04
Agriculture and Farming	0.71	0.33	0.53	0.41	0.46	0.49
Healthcare and Education	0.05	0.14	0.11	0.08	0.05	0.09
Wildlife and Forest Protection	0.07	0.24	0.18	0.24	0.15	0.18

For the validation of the pairwise comparison process, a consistency check was performed. After assigning the weights to all the criteria, the value of λ_{max} came out to be 5.31. Using Equation (3), the Consistency Index (CI) value was obtained to be 0.08 which resulted in a consistency ratio of 0.07 obtained by using Equation (2). This CR value is well within the limits of 10%, which shows that the weights provided to each criterion are

consistent enough to be reliable and carried forward for further process. If the CR is above 0.1 or 10%, it indicates that the pairwise comparisons should be revisited or reversed [27].

A detailed discussion regarding the proposed future projects is provided below along with the critical analysis of the criteria weight shown as priority percentages after performing the AHP analysis.

3.1. Tourist Accommodation

The tourism industry plays a significant role in Saudi Arabia as a whole, and the experts evaluated the tourism investment in the Al-Baha region in terms of percentage. Hence, many tourism projects are planned to contribute to the local economy and urban development in Al-Baha. Accommodation is the key factor in the success of the tourism industry, contributing to tourists' comfort, providing different options and locations, and resulting in flexible prices. Relevant projects can be seen in Figure 5 with the evaluation of each project by the expert panels. Renovating the existing facilities is significant, with consideration placed on the location of the airport and Al-Baha city. This reflects how important tourist accommodation is for the region concerning future planning and urban development, and the need to manage tourist accommodation, including renovating and enhancing existing furnished apartments.

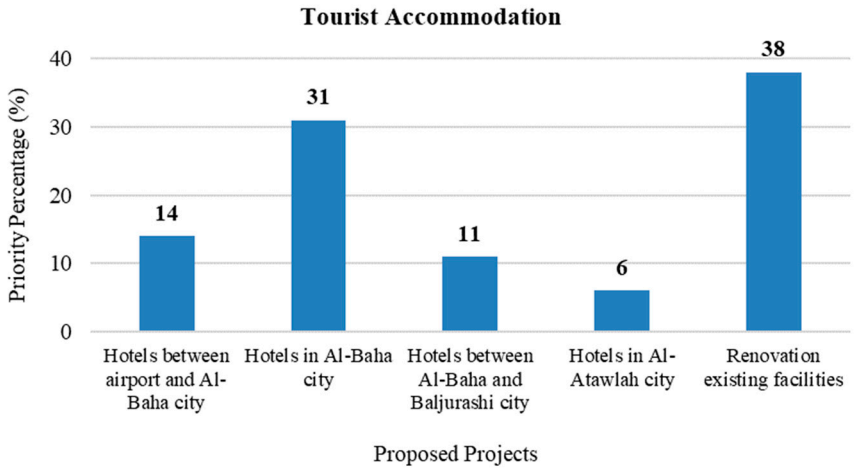

Figure 5. Priority Percentage for Tourist Accommodation Projects.

3.2. Tourist Villages Design

The climatic and topographical condition of the Al-Baha region is ideal for tourism villages, including therapeutic tourist villages and tourist villages for entertainment and activities, as well as sports villages. Figure 6 presents the suggested tourist villages identified across the Al-Baha region and the evaluation of each tourist village in terms of percentage. The development of the tourism industry across Al-Baha will include establishing tourism villages, each with a unique affordance, such as therapeutic facilities for some and recreational and sports purposes for others. It is essential to note that tourist villages are part of the tourism system, which will result in accommodation demand in Al-Baha.

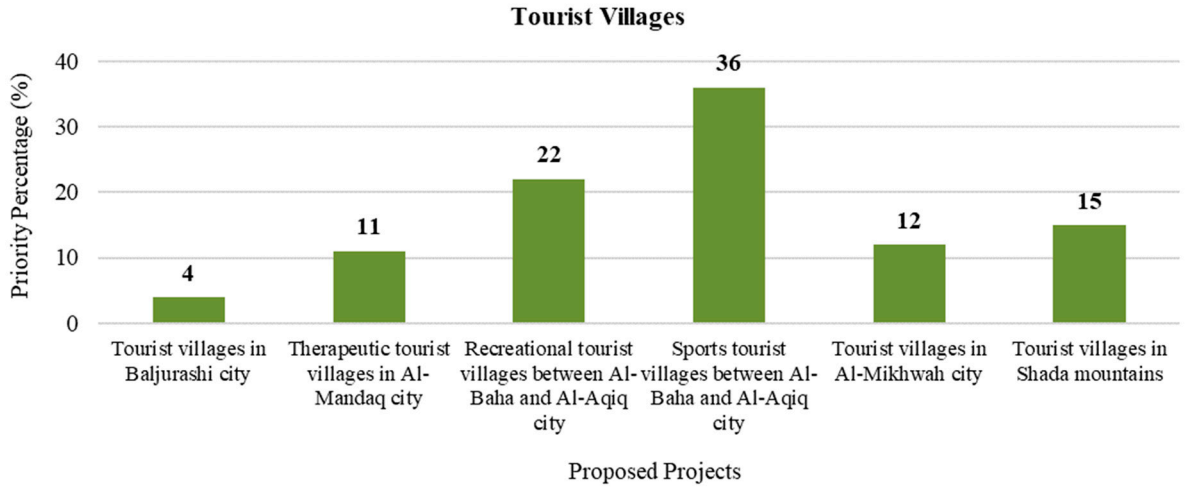

Figure 6. Priority Percentage for Tourist Village Projects.

Links between the airport and Al-Baha city are recommended for this type of project, with experts evaluating establishing and investing in a sports tourist village between Al-Baha and Al-Aqiq city as highly important due to the airport's location and site conditions. Moreover, tourist villages within the mountain topography are still recommended, especially for therapeutic purposes. The evaluated tourist villages will play a significant role in attracting tourists and local citizens, creating new jobs and contributing to the local economy.

