



The Cluster of Urban Agriculture: Case of Bartın-Turkey *

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Abstract: Urban agriculture (UA) can certainly play an important role and occupy a considerable amount of space and people's endeavours in the cities of the future. This research is concerned to examine UA activities in Bartın whether they are organized as a cluster by using the theory of Growth Cluster, and then tries to explore the cluster characteristics of UA as a part of the project: TR-26 Bartın Regional Development. Finally, it makes an argument about the environmental, societal and economic impacts of UA in Bartın City. Research has confirmed that "the UA is a cluster in Bartın, and it holds promises for future growth". However, to develop the cluster further, its strength needs to be enhanced. Many problems have appeared, among which weak coordination and collaboration among the stakeholders involved are of fundamental importance. It is therefore perceived that the development a particular organization of UA marketing (public-private partnership together with knowledge institutes) is necessary to particularly improve a better coordination and the situation of UA cluster in Bartın. In this study, a model of UA activities is proposed for "Bartın City Initiative" in terms of city-level actions for growth cluster of UA in Bartın.

Key Words: Urban agriculture, growth cluster theory, city development strategies, urban management, Bartın.

Kentsel Tarım Kümesi: Türkiye-Bartın Örneği

Öz: Gelecekte kentsel tarım (KT), kentlerde önemli bir mekânsal yer işgal edecek ve insanların uğraşı alanları içinde yer alarak önemli bir rol oynayacaktır. Bu çalışmada, Küme Büyüme Teorisi'ne göre Bartın'daki KT aktivitelerinin bir küme olarak organize edilip edilemeyeceği araştırılmış; daha sonra TR-26 Bartın Bölgesel Kalkınma Projesi'nin bir parçası olarak KT'ın küme özellikleri incelenmiştir. Sonuç olarak, Bartın Kenti'ndeki KT'ın çevresel, sosyal ve ekonomik etkileri tartışılmıştır. Buna göre "KT'ın Bartın'da küme özelliği taşıdığı ve gelecekte büyüme potansiyeline sahip olduğu" saptanmıştır. Ancak, kümenin gelecekteki gelişimi için, güçlü yönlerinin geliştirilmesine gereksinim duyulmaktadır. Pek çok sorun bulunmakla beraber, temel sorun paydaşlar arasında zayıf eşgüdüm ve işbirliği olarak ifade edilebilir. Bu nedenle, özel bir KT piyasasının organizasyonunu (üniversiteler ile birlikte kamu ve özel sektör ortaklığı) geliştirmek için, özellikle Bartın'daki KT kümesinin durumunu iyileştirmek amacıyla, paydaşlar arasında daha iyi bir eşgüdüm oluşturulması gerekmektedir. Bu çalışmada, Bartın'daki KT kümesinin gelişimi için kent seviyesinde "Bartın Kent Girişimi" için bir KT aktiviteleri modeli önerilmiştir.

Anahtar Kelimeler: Kentsel tarım, küme büyüme teorisi, kent gelişim stratejileri, kentsel yönetim, Bartın.

Introduction

The major part of the urban population lives in cities growing rapidly. Rapid urbanisation and population growth put pressure on natural resources because of the increasing demand for urban services. Poverty, lack of basic urban services such as clean water, shelter, sufficient food and pollution are getting worse in the passing time (ETC 2005). Urban Agriculture (UA) is thus an important supply source in developing-country urban food systems, a critical food-security valve for poor urban households. It affords a cheap, simple, and flexible tool for productively using open urban spaces, generating

employment and income, adding value to products, and resolving otherwise incompatible urban land use issues (Mougeot 2000, Gibeault et al. 2002). One of the important types of UA is named community gardens that are identified as a potential strategy for meeting multiple community needs, addressing both food security and economic development simultaneously (Feenstra et al. 1999, Lawson 2005). UA's nature and magnitude vary, of course, depending on agro-ecological conditions; national, regional, and local policies; market conditions; and household characteristics, but it has become an important part of

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the urban scene. Developing regional and global networks like a cluster are important, but national and local networks must also be created and supported (Mougeot 2000).

