



Investigating the Development of Agriculture and the Affiliated Industries Influencing the Sustainable Development in Saravan City

Khodabakhsh Hosseinbor

Masters student, Department of Geography & urban planning Islamic azad University, Zahedan Branch, Zahedan, Iran.

Abstract: *The geographical position of the Saravan city and its closeness to Pakistan border have given it a special stance rendering it necessary to make plans in line with the development and acceleration of the elimination of the inequalities. Determination of the method of access to a pattern of development, social justice through the optimum distribution of the resources and facilities, improvement of the people's sustenance and identification of the development poles and axes are amongst the goals that should be pursued. The present study aimed at the investigation of the development of agriculture and its affiliated industries that influence sustainable development in Saravan. The present study's method was descriptive and analytical with an applied objective. In the data-gathering phase, 35 elites of the region were selected using Cochran's Formula among the 39 office heads and individuals with MS and higher academic degrees, who worked in the offices of Saravan were selected based on a simple random sampling and then interviewed. In the present study, it is attempted to survey land-use preparation in Saravan city using GIS and Analytical Model (SWOT) and identify the development capabilities of the city. The results indicated that the increase in the lands under the cultivation of date and development of its affiliated industries can be promising in the resolution of the unemployment problem.*

Keywords: *agricultural development, sustainable development, date cultivation, Saravan City.*

INTRODUCTION

In today's world, natural resources are considered amongst the precious and rare graces. Therefore, there is a competition in the way of using these graces between various human activities in the natural environment like cultivation and gardening, foresting and pasturing, industry and mine, city and village, etc.

The fair and rational allocation of the land to these activities is amongst the important discussions in the planning affairs, which is commonly termed as "land-use planning". In other words, the land-use planning is adjusting of the relationship between the human being and space and it essentially includes the human activities in space with its goal being logical exploitation of all the facilities for improving the material and spiritual status of the society in the course of time (Kargar et al., 2011, p.1). The purpose of land use planning is to determine the suitability, potential, and suitability of the lands, in other words, to determine the most desirable type of productivity. Land-use planning is a process that offers the compatibility of any type of utilization for any part of territory according to the activities therein (Majnouniyan, 1999, p.70).

On the other hand, moving the developing countries through the sustainable development entails paying attention to the regional and local levels in development planning, access to which is impossible within the framework of the sectoral planning system due to the centralization efforts. The World Commission on Environment and Development defines sustainable development from the point of view of the present and the future: "Development that meets current needs without jeopardizing the ability of the future generation's ability in meeting their needs. Such a pattern of development supports all people, generates jobs and products, and is environmentally friendly" (Fanni, 2009, p.182).

Considering the fact that the relationship between the land-use planning and regional and district planning is in fact summarized within a process formed by the interaction of the actions and functions of the nature and human beings in the geographical settings, the same approach has been used herein to the land use planning in Saravan, located in the easternmost region of Iran on the border between Islamic Republic of Iran and Pakistan and known as Iran's land of dawn.

Expansion of poverty, unemployment, addiction and false jobs, daily increasing development of the narcotics smuggling, fuels and so on, insecurity, unequal distribution of services, and land uses in Saravan made the researcher to investigate the land use planning in Saravan so as to identify and come up with the proper solutions for the development of agriculture and its affiliated industries.

The use of the latest and advanced technologies in the qualitative and quantitative research doubles the reliability and validity of them and provides the planners with the specified and right path. One of the software packages used in this regard is Geographical Information System (GIS), which is envisioned as an advanced instrument for analysis, investigation, and demonstration of the information and pooling of the data. In the current research, this software has been employed for better identification of the region and more efficient planning. The present study tries performing of land use planning in Saravan using GIS and analytical model (SWOT) so as to identify the development potentials of the city thereby to make the maximal use of the existing opportunities and avoid the threats.

Study Theoretical Foundation:

Border Regions' Land Use Planning:

The land use planning of the border regions is a sort of planning that interlaces the development with security and defense, as border regions' essential needs, within the framework of the border regions' conditions and introduces a solution for the development of the border regions wherein the security and development become correlative (Andalib, 2000, p.29 and 2001, p.14).

Border regions are the intersections of the country's domestic development plans with the neighboring countries' development programs. So, the mutual effects of these plans on one another (that can be negative (threats) and/or positive (opportunity)) should be simultaneously taken into account.