3.3. Developing Heritage Villages

The Al-Baha region has many heritage villages and a social legacy across the region that reflects its local culture and traditions. Moreover, these heritage villages need to be protected, restored, and rehabilitated to preserve these traditions. Hence, heritage villages can be sites for investment, restoration, and rehabilitation and used for tourism purposes that are in keeping with their urban identity. The experts evaluated five projects in the development of heritage villages for both the purpose of restoration and investment in the tourism industry. Due to the Al-Baha region having a high number of heritage villages across the region, villages that are located within urban boundaries and close to essential services have been selected. The development projects involve establishing new facilities around the villages for rehabilitation and establishing protections for the villages' privacy and identity. Figure 7 shows the importance of each suggested project for each heritage village development. The restoration of the Thej Ain heritage village is the ideal project. Other projects also have a high valuation in terms of investment and protection as important sites of social legacy.

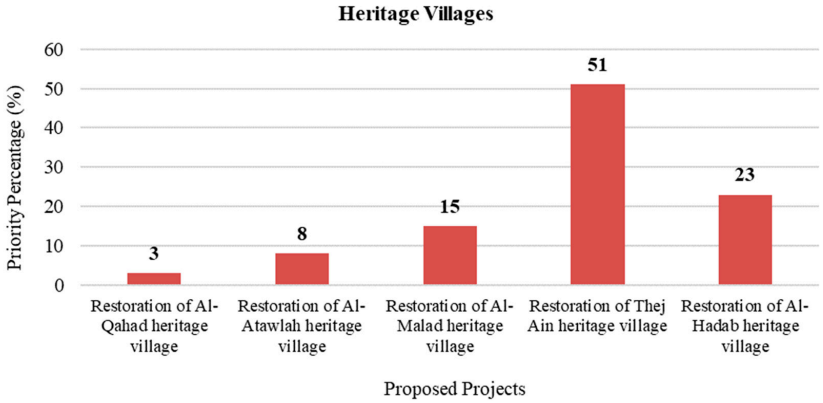

Figure 7. Priority Percentage for Heritage Village Projects.

3.4. Developing Historical and Heritage Buildings

The Al-Baha region contains a wealth of individual historical buildings across the region, including palaces and castles. Some of these historical buildings are within a heritage village and others exist as individual units containing historical buildings. It can be seen that, in Figure 8, the experts have evaluated selected locations across the region based on their proximity to other tourism facilities. The Al-Malad heritage village contains a famous military castle and is readily accessible to visitors; therefore, it can be seen that the experts viewed the restoration of this facility as essential, along with the development of the surrounding heritage village. Dedicating museums to present historical artifacts is an essential procedure that is a part of the work of preserving traditions; these can be located within historical facilities. Souq Al-Sabt is a famous marketplace located in the Baljurashi town and is characterized as a historical area that needs to be protected, developed, and invested in as part of the tourism industry. The experts evaluated the restoration of Bakhrosh castle and the restoration of the Al-Malad heritage building as important projects.

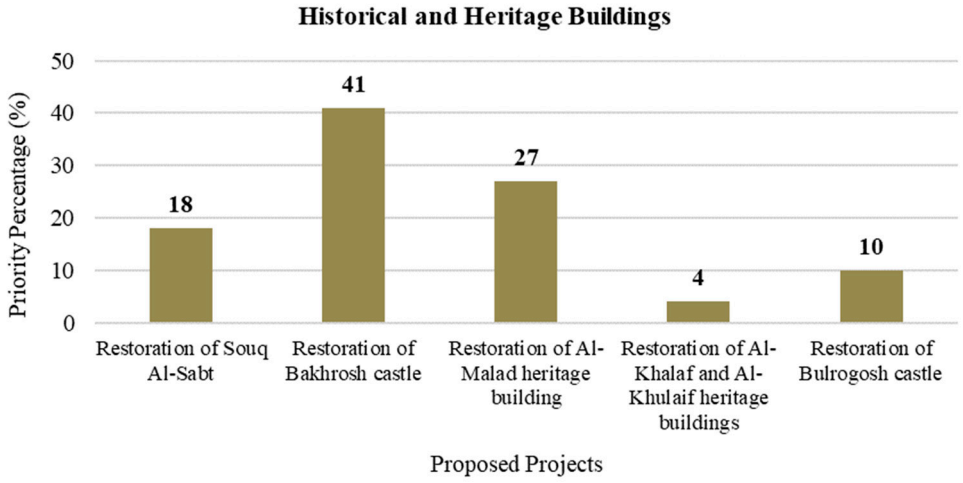

Figure 8. Priority Percentage for Historical and Heritage Building Projects.

3.5. Renewable Energy Investment

The cultivation of natural resources is a key aim of the project, which has been highlighted in the Al-Baha region due to the high availability of solar and wind energy in the mountainous and coastal parts of the region. Five different projects were evaluated by the experts about investments in renewable energy, including solar and wind energy, in different locations across the region. The project types and features are the same, but the locations vary depending on the number of surrounding villages and the climatic conditions. Figure 9 illustrates how investment in solar energy is of the greatest importance in Al-Mikhwa city.

The mountainous parts of the region, characterized by hot climatic conditions, are recommended for investment in solar radiation because their higher altitude means they have higher amounts of solar radiation. These natural resources can be used to generate electricity and meet demand in remote villages. In addition, the Al-Baha region contains a wealth of wind energy, which can also be exploited to generate energy in the form of electricity by introducing wind energy generation fields in Al-Mandaq city for energy production. Wind turbines can be installed on the top of mountains and generate energy in the form of electricity.