UA is defined as an industry that produces, processes and markets food and fuel, largely in response to the daily demand of consumers within a town, city or metropolis, on land and water dispersed throughout the urban and peri-urban area, applying intensive production methods, using and reusing natural resources and urban wastes, to yield a diversity of crops and livestock (Smit et al. 1996). A Cluster is described as a concentration of firms across several industries that creates quality jobs, exports goods and services, shares common economic foundational needs, and unites the public sectors of economic development, legislatures at all levels, universities, community colleges, workforce development, and support foundations (Breault 2000). In order to understand growth processes in clusters in urban regions, Van den Berg et al. (2001a) provide a scope for policy improvement and allow the comparison of different clusters by means of a framework which includes spatial and economic conditions, organising capacity and cluster specific conditions.

There are several examples of clusters in different fields in developed countries and developing countries as well.

Agriculture Cluster in the Jordan Valley is one of the best known examples for Agriculture Cluster concept which includes the sessions of sector performance, the diamond hypothesis and future challenges of the agriculture cluster in Jordan (Jordan Ministry of Planning 2005).

Innovative clusters and clustering are new concepts for Turkey (Yılmaz et al. 2005). The need for supporting clustering is underlined in the Preliminary National Development Plan (2004-2006). In December 2003, the first clustering initiative started in the province Bartın as a pilot project. So the "Bartın Regional Development Project" (TR-26) was launched by State Planning Organization (DPT) in a co-operation with Small- and Medium-sized Industry Development Organizations (KOSGEB) and the National Competitiveness Research Institute (URAK) (PRO INNO EUROPE 2005). Following a detailed analysis of the region, the sectors with a potential global competitive advantage were identified as yacht and shipbuilding, furniture and wood industry, tourism and agriculture.

In terms of Cluster, Bartın City has a potential in the field of UA. In low-income cities such as Bartın, UA is a prime generator of jobs especially for women. The main reason for selecting of this cluster is to keep the traditional activity of UA alive, besides protecting the resources of Bartın, and integrating UA in the city development of Bartın. To this effect, the study mainly deals with the UA in Bartın City with the respect of Growth Cluster Theory. The city of Bartın further recognises the need to develop strategies that can enhance UA Cluster in order to ensure sustainable urban development, in support of the Local Agenda 21 and The Habitat Agenda.

The objectives of this research are to examine UA activities in Bartın whether they are organized as a cluster; to explore the cluster characteristics of UA in conformity with the project (TR-26 Bartın Regional Development Project), and to examine the multi-faceted impacts of UA in the Case of Bartın City. The hypothesis of the research is that UA has the characteristics of Cluster, and UA has potentials to the socio-economic development of Bartın.

Depending on the hypothesis, the research questions are formulated as shown below.

1. Are UA activities organized as a cluster in Bartın to understand the local problem in its global context?
2. To what extent the agriculture cluster, which has been in the TR-26 Bartın Regional Development Project, can be implemented in Bartın?
3. What are the likely impacts of UA in the City of Bartın?
 - a. What is the environmental impact of UA in Bartın?
 - b. What is the societal impact of UA in Bartın?
 - c. What is the economic impact of UA in Bartın?

The research questions formed the basis of conducting the research and its coverage to testify the hypothesis.

- Research question 1 is constructed as a basis of the theoretical discussion of Growth Cluster in UA. The expected answer for the first question is to understand the local problem in its global context.

- Research question 2 is formulated to assess the actual performance of agricultural cluster which is the subject of the TR-26 Bartın Regional Development Project according to the UA theories and Growth cluster (Van den Berg et al. 2004).

- Research question 3 is designed to explore the direct impact of the UA cluster according to the thesis hypothesis.

Materials and Methods

This research was conducted in the City of Bartın which is located on the Black Sea Region of Turkey (Figure 1). Bartın is located at 41° 18' and 41° 45' north longitudes and 32° 08' and 32° 44' east latitudes in the West Black Sea part of the Black Sea Region. It is surrounded by a 59 km long coastline of the Black Sea in the north and provinces of Kastamonu and Karabük in the east, Karabük again in the south and Zonguldak in the west. Area is 2.143 km² and altitude is 25 meters. Bartın has 271 villages and four counties including the central county.

The research is a qualitative and explanatory study based on quantitative and qualitative data. The methodology contains primary and secondary data collections (Table 1 and Table 2). The steps of the research are schemed on Figure 2.