Besides being influenced by the conditions and properties related to the entire country, border regions are also influenced by the special border-specific issues and characteristics like being far away from the center, geographical isolation, diversity of the ethnicities, religions and subcultures, and reduction in the amount of the central government's supervision and control on them that these factors also influence the development of border regions.

As for the land use planning, Faun Leer in a definition of the stability of development asserts that land use planning is indeed planning, renovating and managing the land of supplying the needs of today and future generations (Tabibian, 1998, p.63).

The land-use planning offers a plan that looks, as regional programming, for the far increasingly higher improvement of the contextual space and human life in the rural, urban and regional environments (Sa'eidnia, 1999, p.42). Some believe that land-use planning is a sort of long-term planning for more optimum and better distribution of the population and human activities in the area of natural resources for enhancing the society's welfare and development (Asayesh, 1999, p.4).

The Reasons for Preparing Land Use Planning:

- 1) Recognition of the territory of land and maximizing the potential abilities of the regions regarding the natural and human resources for the actualization of the national goals
- 2) Better distribution of the population for supplying of the natural resources and economic activities
- 3) Dividing of the specialized duties and determination of roles and responsibilities specific to each region of the country parallel to the actualization of the national and regional development goals and, resultantly, absorption of the general participation from various regions for the actualization of the goals
- 4) Specialization of the regions in some activities or industries and forming a set of regions with supplementary functions for the supply of the country's general goals
- 5) Setting long-term national development strategies based on various aspects, especially strategies of spatial population and activity distribution in the breadth of a land
- 6) Establishing coordination in the regional development planning
- 7) Establishing long-term coordination in the mid-term sectorial programs, creation of the facilities for arranging regional sectorial programs and creation of rational solidarity and connection between the civil reconstruction plans
- 8) The necessity of paying attention to the environment and the essentialness of paying attention to the optimal exploitation of natural resources (Vahidi, 2010)

Agricultural Land Use Planning:

From the perspective of Todaro, "the small-scale industries with rural use" should become the supporters of the agricultural sector. He opines that industry is a service-provider to agriculture and not that agriculture should be the server of the industry. Todaro believes that since the developing countries are in a transition from a sustenance-oriented agricultural stage to mixed agriculture, land reforms can pave the way for this transition and elevate the life level of the rural agriculturalists. He introduces mixed cultivation as a development strategy. Joan Robinson, an English economist, as well, like Todaro, realizes agriculture as the essence and pivot of development and believes that the production of the foodstuff is the most effective investment that can be replaced for imports. Direct attention to the mass poverty and unemployment necessitates increasing the food products. However, the fair distribution of consumption should be also taken into account. The only solution is mixing the two and the subsequent return to small-scale agriculture based on the workforce and the gradual advance from this base as the next stage (Robinson, 1986, p.187).

The theory by Antoine Dakore, as well, pursues the same goal that had been proposed by Robinson, i.e. production of foodstuff for reaching development. He believes that the hunger issue and elimination of the foodstuff guide the civil reconstruction and development programs. This pattern can be implemented for solving the hunger problem firstly in Africa and then in Asia and Latin America. Dakore knows farmers as the main officials of the rural reconstruction and believes that achievement of development is impossible without their participation.

Sustainable Development:

Development is an objective and assessable economic-social, cultural, and social process and, unlike the concept of growth, it features a complicated and multilateral nature and so, it has been numerously defined and discussed so far in the developed and developing countries (Fanni, 2009, p.2).

Michael Todaro realizes development as the constant enhancement of the entire society and social system towards a better and/or more humane life. Development is the process of changes that are brought about in the people's social and economic growth, intensification of the land use, and exploitation of the natural resources as well as a sort of progress in the conditions of life and social welfare of the low-income social groups (Shokou'ei, 2009, p.266).

The concept of sustainability in development is not similar to the concept of stability in physics rather it means that the non-renewable resources should be optimally and effectively used and applied in the course of achieving sustainable development and the renewable resources should be gradually replaced with the non-renewable ones. Moreover, the solid and liquid wastes and residues resulting from the development processes should be less than the amounts adsorbed and degraded by nature. This way, sustainable development means stable management of the resources and environment and savings rare resources and devising of vast strategies in using renewable resources.