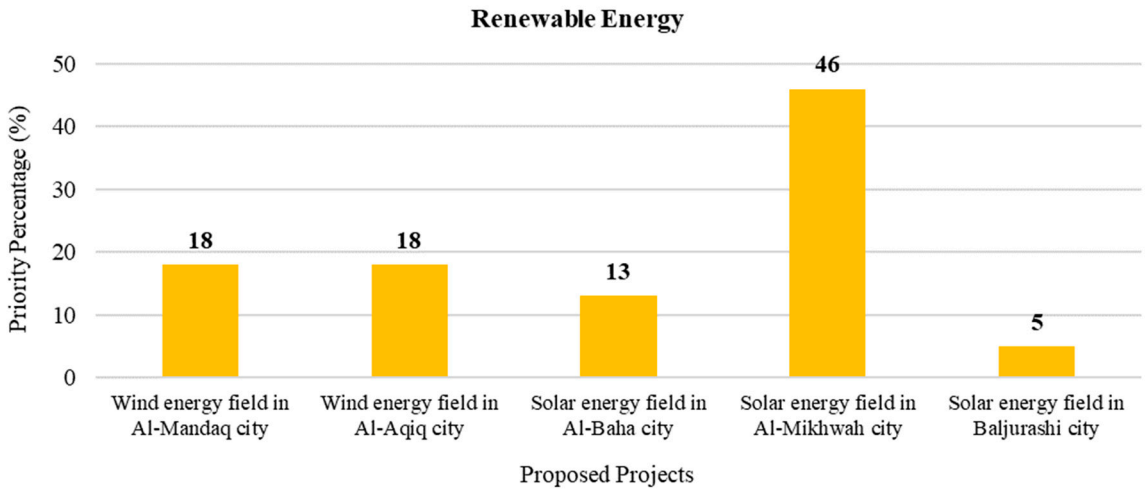

Figure 9. Priority Percentage for Renewable Energy Projects.

3.6. Agricultural Development and Farming Projects

The agriculture and animal production industries generate a comparative advantage for the Al-Baha region due to its key characteristics and climatic conditions. It is essential to allocate projects that lead to urban and economic developments. Hence, several projects related to agriculture and animal production projects were evaluated by the experts consulted for this study. Figure 10 shows the evaluation of each suggested project related to the agriculture and animal production industry. It is important to note that agriculture is primarily a sideline in the Al-Baha region so supporting farmers to develop an agriculture industry is vital. Furthermore, seasonal agricultural products are distinctive in the Al-Baha region, such as pomegranates, almonds, and others. The experts recommended by their evaluation the allocation of central farms in Bedah village to be provided to farmers for some seasonal products. Animal production is linked with the agriculture industry, and so the experts also evaluated the importance of allocating and designing farms for animal production across the region.

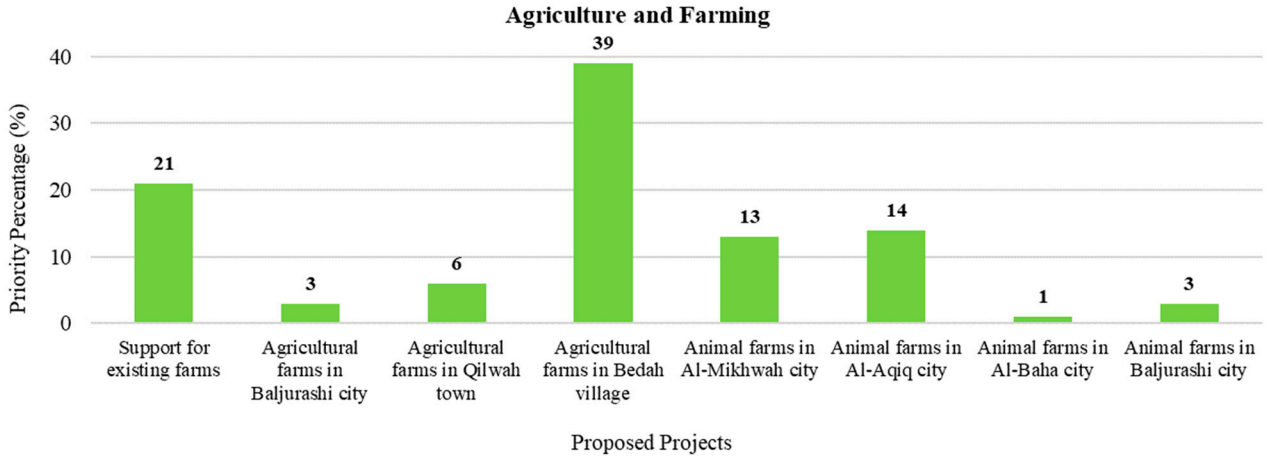

Figure 10. Priority Percentage for Agriculture and Farming Projects.

3.7. Healthcare and Education Facilities Development

Private health centers are public services that will contribute to the local economy as each district will require them. The experts noted that different health centers should be established across the Al-Baha region. Figure 11 displays the description and evaluation of each project relating to health centers to be established in the Al-Baha region. Establishing private hospitals in Al-Baha city is necessary due to possible high demand, and they can

provide employment for residents and help control population movements driven by access to specialist health facilities. In addition, the surrounding villages in the Al-Baha region need to be structured around health center facilities. Therefore, the experts also evaluated establishing private hospitals in the surrounding villages of Al-Baha city as being essential. Al-Aqiq town, which contains the main airport and Al-Baha governmental university, still needs to establish private healthcare centers, so the experts evaluated the importance of this. Generally, this category of the project is important, and, indeed, the experts evaluated the development of private health facilities in the Al-Baha region.