The first stage of the research was the determination of the objectives, the questions and hypothesis. In this stage, moreover the relevant theories are selected in order to fulfil the objectives of the study.

Each research question is analysed by the selected indicators of theories such as Cluster and UA. The first and second research questions are analysed in terms of the indicators of Cluster theories: Growth Cluster Theory and Analytical Analysis for Micro enterprise in UA (Market/Network/Cluster Analysis). Market/ Network/ Cluster Analysis are evaluated in the cluster specific conditions of the Growth Cluster.

Finally, the third research question is analysed by the selected indicators of four different UA theories. Therefore, the results of the analysis are divided into two parts: "UA Cluster" and "the impacts of UA" in Bartın."

The second stage of the study was the selection of the research area. The third stage was the literature research and data collection which required desk study and fieldwork. The desk study phase was the data collection related to the main subject of the study; UA theories (Smit et al. 1996, Van den Berg 2000, Dubbeling 2002, Holmer 2002) and the theories such as Growth Cluster (Van den Berg et al. 2001b, Holmer 2002, Davidson 2005).

The fieldwork phase was the data collection about research area in terms of Growth Cluster Theory criteria using the different tools such as depth interviews, group discussions and surveys with related actors in Bartın. The analytical analysis in terms of Growth Cluster Theory was constituted the forth stage

of the study. The depth interviews were conducted by the author with open ended discussions. In order to draw the UA profile determines the level of achieving the needs and demand of the inhabitants.



Figure 1. The geographical position of Bartın City

Table 1. The primary data of the research

Government	Knowledge Institutes(KI)	Other Org.	Firms
State Planning Organiz. (DPT)(1)	Bartın University (BU) Faculty of Forestry, Dept. of Land. Arc. (1)	URAK (National Compt. Research Inst.)(3)	Bartın Initiative Group (BIG)(2)
Municip. of Bartın (MB)(1)	BU Faculty of Forestry, Dept. of Forestry Eng.(1)	Small and Medium Industry Dev.Organiz. (KOSGEB)(2)	Birlik Agriculture (B)(1)
Governor of Bartın, Dept.of Planning and Dept.of Finance (GB) (3)	BU Schools of Higher Edu. Prog. of Greenhouse and Home Plants Growing (3)	Bartın Province of Social Mutual Solidarity Foundation (SYDV) (2)	Ulas Agriculture (U) (1)
General Directorate of Agriculture (A) (3)	BU Schools of Higher Education Program of Business Mang.(1)	Chamber of Commerce and Industry (CCI) (1)	Çağlayanlar Commerce (C) (1)
General Directorate of Environ. and Forest (EF) (1)	BU Schools of Higher Education Program of Accounting (1)	Chamber of Agriculture (CA) (1)	Dumanlar Commerce (D) (1)
			Çakırlar Commerce (CC) (1)
			Urban Farmers (UF) (8)
TOTAL: 40			