Sustainable development is a process in the course of which the people of a country themselves try meeting their own needs and upgrading their life levels without consuming the resources that belong to the future generations and wasting the future capitals for the supply of their instantaneous wants. Therefore, development is recognized to be sustainable when it is not devastating and enables the future generations to conserve the resources (including water, soil, air as well as genetic and animal resources and so on). In sustainable development, the principle is that the basic natural resources should be conserved in such a way that the future generations can at least produce and consume as much as the present generation can (Zahedi, 2008, p.5).

Study Method:

The city's capital is Saravan, which is 1195m above sea level, situated in 27° 20' of the northern latitude and 62° 20' of the eastern longitude. Rainfalls substantially take place during winter. There is not seen any trace of rain during seven months of the year on average. The precipitation rate increases from the eastern side of the province to its west. The average annual rainfall is about 70mm and very irregular. Due to the high vastness and extensiveness and adjacency to Pakistan, Saravan is highly actually talented for various grounds of the agriculture sector, including cropping, gardening, ranching and poultry, and even fishery and aquatics and agricultural products' processing industries and it is envisioned as one of the important poles of the province's agriculture. The area under cultivation of the agricultural products in Saravan is about 21920ha and the fallow lands exceed 10000ha.

The current research is the first fundamental research in the area of land use planning in terms of its title and work method for no similar studies has been carried out in the provincial level and even in the national level before now, so it can be of an applied aspect. The use of GIS in this study enhances the analytical power of the results in qualitative terms. So, quality is of greater importance than the quantity. The present study's method is descriptive-analytical and it has been carried out based on an applied method.

In the present study, after identifying and evaluating and classifying the internal and external factors, using ETOP or EFE Tables (for the identification of the economic, technological, political, cultural, and social factors) as well as SAP or IFE Tables (for the evaluation of the internal factors in comparison to the rivals and strength and weakness of the area), the factors were inserted in the margins of SWOT matrix like the following Table and then, the proper strategies suitable for each of the WT, SO, WO, and ST sections were suggested based on the expertise.

In the data-gathering phase, using Cochran Formula based on a simple randomized sampling method, 35 experts were selected and interviewed from 39 office heads and individuals with MS or higher degrees, working in the offices in Saravan.

Findings:

Agriculture, Employment, and Development:

Table (1) shows the production rates of the gardening products based on hectare and performance level and profitability rate of each product.

Table 1: The amount of gardening products based on hectare and performance level of the product and profit rate (Saravan City), 2012

Product name	The area under cultivation (ha)		Production rate (ton)	Performance per every hectare (ton)	Profitability percentage per every ton
	Fertile	Infertile			
Apple	--	7.5	33.1	4.4	5280000
Peach	--	9	14.1	1.6	2880000
Apricot	--	10	38	3.8	5130000
Grape	11	12	187	15.5	13175000
Berry	0.3	1	2.9	2.9	3335000
Irrigated date	700	3765	27995	6.3	24255000
Rain-fed date	--	8200	12300	1.5	352000
Olive	14	14	18.2	1.3	5551000
Orange	2	14	126	9	10980000
Tangerine	--	10	90	9	9900000
Sour orange	1	3	27	9	6750000
Pomegranate	7.5	42	408	9.7	13580000
Fig	--	7	63	9	11700000
Sum	735.8	12106.5	42190.3	----	-----
Source: Agricultural Jihad (delineation and analysis of the information, the author, 2013)					

As it is observed in Table (1), dates have a higher profitability rate than the other products. The performance rate of the irrigated date per hectare is 6.3 tons with a profitability rate of 24255000 RIALS per every hectare and it enjoys a higher cultivation rate in comparison to other agricultural and gardening products.

Investigating the Employment Rate of Agricultural Products:

Table 2: comparison of the employment rates of the highly-produced crops in Saravan

Product name		Date	Grape	Orange	Fig	Pomegranate	olive
Employment rate from sowing till harvest (per every 10ha)		5	3	3	4	3	4
Wastes	Amount of waste produced per every hectare in a year (tons)	6	1	2	2	2	1.5
	Employment rate (individual) per every 10ha	4	1	1	1	1	1
Product processing	The number of producible products in the processing stage	15	6	7	6	7	5
	Employment rate (individual) (per every 10ha)	15	6	7	6	7	5
Transportation (every 10ha) (individual)		4	2	2	2	2	2
Indirect employment (individual)		14	6	6	6	6	6
Sum of employment per every 10ha (individual)		42	18	19	19	19	18