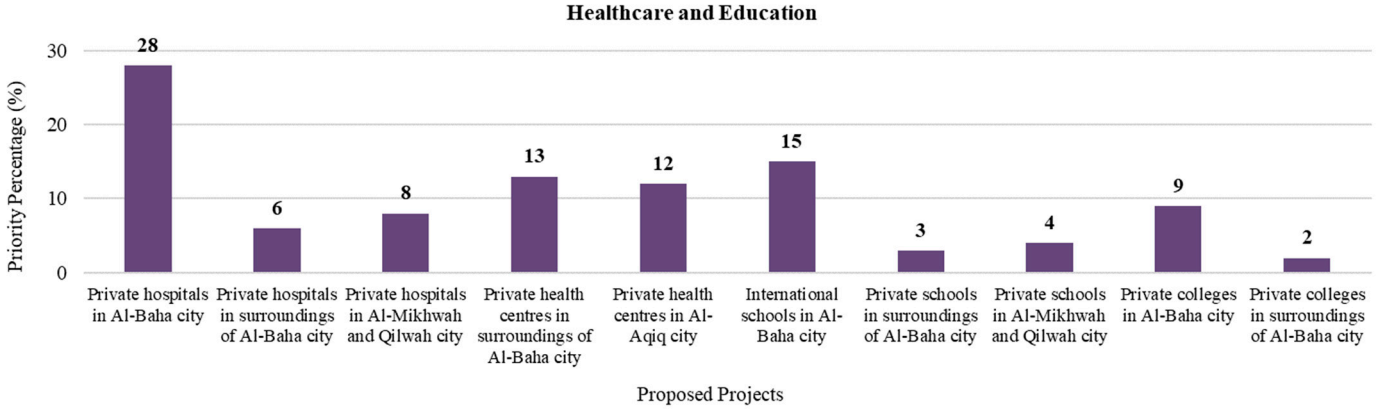

Figure 11. Priority Percentage for Healthcare and Education Projects.

Education facilities also need to be considered as they can have an important influence on migration flows, potentially resulting in reverse migration to the region. Five projects related to education facilities development have been evaluated, as seen in Figure 11. Establishing private international schools in Al-Baha city could contribute to developing the local economy while establishing private schools in the surrounding villages around Al-Baha city is also essential to control the urban sprawl from villages to the main cities which results in increased demand in lands where forests and wildlife habitats need to be protected and any construction processes avoided.

On the other hand, establishing private colleges in coastal towns such as Al-Mikhwah and Qilwah is also important, as seen in the experts' evaluation. This is due to the high population in coastal areas. Private colleges will contribute to both controlling urban sprawl from the coastal areas and developing the local economy and are anticipated to experience higher demand in the future. Thus, establishing them in Al-Baha city and its surrounding villages has been recommended by the experts for the Al-Baha region as being highly important.

3.8. Forest and Wildlife Protection

Forests and wildlife habitats need to be protected to ensure the ecosystem is balanced. The Al-Baha region is wealthy in terms of natural vegetation, with forests across the region that contain significant wildlife habitats. Urban sprawl can be a key factor affecting the ecosystem's balance, as human lifestyles around the forest cause animals that cannot co-exist with people to be displaced, such as hyenas and Arabian tigers, resulting in increasing numbers of other kinds of wild animals. Five projects to address urban sprawl and protect forests and wildlife have been evaluated. Figure 12 presents the evaluation data for these projects.

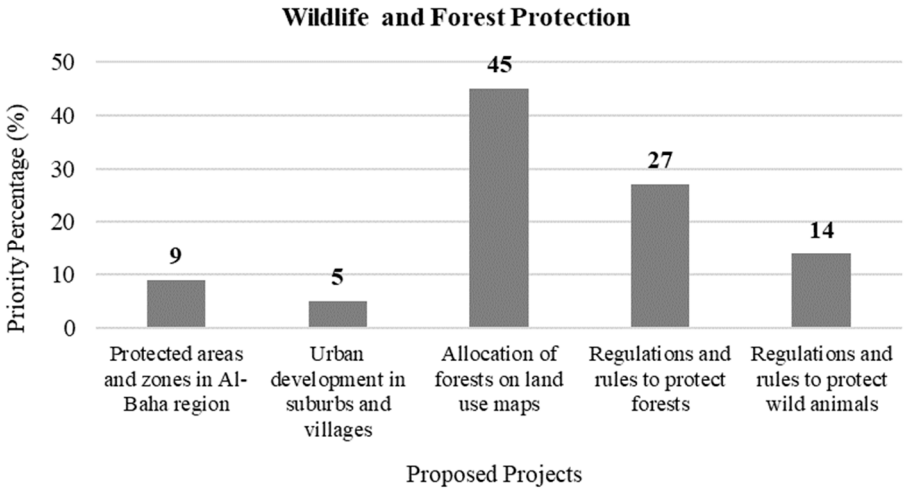

Figure 12. Priority Percentage for Wildlife and Forest Protection Projects.

It can be seen that allocating protected areas and zones in the mountainous area of the Al-Baha region is important to protect its unique character. On the one hand, future urban development in suburbs and villages must avoid any sprawl into surrounding forests. Protocols must be established to manage forests, and on land use maps, forests must be designated as forests. The experts evaluated these steps as essential, as well as projects to provide regulations to protect wild animals.

4. Discussion

Based on the results, it appears that Al-Baha has a comparative advantage over other Saudi regions due to its location and the topographical and climatic conditions. The Al-Baha region has a promising future in terms of the tourism, agriculture, and medicinal plant industries. The discussion will therefore cover environmental and agricultural collaborations; renewable energy investments for a future green environment; the local economic cycle; and tourism.

4.1. Environment, Agriculture, and Animal Productions

Due to rising ethical awareness, societies have started to reject and criticize the unethical use of animal materials. While human–wildlife conflicts are a new issue in urban areas, wildlife protection and conservation must now be addressed to sustain human life. As investigated in the analysis section, there is a collaboration between the agriculture industry, forest protection, and wildlife, as all three factors are directly linked to environmental responsibility and go to the heart of Al-Baha's identity [29]. In Saudi Arabia as a whole, information concerning therapeutic plants is inadequate, and this is also the case in the Al-Baha region. These data will be helpful in the sustainable utilization of these therapeutic plants in the future and in creating methodologies for securing sustainable and appropriate uses of these plants [30,31].