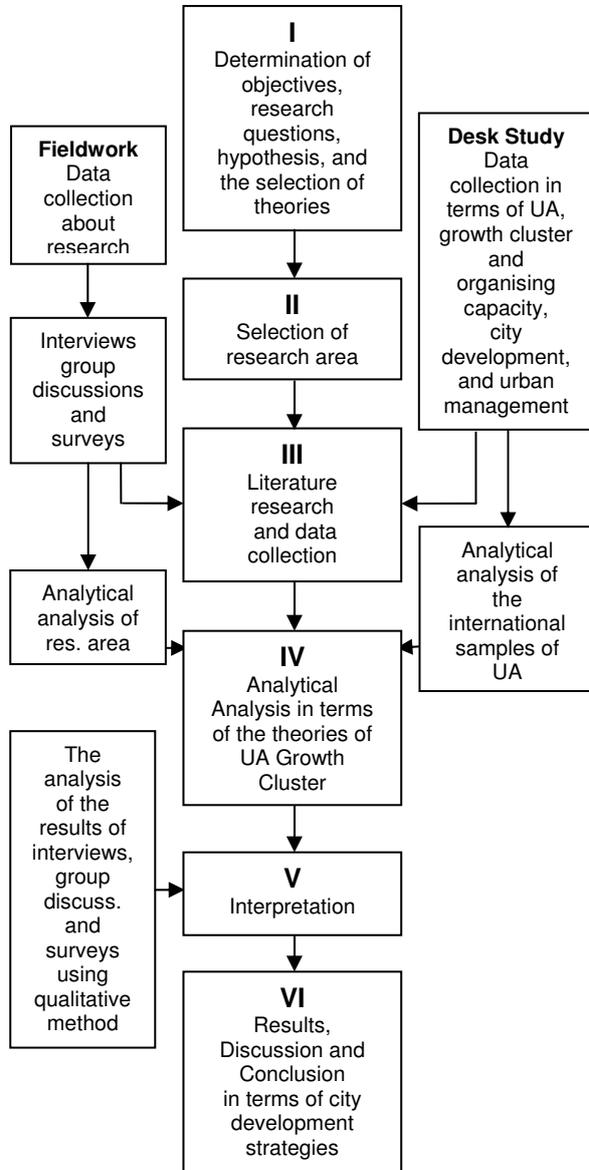


Figure 2. The steps of the study

In depth interviews of 40 people were held with key persons (the stakeholders of the TR-26 Bartın Regional Development Project and other related persons and institutions) in the cluster using qualitative method, purposely selected sample. The group discussions took place at the University of Bartın analyzing the knowledge base of the project in Bartın. Afterwards, to study the agriculture cluster was used to the Growth Cluster theory. Analysis of

Table 2. The secondary data of the research

The Resources of Secondary Data	
The annual reports of Ministry of Agriculture and Forestry	Books, journals, articles from the libraries of Knowledge Institutes (IHS, Erasmus Uni., ZKU, Ankara Uni. etc.)
The reports of Governor of Bartın, Dept. of Planning and Dept. of Finance	Archives of Local Newspapers
The reports of General Directorate of Agriculture	Archives of General Directorate of Agriculture
The reports of General Directorate of Environment and Forest	The archives of Small and Medium Industry Dev. Organizations
State Institute of Statistics, Annual Census of Agriculture	
The reports of TR_26 Bartın Regional Development Project	
Internet, Universities, UNDP, FAO, ETC, UA Notes, City Farmer, IDRC, IFPRI, RUAFA, SIUPA, CGIAR, Bartın Municipality, URAK, DPT, etc.	

the TR-26 Bartın Regional Development Project was started. For this analysis, some key actors were asked in order to get the answer of the question "how these key organizations are linked up with other organizations (firms, knowledge institutions, government) within and outside the region".

In the fifth stage of the study, the results of the depth interview analysis were interpreted.

The last stage of the research included the results, discussion and conclusion accounting city development strategies. Aiming to develop the strategies of UA effectively in Bartın, leads to the question of what are the spatial implications in terms of policy and planning to encourage UA Cluster?

Results

The results depending on the each research questions are given below: The qualitative analysis of the research question 1 is shown in Table 3. The result of the analysis shows that the growth cluster is medium (-+) in Bartın. This means that there is substantial potential regarding growth cluster in UA for Bartın. The economic, spatial and cultural conditions are also medium (-+).

The Bartın's people have entrepreneurial spirit. However, this clustering has been lack of leadership. In addition to that there is a weak network system which is in need of some kind of improvements. Creating a linkage between demand and supply and formation of the strategic relationships between various actors in the cluster are the main prerequisites to enhance the visibility of different sectors and for the improvements of the environmental quality. Other potentials such as local broadcasting organisations can also make contribution for the conditioning of the cluster. All these potentials together can support both the quantity and quality of the UA cluster and strengthen the local urban economy in Bartın.

The qualitative analysis of the second research question is shown in Table 4. With this research question, it is explained the organising capacity of TR-26 Bartın Regional Development Project, particularly UA cluster. This analysis presents that general conditions, and cluster specific conditions have the same problems. The analysis of the organising capacity of the TR-26 Bartın Regional Development Project shows that there are important problems in the cluster specific conditions. The result of the qualitative analysis of the growth cluster is again medium (++) however the project has no organising capacity for the Growth cluster as a result of the interviews. The organising capacity is highly weak (-).