Area under cultivation in the city (hectare)	12665	23	16	49.5	7	28
Employment rate under the current status in case of creating processing industries (individual)	53193	41.4	30.4	94.5	13.3	50.4
Percentage of employment under the current status (agriculture sector)	99.56	0.077	0.056	0.17	0.025	0.094

Investigating the Strategic Factors in Agriculture Sector:

Table 3: Evaluation of the external strategies (EFE) of the agricultural sector in Saravan

External strategic factors	Normalized weight	Score	Balanced score	Explanations
Opportunities				
1. Existence of moor and desert lands O1	14.0	4	0.56	Existence of the Gasht, Hashk, Esfandak, Jalaq, Kallegan, Dezak, Gidist moors and desert strap of Mashidak Verutak
2. The capability of cultivating palm trees in the entire moors, desert lands and even rock-ribbed and mountainous regions O2	138.0	4	0.552	Palm trees can grow in the entire lands of the region even rock-ribbed lands and salty lands.
3. Possibility of producing almost 15 new byproducts from dates O3	14.0	4	0.56	The following products can be produced from palm trees (date sap, date leather, date vinegar, chipboard from its leaves, date core oil, husk, date cookie, date sweets, almond date, date jam, traditional mat, basket and diverse artefacts, and so forth) as a result of which generative employment is created.
4. Existence of large wastes of the date products O4	083.0	3	0.249	Six tons of wastes per every hectare in each year and the resultant possibility of creating the industries of chipboard construction and re-entrepreneurship
5. The neighboring country's need for date import and the resultant foreign currency intake and the products' profitability and the existence of consumption market O5	111.0	4	0.444	Date products are highly demanded in the domestic markets and foreign markets. So, it is considered as a golden chance in Saravan City and it can create a lot of jobs in an indirect manner.
Threats				
1. Bioenvironmental pollution due to the use of the fertilizers and chemicals T1	14.0	2	0.28	The increase in the farmlands brings about a maximal increase in the use of the fertilizers and chemicals, as well.
2. The corresponding offices do not provide the required land area. T2	107.0	2	0.214	According to the fact that the majority of the regions of the city are amongst the protected regions, the possibility of issuing the required licenses for the transferring of the required lands is weak.

3.	The flood danger T3	055.0	2	0.11	In case that the dams and dykes break, the downstream regions would be most probably flooded.
4.	Emigration to the region in case of the existence of job-creating industries.	026.0	2	0.052	In case that the industries are expanded and the job creation is increased, the possibility of migration from the other regions is intensified.
5.	Expansion of the equipment and mechanized machinery	0.060	2	0.12	Increase in the use of mechanized equipment brings about an increase in the unemployment rate
6.	Sum	1		3.141	