The Al-Baha region is wealthy in terms of its agricultural products and medical plants that could become an important contributor to the local economy and create a comparative advantage for the region. Farmers in the Al-Baha region need to be supported and encouraged to invest in the agriculture industry, with a focus on varieties of fruit and agricultural products that are unique to the region and of higher quality than imported products. Allocating and designing central farms and providing flexibility for farmers to invest in these farming hubs will help to develop the agricultural sector. Due to the distribution of monkeys in the Al-Baha region which affects the agriculture industry, some methods can be applied and provided to the farmers to protect their products. Many studies have suggested solutions to protect farms from wild animals [32,33].

The research on the impact of urban sprawl on carbon stocks within metropolitan woodlands can assist with policies for a sustainable metropolitan plan [34,35]. This is especially significant given climate change and environmental deterioration due to rapid urbanization [36]. For a long time, observers have communicated concern about the loss of farmland to urban expansion. However, up to this point, they have disregarded the impacts of urban sprawl on woodlands [37]. A significant consideration in woodland management to alleviate climate change is to create harmony between forest carbon stockpiling and ecological sustainability [38,39].

Forest protection is essential to protect the ecosystem in the Al-Baha region in light of urbanization, desertification, and waste disposal. Protocols for the protection of the available forest are essential in the Al-Baha region due to its status as a wildlife habitat. Creating distance between the forests and urban zones is crucial to preserve the forests' identity. Furthermore, the allocation of waste disposal areas far away from the forest is one of the protocols that should be applied to avoid wild animals encountering human waste products. In addition, it is vital to avoid using and investing in any kind of investment and social activity with the forests' boundary because these activities are one of the factors that damage the forests.

4.2. Renewable Energy Investments for Future Sustainable Environment

Due to the increase in awareness of climate change and the understanding of the importance of transitioning to alternative clean energy sources, the hospitality industry is under pressure to apply green practices with minimal CO_2 emission rates and to minimize the environmental impact of its operations [40]. Renewable energy plays a significant role in a clear and green environment by reducing CO_2 emission rates [41]. The Al-Baha region is one of the topographically higher regions in Saudi Arabia, with high renewable energy accessibility in the forms of solar radiation [42,43] and wind energy [44], so this natural resource should be fully exploited to power cities and remote villages. As per Vision 2030, the Kingdom of Saudi Arabia plans to outfit 9.5 GW of energy from sustainable power sources, a significant proportion of which will be solar PV generation.

This momentous execution of solar projects requires an exact valuation and examination of the solar resource information and PV-allocated sites [45]. Fossil fuels, i.e., heavy fuel oil, natural gas, diesel oil, and crude oil, are the fundamental wellsprings of energy in Saudi Arabia [46]. Decision making in energy projects requires attention to specialized, monetary, environmental, and social effects and is regularly complicated [47]. Renewable generation and energy efficiency goals have been targeted by universities due to their important roles in achieving sustainability requirements [48]. On this basis, solar radiation should be exploited in the Al-Baha region by the application of at least three solar-exploiting fields across the region, optimally at the southern faces of the high mountains. This solar radiation will be used to generate electricity, resulting in the minimal need for electricity generation through the burning of fossil fuels.

The electricity generated will be sold by suppliers to stockholders. The energy demand will be the same, but the source of this energy will be net-zero carbon [49,50]. The mountain tops of the Al-Baha region should also be exploited for wind energy and generate electricity due to the high demand for wind energy on top of mountains and Al-Aqiq town. Micro energy generation by the installation of photovoltaic panels for future residential units is essential to exploit more areas within the region for solar gain and minimize the energy costs for occupants. This can be achieved by approving regulations to allocate PV areas in each residential unit for this purpose, and then the generated energy can cover some of the occupants' demand and their remaining energy needs can be met by energy suppliers.

4.3. Local Economic Cycle and Tourism

The tourism industry and agriculture products combine to constitute the bulk of the local economy of the Al-Baha region. Tourism plays a significant role as a driver of change, with tourism goals perceived as a motivation to move from traditional to modern lifestyles

and social structures. Therefore, tourism always provides a conduit for new trends and behavioral standards [51]. In developing countries, the effects can differ due to many factors, such as the number of tourists, the nature and character of the destination, and the type and size of the tourism project [51]. The Al-Baha region is rich in traditions, heritage villages, and historical villages, but the majority of these facilities require restoration and rehabilitation to be fully integrated into the tourism industry [52].

This process should be linked with the provision of facilities such as accommodation and shops and can be financed by investors. Heritage villages are a part of the tourism system and can contribute to the local economy by employing historical facilities for tourism purposes [53]. Famous heritage villages include Thei Ain [54,55], bin-Rogush Palace, and many others; these sites are ready for restoration and investment. On the other hand, therapeutic villages are among the most important to establish across the region due to the suitability of the climatic conditions for this purpose. Many involved in shaping therapeutic landscapes have noticed an increase in health tourism in recent years [56].

Efficient urban design considers tourists' needs, facilities, and services within a village, enabling a therapeutic village to become a medical tourism investment village. In addition, establishing a number of these villages, as recommended by the experts, will contribute to the development of the local economy. In addition, investment in Al-Baha's agriculture, in particular medicinal herbs, can give a comparative advantage for the region due to its pre-existing rich supplies of such flora. The uses of herbal medicinal plants in the Kingdom of Saudi Arabia are a tradition and is common in southern regions such as Al-Baha, which is especially wealthy, both in rural and suburban areas, in the kinds of plant used in the treatment of ailments, and no evidence has confirmed the mutagenicity of the medicinal plants in Saudi Arabia [57].

4.4. Certainty and Uncertainty Challenges

Urban development can face unexpected risks and challenges due to the population's needs and demand for services [58]. A dramatic increase in the human population in hot arid climatic conditions is frequently assumed to create major challenges concerning land degradation [59]. Demand for urban facilities, services [60], energy [61], and waste management can lead to uncertainty and challenges that must be resolved in the future. The populations of informal settlements face a different scale of urban risks, from climate and monetary shocks to pollution and the danger of community displacement [62]. It should be noted that risk is an ongoing element of day-to-day metropolitan routines in the twenty-first century. It mostly influences urban planning projects because their fast and frequent impromptu extension exposes countless individuals to unforeseen events [63].