TR-26 Bartın Regional Development Project in Bartın has a vision and strategy. It was a good example of public-private partnership, at the beginning. But unfortunately, because of the some problems such as changing the leaders, weak strategic network, lost of the presence of engines, etc.; the project has not been successfully implemented. It seems that there is no possibility for the implementation of the project. The organising capacity of the UA cluster has some problems: The interviewees and society in general do not have a vision. The lack of vision and disintegration would hamper the targeted action in the long-term. The lack of *leadership* is very problematic. Private agent as Bartın Entrepreneurship Group is the candidate to guide the local networks. Delegates of the private sectors and public staff together with the educational institutions are necessary

In the spatial-economic context (Van den Berg et al. 2001b) the economic structure of the region, the

culture (i.e. cultural/ societal aspects) and the quality and accessibility of the region will be discussed. With respect to the "culture" Bartın is known as the "working city" although unemployment and migration out of the city are widespread. As a result of the interviews, it was detected that there are an entrepreneurial spirits in UA sector. Geographical location of the city of Bartın could be considered positive in terms of accessibility. Bartın is very close to the important economic centres such as Istanbul and Ankara. Karabük and Zonguldak are the other big cities of almost equal importance in the region. The close proximity to the Black Sea can facilitate the transportation to the Black Sea countries. The city is connected well to the main economic centre by both highways and harbour. The airport (Saltukova) is under construction will attract new firms. Although the city of Bartın has very important cultural and historical sites, the quality of living environment is quite low. Its location besides the sea side can be attributed as a positive factor. The availability of cheap land was seen to boost the coverage of young businessmen. In the context of cluster specific conditions; the firms in the urban agricultural sector are small, generally family enterprises, and dispersed. It means that the cluster has sufficient critical mass. The cluster has some 'engines' such as local initiatives, but not efficient. According to TR-26 Bartın Regional Development Project, the pattern of UA cluster network remained dispersed, given mainly lack of leadership.

The qualitative analysis of the third question is shown in Table 5. The result of the survey shows that there are substantial positive environmental impacts of UA in Bartın. However, "agrochemicals in urban environment" was considered as negative (-). The environmental impact of UA in Bartın was accepted as medium (++). In terms of economic impacts, all interviewee mentioned that UA would affect economy of Bartın positively. On the contrary, the indicator of "competition for urban land use system" was evaluated negatively (-). The final economic impact was medium (+-). The results of analysis indicated that there were important positive social impacts of UA. However, activities such as animal husbandry were considered negatively to the city image. Therefore, the final result of social impact of UA in Bartın was taken as medium (+-).

Table 3. Analysis of the question of "Are UA activities organized as a cluster in Bartın?"

Indicators of Theory	Government	KI	Other Org.	Firms	UF	Result ¹
Primary Data						
Growth Cluster						
General conditions	+-	+-	+-	+-	+-	+-
Economic conditions	+-	+-	+-	-	-	
Spatial conditions	+-	+	+	+-	+-	
Cultural conditions	+-	+-	+-	+-	+-	
Organising capacity	+-	-	+-	+-	-	+-
Vision & strategy	+	+	+	+-	/	
Quality of public & private network	+-	-	-	+	-	
Level of societal support	+-	-	+	+	+-	
Level of political support	+-	-	+-	+-	-	
Presence of leadership	-	-	+	/	-	
Cluster specific conditions	+	-	+-	+-	+-	+-
Development level: critical mass	+	-	+-	+	+-	
Quality of cluster actors	+	-	+-	+-	+-	
Presence of engines	+	-	+-	+-	+-	
Degree of strategic interactions amongst actors	+-	-	-	+-	-	
Level of new firm creation	+	+-	+-	+	+	
Total						+-

(Scoring: -weak, not enough, +- medium, +strong, enough. • data can not be quantified, / question is not dedicated to that target group)

¹The result of the basic indicators of growth cluster theory

Table 4. Analysis of the question of "To what extent the agriculture cluster, which is in the TR-26 Bartın Regional Development Project can be implemented in Bartın?"