Table 4: Internal Factor Evaluation (IFE) in the agriculture sector of Saravan

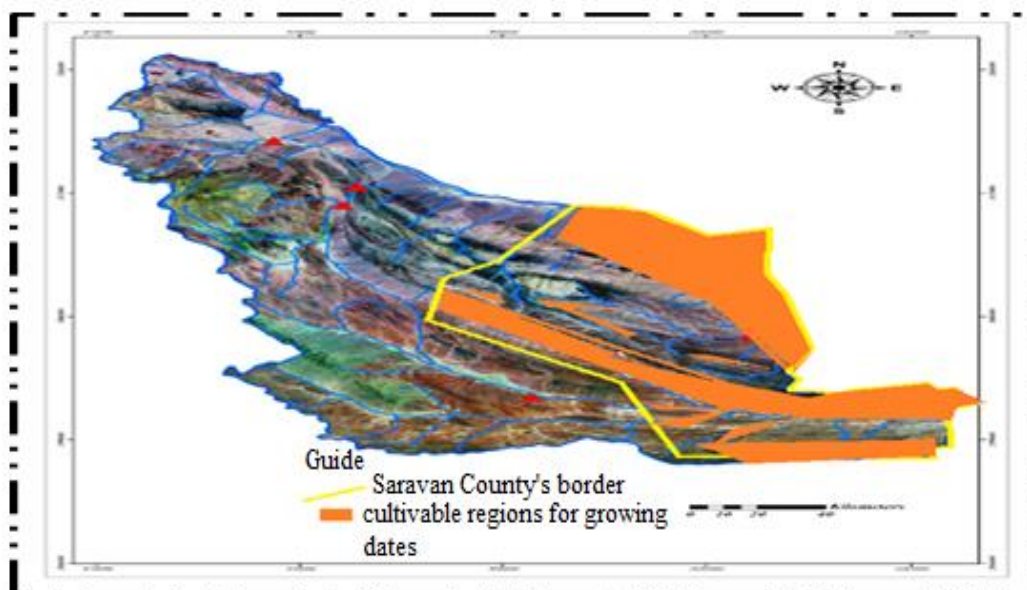
Internal factor evaluation	Normalized weight	Score	Balanced score	Explanations	
Strengths					
1.	The reasonable and high price of the date products in the internal and external markets. S1	0.167	4	0.668	Date price is higher than the mean price of the other agricultural products.
2.	Construction of numerous dams inside the city for controlling the waters resulting from flood S2	0.125	4	0.5	Several earth dams and dykes have been constructed during the recent years for controlling the water stemming from the flood and seasonal rainfalls
3.	Palm trees' needlessness of fertile soil and abundant water S3	0.156	4	0.624	The palm tree is capable of being planted in low-water regions and various kinds of lands and pastures.
4.	The 8000-ton capacity of the cold storehouses for keeping date S4	0.147	4	0.588	At present, there are 9 cold storehouses with a capacity of more than 8000 tons in Saravan and several other licenses have been given for construction of the storage rooms.
5.	The majority of people's familiarity with the methods of planting, growing, and harvesting dates S5	0.1	3	0.3	Due to the several thousands of the history of date cultivation in the region, most of the people know how to grow dates.
Weaknesses					
1.	Reduction in the seasonal rainfalls W1	0.151	1	0.151	During recent years, the average rainfalls have been reduced in contrast to the long run
2.	Absence of investment in the affiliated industries W2	0.085	2	0.17	At present, only one processing workshop has been constructed in cooperation with agricultural jihad and it is not enough
3.	Soil erosion W3	0.03	2	0.06	In the regions of the northeastern section of Saravan City, the fluid sand's movement and the resultant soil erosion are quite likely.
4.	Absence of fertile soil W4	0.026	2	0.048	The soil existent in Saravan City is moor-like and lacks sufficient humus for farming.

5.	Long heat periods W5	0.015	2	0.030	It is hot at least in eight months of the year and this is harmful to some of the products.
	Sum	1		3.139	

The mean value of the balanced scores in Tables (3) and (4) (EFE and IFE) for the studied region has been calculated equal to 3.14, which enjoys a very good weight in this strategy and the region can recognize this strategy as a golden opportunity.

Cultivable Regions:

According to the fact that the palm trees can grow in all of the lands, the following regions are suggested for making plans parallel to the allocation of lands for palm tree planting (map 1).



Map 1: Cultivable regions for growing palm trees in Saravan City

The area of the existent lands is 5287 square kilometers and the region would achieve the highest limits of development and progress if at least half of it can be cultivated by palm trees through making correct programming and management. According to the existence of the seasonal rainfalls in the region, dams can be constructed in the flood-prone regions to supply the required water.

Conclusion:

The results indicated that the increase in the area under the cultivation of palm trees and the development of the affiliated industries can help to resolve the unemployment problem. The total mean of the normalized coefficients of the agricultural sector and affiliated date industries has been found equal to 3.14 based on Tables (3) and (4), which is higher than the weighted mean, 2.5. Therefore, it is deemed as a strong strategy and a golden opportunity for the development of the city of Saravan.

Considering the fact that the majority of the regions in Saravan lack fertile lands and there is a scarcity of water for farming, a sort of change has to be brought about from agricultural role towards the other industries. However, according to the special properties and capabilities of the palm tree that enjoys a higher profitability in contrast to the other gardening and farming crops and is in lower need of surface water (especially after three years) and also since palm trees do not need fertile soils and they can be even grown in the salty and rock-ribbed lands, it is consequently viewed as the best product for farming in the region. In the northeastern regions of the

city wherein dust and soil erosion are problematic, planting of palm trees can be the best solution for fighting the dust and soil erosion. The development of the date-dependent industries can somewhat resolve unemployment problems and add to the added value of the products up to 12 times, so it is the best solution and strategy in line with sustainable development.

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