The areas of certainty in the recommended projects are increasing local income and economic development. Furthermore, it is advantageous that there is no commercial competition for the recommended projects, underlining confidence that they will succeed over the long term. These projects will give the region a comparative advantage over the other regions of Saudi Arabia. Nevertheless, the Al-Baha region has faced some challenges in establishing commercial projects in terms of demand. Furthermore, investors have multiple options where their goal is to achieve the highest interest and income. Recommended projects will play a significant role in long-term planning, although attracting investors locally and internationally remains an area of uncertainty. Moreover, the budgets for establishing some types of projects will require a high rate of investment based on their potential and expected income streams. The reason is the topography of the sites: most of Al-Baha consists of mountainous areas, which necessitate considerable work to prepare sites for construction, especially for the projects related to tourism villages, which need new buildings and facilities.

5. Conclusions

This paper can support decision-makers in the Al-Baha region when selecting future urban projects to suit the local topographical and climatic conditions. Many urban

projects have been suggested and evaluated by a panel of 52 experts, with experience and knowledge of the social and urban structure of the Al-Baha region. An analytical hierarchy process (AHP) approach to the expert consultations was applied in this study, which evaluated around 50 possible urban projects over the next 5 years. These projects are related to agriculture and plants, animal production, renewable energy investments, tourism and medical villages, forest management, and wildlife habitat protection. The findings indicate that tourism and agriculture and farming projects are the most important because of the need, location, characteristics, and urban components of the region.

Furthermore, the analysis of the results shows that renewable energy investments are suitable for the Al-Baha region in the mountain and coastal areas due to the abundance of natural resources in the form of wind and solar radiation. The study can be concluded with the following recommendations:

- Working on economic feasibility studies for each recommended urban project in terms of supply and demand.
- Providing flexibility for investors in each recommended project and attracting international investors to run these projects.
- Outlining a time scale to establish the recommended projects within stages to be completed by 2030 to fulfill the sustainable development goals of Saudi Vision 2030.
- Outlining a time scale to advertise each established project locally and globally.
- Allocating research projects to survey and determine public opinion, and to identify the challenges facing these recommended projects.
- Allocating new subdivision plans for future urban expansion, such that the new urban projects consider the protection of forests and wildlife.

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References

1. Gualini, E.; Majoor, S. Innovative Practices in Large Urban Development Projects: Conflicting Frames in the Quest for "New Urbanity". *Plan. Theory Pract.* **2007**, *8*, 297–318. [CrossRef]
2. Stratigea, A.; Papadopoulou, C.-A.; Panagiotopoulou, M. Tools and Technologies for Planning the Development of Smart Cities. *J. Urban Technol.* **2015**, *22*, 43–62. [CrossRef]
3. Yang, R.J. An investigation of stakeholder analysis in urban development projects: Empirical or rationalistic perspectives. *Int. J. Proj. Manag.* **2014**, *32*, 838–849. [CrossRef]
4. Lee, J.-K. Cost Overrun and Cause in Korean Social Overhead Capital Projects: Roads, Rails, Airports, and Ports. *J. Urban Plan. Dev.* **2008**, *134*, 59–62. [CrossRef]