Indicators of Theory	Government	KI	Other Org.	Firms	Result ¹
Primary Data					
Growth Cluster					
General conditions	+-	+-	+-	+-	+-
Economic conditions	+-	+-	+-	-	
Spatial conditions	+-	+	+	+-	
Cultural conditions	+-	+-	+-	+-	
Organising capacity	+-	-	-	-	-
Vision & strategy	+	+	+-	+-	
Quality of Public & Private network	-	-	-	-	
Level of societal support	-	-	-	-	
Level of political support	+-	-	-	-	
Presence of Leadership	-	-	-	-	
Cluster specific conditions	+	-	+-	+-	+-
Development level: critical mass	+	-	+-	+	
Quality of cluster actors	+	-	+-	+-	
Presence of engines	+	-	+-	+-	
Degree of strategic interactions amongst actors	+-	-	-	+-	
Level of new firm creation	+	+-	+-	+	
Total					+-

(Scoring: -weak, not enough, +- medium, +strong, enough. • data can not be quantified, / question is not dedicated to target group)

¹The result of the basic indicators of growth cluster theory

Table 5. Analysis of question of "What are the physical, societal and economic impacts of UA in Bartın?"

Indicators of Theory	Government	KI	Other Org.	Firms	UF	
Primary Data						
Urban Agriculture						Result ¹
Physical/environmental impacts	+-	+-	+-	+	+	+-
Relationships between UA and RA, ULM, USS, UFS, SUD	+	+	+-	+	+	
Synergy: health aspect in context of greening	+	+	+	+	+	
Agrochemicals in urban environment	-	-	-	+-	+	
Economic impacts	+-	+-	+-	+-	+-	+-
Access to inputs and markets and amenity	+	+	+	+	+-	
Employment, work for women	+	+	+	+	+	
Less poverty	+	+	+	+	+-	
More enterprises	+	+	+-	+	+	
Stronger economic base	+	+	+-	+-	+-	
Decreasing migration	+	+-	+-	+-	+-	
Competition from urban land use systems	-	-	-	-	-	
Marketing system	+-	+	+-	+	+-	
Farming practices	+	+-	+-	+	+	
Social impacts	+-	+-	+-	+-	+	+-
Meeting human needs for green spaces	+-	-	+-	+	+	
Negative perceptions of (peri-)urban farming	-	-	-	-	-	
Community solidarity	+	+	+-	+-	+-	
Improved nutrition and food security	+	+	+	+	+	
Cleaner environment	+	+-	+-	+	+	
Total						+-

(Scoring: - weak, not enough, +- medium, +strong, enough. ■ data can not be quantified, / question is not dedicated to that target group)

¹The result of the basic indicators of growth cluster theory

Discussion

UA sector in Bartın has significant opportunities such as local economic development, providing healthy green and open spaces, increasing in human health and well-being benefits and improving quality of life. Land availability, presence of Sustainable Plan of Bartın (Özcan 2001), growing partnerships and human resources are main strengths to contribute to the effectiveness of UA in Bartın. Moreover, UA sector has several weaknesses and threats which are needed improvement as follows: unwillingness of UA, lack of policy, lack of education, lack of effective leadership and weak strategic network.

The traditional structure of Bartın and the increasing awareness towards UA support this development, and offer wide range of new opportunities. In this scope, UA sector has an important potential for economic development of the city.

UA provides alternative industry to the city economy. The livestock of the city can be supplied by the products of the UA such as daily food, vegetables, milk and fish. The processing of the agricultural products, marketing activities serve considerably to economic output for the city economy in general. However there are obstacles for achieving UA. The pollution caused by UA is a serious problem. These environmental problems could be challenged with delivering good guidance and assistance as well as controlling the production process and training the farmers.

On the other hand, it is possible to obtain environmental gains with the presence of UA. Farming areas in urban centre reduce traffic volume and lessen increased level of air pollution. UA can also prevent soil erosion and rebuilt urban forest. Wide plantation areas create positive impacts to the urban microclimate. Organic agriculture lessens the waste pollution to the city water resources. And finally, UA provides income for poor farmers and creates jobs (Smit et al. 1996, UNDP 1996).

The educational institutions can play important role to promote the UA cluster. The collaboration of the different educational units, sharing facilities and combining marketing efforts can thus support positively. This might help to offer better opportunities for students to specialise and may put Bartın firmly on the map as the location for UA education. The public knowledge infrastructure –university, higher education– could bring in its experience in knowledge transfer. It was detected very poor coordination between public and private institutes and needs better coordination. Public sector has to undertake a pivotal role between educational units. University and Higher Education Institute should acknowledge the firms in the city as partners for research and cooperation.

The application of UA is highly recommended especially for the vulnerable groups such as urban poor. To achieve full potentials of UA sector in Bartın, planned interventions are needed (UNDP 1996, Varquez and Anderson 2005):

- To increase public knowledge and support,
- To build political will,
- To improve organization and communication among farmers,
- To develop a policy framework and build institutional capacity,
- To expand research and training,
- To improve access to resources, inputs and services,
- To maximize health, nutrition and food security,
- To achieve sound base environmental and urban management.

For the development of UA the city level is one of the most important levels of the actions. Depending on the city level actions, managing the positive benefits created by UA in the form of Growth Cluster can promote city's economic life in future. Without question this development requires policy and programmes and needs regulations:

- Initiating a city-wide study and discussion programme to formulate and adopt policies for the regulation and/ or promotion of UA.
- Modifying existing rules and legislations in health and land use.
- Recognizing agriculture as an urban industry.
- Creating an institutional system to promote and regulate UA.
- Generating a city-level food system plan, including both rural and urban supply sources.
- Establishing a programme and plan for achieving environmental sustainability utilizing UA.

- Preparing a land use plan which provides agricultural parcels and evaluate the proximity of water and market advantages.
- Providing support for disadvantaged citizen group: especially for women.
- Creating market-places for urban farmers.
- Providing a training programme in urban farming about new agricultural methods.

In this study, it is proposed "Bartın City Initiative" City-level actions for growth cluster of UA. The members of this initiative are composed of the local businessmen, public administrators, members of the civil initiatives, local selected representatives, scientists so on. The mutual debates and feedbacks among different stakeholders and local actors can result in a democratic platform for promoting policies and strategies for the future development of UA in Bartın. The initiative acts as a driving force for the new developments of the initiatives for UA sector. The proposed model of UA activities for Bartın City Initiative is shown in Figure 3.

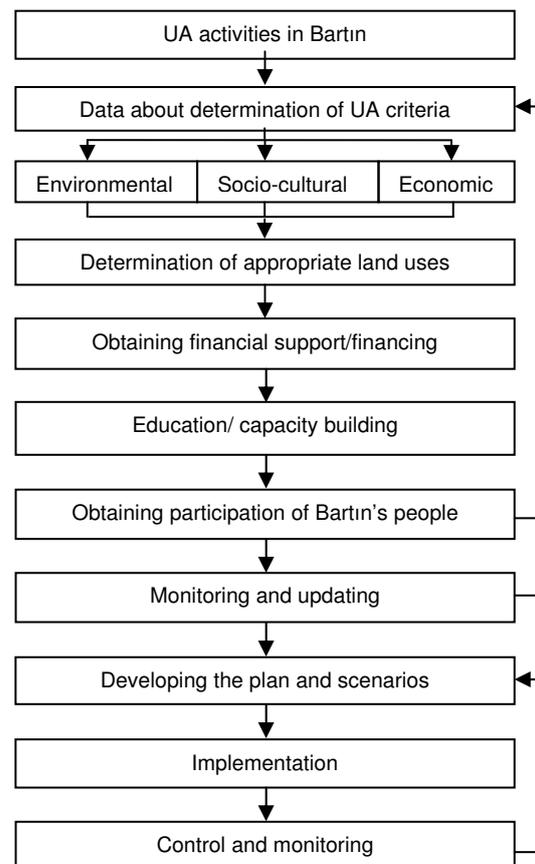


Figure 3. The Model of UA Activities for Bartın City

Conclusion

UA activities in Bartın are based on cluster characteristics and have to be promoting for future development of the city.

In the developing economies, such as Bartın, UA can be considered as the important agricultural industry. UA can create jobs especially for small farmers and to some extent makes contribution to small agri-business. Moreover UA provides social equity with job opportunity to the disadvantages population such as women. Bartın has advantages for the competition in the market because of the presence of some crops; strawberry is one of them. The positional advantages to the important centres decreases the transportation cost. The period for transportation is short because of the proximity and time.

For further research, the proposed model needs to be developed in more detailed way. University can be involved in looking at the impacts of UA activities on environment in close collaboration with The General Directorate of Environment and Forestry.

This research proved that the UA is a cluster in Bartın and holds promises for future growth. Some improvements, however, should be implemented. Effective organisations between the enterprises, better educational facilities, new connections with the international markets, improvement of the transportation infrastructure are needed.

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