5. Adisson, F. From state restructuring to urban restructuring: The intermediation of public land ownership in urban development projects in France. *Eur. Urban Reg. Stud.* **2018**, *25*, 373–390. [CrossRef]
6. Al-Barakah, F.N.; Aly, A.A.; Abaakhel, E.H.S.; Al-Rizkid, A.M.; Alghamdi, A.G.; Al-Sewailem, M.S. Comparison and Hydrochemical Characterization of Groundwater Resources in the Arabian Peninsula: A Case Study of Al-Baha and Al-Qassim in Saudi Arabia. *Water Resour.* **2020**, *47*, 877–891. [CrossRef]
7. Ali, N.A.A.; Al Sokari, S.S.; Gushash, A.; Anwar, S.; Al-Karani, K.; Al-Khulaidi, A. Ethnopharmacological survey of medicinal plants in Albaha Region, Saudi Arabia. *Pharmacogn. Res.* **2017**, *9*, 401–407. [CrossRef]
8. Wolshon, B.; Marchive, E. Emergency Planning in the Urban-Wildland Interface: Subdivision-Level Analysis of Wildfire Evacuations. *J. Urban Plan. Dev.* **2007**, *133*, 73–81. [CrossRef]
9. Al-Aklabi, A.; Al-Khulaidi, A.W.; Hussain, A.; Al-Sagheer, N. Main vegetation types and plant species diversity along an altitudinal gradient of Al Baha region, Saudi Arabia. *Saudi J. Biol. Sci.* **2016**, *23*, 687–697. [CrossRef]
10. Al-Harbi, K.M.A.-S. Application of the AHP in project management. *Int. J. Proj. Manag.* **2001**, *19*, 19–27. [CrossRef]
11. Rajput, T.S.; Singhal, A.; Routroy, S.; Dhadse, K.; Tyagi, G. Urban Policymaking for a Developing City Using a Hybridized Technique Based on SWOT, AHP, and GIS. *J. Urban Plan. Dev.* **2021**, *147*, 04021018. [CrossRef]
12. Gaudenzi, B.; Borghesi, A. Managing risks in the supply chain using the AHP method. *Int. J. Logist. Manag.* **2006**, *17*, 114–136. [CrossRef]
13. Deng, X.; Deng, Y. D-AHP method with different credibility of information. *Soft Comput.* **2017**, *23*, 683–691. [CrossRef]
14. Goepel, K.D. Implementation of an Online Software Tool for the Analytic Hierarchy Process (AHP-OS). *Int. J. Anal. Hierarchy Process* **2018**, *10*, 469–487. [CrossRef]
15. Franek, J.; Kresta, A. Judgment Scales and Consistency Measure in AHP. *Procedia Econ. Financ.* **2014**, *12*, 164–173. [CrossRef]
16. Weiss, E.N.; Rao, V.R. AHP DESIGN ISSUES FOR LARGE-SCALE SYSTEMS. *Decis. Sci.* **1987**, *18*, 43–61. [CrossRef]
17. Saaty, T.L. How to make a decision: The analytic hierarchy process. *Interfaces* **1994**, *24*, 19–43. [CrossRef]
18. Ishizaka, A.; Labib, A. Review of the main developments in the analytic hierarchy process. *Expert Syst. Appl.* **2011**, *38*, 14336–14345. [CrossRef]
19. Ishizaka, A. Clusters and pivots for evaluating a large number of alternatives in AHP. *Pesqui. Oper.* **2012**, *32*, 87–102. [CrossRef]
20. Shaawat, M.E.; Jamil, R.; AL-Enezi, M. Analysis of Challenges in Sustainable Construction Industry by Using Analytic Hierarchy Process: A Case Study of Jubail Industrial City, Saudi Arabia. *Int. J. Sustain. Real Estate Constr. Econ.* **2018**, *1*, 109–122.
21. Ding, G.K.C. Sustainable construction—The role of environmental assessment tools. *J. Environ. Manag.* **2008**, *86*, 451–464. [CrossRef] [PubMed]
22. Oliveira, V.; Pinho, P. Evaluation in Urban Planning: Advances and Prospects. *J. Plan. Lit.* **2010**, *24*, 343–361. [CrossRef]
23. Chew, M.Y.; Das, S. Building Grading Systems: A Review of the State-of-the-Art. *Arch. Sci. Rev.* **2008**, *51*, 3–13. [CrossRef]
24. Cole, R.J. Building environmental assessment methods: Redefining intentions and roles. *Build. Res. Inf.* **2005**, *33*, 455–467. [CrossRef]
25. Alyami, S.H.; Rezgui, Y. Sustainable building assessment tool development approach. *Sustain. Cities Soc.* **2012**, *5*, 52–62. [CrossRef]
26. Alyami, S.H.; Rezgui, Y.; Kwan, A. The development of sustainable assessment method for Saudi Arabia built environment: Weighting system. *Sustain. Sci.* **2014**, *10*, 167–178. [CrossRef]
27. Saaty, T.L. How to make a decision: The analytic hierarchy process. *Eur. J. Oper. Res.* **1990**, *48*, 9–26. [CrossRef]
28. Saaty, T.L.; Özdemir, M.S. How Many Judges Should There Be in a Group? *Ann. Data Sci.* **2014**, *1*, 359–368. [CrossRef]
29. Al-Subaiee, F. Attitudes of locals and their dependence on the natural forests: A Case study of Al-Baha area-Saudi Arabia. *J. Anim. Plant Sci.* **2014**, *24*, 634–650.
30. Al Zandi, A.; Al-Khulaidi, A.; Al-Sagheer, N. Environmental distribution of medicinal plants in Al-Baha region, Saudi Arabia. *Life Sci. J.* **2019**, *16*, 95–102.
31. Wallbaum, H.; Krank, S.; Teloh, R. Prioritizing Sustainability Criteria in Urban Planning Processes: Methodology Application. *J. Urban Plan. Dev.* **2011**, *137*, 20–28. [CrossRef]
32. Siljander, M.; Kuronen, T.; Johansson, T.; Munyao, M.N.; Pellikka, P.K. Primates on the farm–spatial patterns of human–wildlife conflict in forest-agricultural landscape mosaic in Taita Hills, Kenya. *Appl. Geogr.* **2020**, *117*, 102185. [CrossRef]
33. Findlay, L.J.; Hill, R. Baboon and vervet monkey crop-foraging behaviors on a commercial South African farm: Preliminary implications for damage mitigation. *Hum.–Wildl. Interact.* **2021**, *14*, 19.
34. Sperandelli, D.I.; Dupas, F.; Pons, N.D. Dynamics of urban sprawl, vacant land, and green spaces on the metropolitan fringe of São Paulo, Brazil. *J. Urban Plan. Dev.* **2013**, *139*, 274–279. [CrossRef]
35. Feng, L.; Li, H. Spatial Pattern Analysis of Urban Sprawl: Case Study of Jiangning, Nanjing, China. *J. Urban Plan. Dev.* **2012**, *138*, 263–269. [CrossRef]
36. Ren, Y.; Yan, J.; Wei, X.; Wang, Y.; Yang, Y.; Hua, L.; Xiong, Y.; Niu, X.; Song, X. Effects of rapid urban sprawl on urban forest carbon stocks: Integrating remotely sensed, GIS and forest inventory data. *J. Environ. Manag.* **2012**, *113*, 447–455. [CrossRef]
37. MacDonald, K.; Rudel, T. Sprawl and forest cover: What is the relationship? *Appl. Geogr.* **2005**, *25*, 67–79. [CrossRef]
38. Colombo, S.J.; Chen, J.; Ter-Mikaelian, M.T.; McKechnie, J.; Elkie, P.C.; MacLean, H.L.; Heath, L.S. Forest protection and forest harvest as strategies for ecological sustainability and climate change mitigation. *For. Ecol. Manag.* **2012**, *281*, 140–151. [CrossRef]
39. Breuste, J.H.; Artmann, M. Allotment Gardens Contribute to Urban Ecosystem Service: Case Study Salzburg, Austria. *J. Urban Plan. Dev.* **2015**, *141*, A5014005. [CrossRef]

40. Piya, S.; Shamsuzzoha, A.; Azizuddin, M.; Al-Hinai, N.; Erdebilli, B. Integrated Fuzzy AHP-TOPSIS Method to Analyze Green Management Practice in Hospitality Industry in the Sultanate of Oman. *Sustainability* **2022**, *14*, 1118. [CrossRef]
41. Breuste, J.; Artmann, M.; Li, J.; Xie, M. Special Issue on Green Infrastructure for Urban Sustainability. *J. Urban Plan. Dev.* **2015**, *141*, A2015001. [CrossRef]
42. Al-Ghamdi, S.A. Statistical analysis of different global solar radiation sunshine models in Al-Aqiq, KSA. *Int. J. Energy Environ. Eng.* **2021**, *13*, 469–481. [CrossRef]
43. Aldossary, N.A.; Alzahrani, A.A.; Alghamdi, J.K.; Alqahtany, A.; Jamil, R.; Alyami, S.H. A Procedural Framework to Identify Critical Indicators for the Protection of Environment and Ecosystem during Sustainable Urban Development in South-Western Saudi Arabia. *Sustainability* **2022**, *15*, 195. [CrossRef]
44. Al-Ghamdi, S.A. Analysis of Wind Power and Wind Power Characteristics: Al-Aqiq City, Saudi Arabia. *Int. J. Adv. Res. Eng. Technol.* **2021**, *12*, 870–887.
45. Awan, A.B.; Zubair, M.; Abokhalil, A.G. Solar Energy Resource Analysis and Evaluation of Photovoltaic System Performance in Various Regions of Saudi Arabia. *Sustainability* **2018**, *10*, 1129. [CrossRef]
46. Tazay, A. Techno-Economic Feasibility Analysis of a Hybrid Renewable Energy Supply Options for University Buildings in Saudi Arabia. *Open Eng.* **2020**, *11*, 39–55. [CrossRef]
47. Strantzali, E.; Aravossis, K. Decision making in renewable energy investments: A review. *Renew. Sustain. Energy Rev.* **2016**, *55*, 885–898. [CrossRef]
48. Stack, V.; Narine, L.L. Sustainability at Auburn University: Assessing Rooftop Solar Energy Potential for Electricity Generation with Remote Sensing and GIS in a Southern US Campus. *Sustainability* **2022**, *14*, 626. [CrossRef]
49. DeCanio, S.J.; Fremstad, A. Economic feasibility of the path to zero net carbon emissions. *Energy Policy* **2011**, *39*, 1144–1153. [CrossRef]
50. Larson, E.; Fiorese, G.; Liu, G.; Williams, R.; Kreutz, T.; Consonni, S. Co-production of synfuels and electricity from coal + biomass with zero net carbon emissions: An Illinois case study. *Energy Procedia* **2009**, *1*, 4371–4378. [CrossRef]
51. Saeed Bokhari, A.; Binthabet, A.A. Sustainable Development of Ecotourism and Its Relation to Architecture–Case Study: Al-Baha City, The Emirate of Al-Baha. JES. *J. Eng. Sci.* **2019**, *47*, 405–425. [CrossRef]
52. Aldossary, N.A. Application of Urban Sustainable Design Strategies for Development and Rehabilitation of Al-Qahad Heritage Village. *Future Cities Environ.* **2018**, *4*, 17. [CrossRef]
53. Elbelkasy, M.I.; Mustafa, M.M.I. *Investment of Heritage Villages in Saudi Arabia—Case Study of Al-Khubara Village in Qassim*; Springer International Publishing: Cham, Switzerland, 2022; pp. 345–356. [CrossRef]
54. Dehwah, A.H.; Haredy, A.; Krarti, M. Retrofit analysis of historical buildings to net-zero energy: Case study of the Ain village, Saudi Arabia. *Energy Build.* **2021**, *258*, 111826. [CrossRef]
55. Engel, M.S.; AlQarni, A.S.; Shebl, M.; Iqbal, J.; Hinojosa-Díaz, I.A. A new species of the carpenter bee genus Xylocopa from the Sarawat Mountains in southwestern Saudi Arabia (Hymenoptera, Apidae). *Zookeys* **2017**, *716*, 29–41. [CrossRef] [PubMed]
56. Yan, X.; He, S. The co-evolution of therapeutic landscape and health tourism in bama longevity villages, China: An actor-network perspective. *Health Place* **2020**, *66*, 102448. [CrossRef]
57. Al-Zubairi, A.S. Assessment of Mutagenicity of Herbal Preparations from Al-Baha Region, Saudi Arabia. *Egypt. Acad. J. Biol. Sci. C Physiol. Mol. Biol.* **2019**, *11*, 51–62. [CrossRef]
58. Hetz, K.; Bruns, A. Urban planning lock-in: Implications for the realization of adaptive options towards climate change risks. *Water Int.* **2014**, *39*, 884–900. [CrossRef]
59. Khalifa, M.A. Evolution of informal settlements upgrading strategies in Egypt: From negligence to participatory development. *Ain Shams Eng. J.* **2015**, *6*, 1151–1159. [CrossRef]
60. Ashik, F.R.; Alam Mim, S.; Neema, M.N. Towards vertical spatial equity of urban facilities: An integration of spatial and aspatial accessibility. *J. Urban Manag.* **2019**, *9*, 77–92. [CrossRef]
61. Vepsäläinen, J.; Kivekäs, K.; Otto, K.; Lajunen, A.; Tammi, K. Development and validation of energy demand uncertainty model for electric city buses. *Transp. Res. Part D Transp. Environ.* **2018**, *63*, 347–361. [CrossRef]
62. Flower, B.; Fortnam, M.; Kol, L.; Sasin, P.; Wood, R.G. Using participatory methods to uncover interacting urban risks: A case study of three informal settlements in Phnom Penh, Cambodia. *Environ. Urban.* **2017**, *30*, 301–316. [CrossRef]
63. Brunetta, G.; Caldarice, O. Putting resilience into practice. The spatial planning response to urban risks. In *Urban Resilience for Risk and Adaptation Governance*; Springer: Cham, Switzerland, 2019; pp. 27–41.