



UNISCI Discussion Papers

PROMOTING SUSTAINABLE HUMAN SETTLEMENTS AND ECO-CITY PLANNING APPROACH: SOUTHEASTERN ANATOLIA REGION AND SOUTHEASTERN ANATOLIA PROJECT (GAP) IN TURKEY AS A CASE STUDY

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In the recent years, there have been many opportunities flourishing through the development of Turkey. One of these is unvalued rich agricultural and hydro-sources in the Southeastern Anatolia Region. The Southeastern Anatolia Project (GAP), one of the most important projects to develop the remarkable natural resources of the world, is considered as a chance to make use of rich water and agricultural resources of the Southeastern Anatolia Region.

In the recent years, the concept of promoting sustainable human settlements and eco-city planning approach has been included into the GAP Project. And, by applying these concepts in real projects caused remarkable results through development of the region.

The aim of this study is analyze the concepts of promoting sustainable human settlements and eco-city planning approach in the GAP Project that has been still processed.

In the first section, the region of Southeastern Anatolia and the GAP Project will be introduced briefly. In the second section, the stages of GAP Project and the project existing will be analyzed. In the third section, the projects and sub-projects used for promoting sustainable human settlements will be introduced.

In the last and fourth section, a series of policies and strategies for providing the process of settlements which is optimal and harmonizes with eco-system will be given.

1. Introduction

In the 21st century, green space areas are severely depressed by urban development in the world. Plan control measures of preservation of natural environment, diversity of organisms

¹ Las opiniones expresadas en estos artículos son propias de sus autores. Estos artículos no reflejan necesariamente la opinión de UNISCI. The views expressed in these articles are those of the authors. These articles do not necessarily reflect the views of UNISCI.



become more and more important in recent years. The twenty-one century is an eye for human looking for ways to sustainable development of the society and nature (ICLEI, 2000).

With the development of the society and economy, urbanization is the inexorable trend for human society. It symbolizes civilization, prosperity, and sustainable and healthy development of human. At present there are 6 billion populations in the earth, the urban population has been up to 3 billion, accounts for 50 per cent of total population. Although urbanization brings progresses, it also initiates the plunder and the destruction of natural resources. Since the early of 1960s, at first in cities we must face many problems such as explosion of population, energy crisis, shortage of resources, environment deterioration (OECD, 1996).

Cities in most developed countries began to pay attention to ecologically sound urban development in the 1960s, their way is “pollution first and treatment to follow”. Cities should be developed with environmental consciousness. However, Turkey has yet to set eco-cities as the new direction for urban development. Existing work in both theory and practice is weak in Turkey. Foreign experiences show that Turkey should develop ecologically sound cities at the same time as the urban economy grows. Land is not only one of the important components of cities but also the environment of cities, therefore, it is possible that ecologically sound urban development can be achieved through the mechanism of urban land allocation (ICLEI, 1996).

1.1. Sustainable cities and eco-cities

A sustainable city is a city whose citizens are able to have their own needs met without endangering the living conditions of other people and the well-being of the natural world, at present or in the future. In the first instance the emphasis of the term is on people and their needs for long-term survival, the relationship between the present generation and the future generations. Human needs include good air quality and water quality, healthy food and good housing. They also encompass quality education, a vibrant culture, good health care, satisfying employment or occupation, and the sharing of wealth. As well as factors such as safety in public places, supportive relationships, equal opportunities and freedom of expression, and meeting the special needs of the young, the old or the disabled.

Same as sustainable cities, the idea of ecocity is also one of the solutions to environmental problems. “Ecocity” is not a novel term, considerable attention have been paid to ecocities and a lot of efforts have been put on attaining development towards ecocities in the developed world (Roseland, 1997).

2. A brief of Southeastern Anatolia Region and GAP Project

The Southeastern Anatolia Project (GAP) is a multi-sector and integrated regional development effort approached in the context of sustainable development. Its basic objectives include the improvement of living standards and income levels of people so as to eliminate regional development disparities and contributing to such national goals as social stability and economic growth by enhancing productivity and employment opportunities in the rural sector. The project area covers in the basins of the Euphrates and Tigris and in Upper Mesopotamia.



The GAP Project had originally been planned in the 70s consisting of projects for irrigation and hydraulic energy production on the Euphrates and Tigris, but transformed into a multi-sector social and economic development program for the region in the 80s.

The development program encompasses such sectors as irrigation, hydraulic energy, agriculture, rural and urban infrastructure, forestry, education and health. The water resources development component of the program envisages the construction of 22 dams and 19 hydraulic power plants and irrigation of 1.7 million hectares of land. For this project, already spent 16 billion dollars until now and in total it is 32 billion dollars. The total installed capacity of power plants is 7476 MW and projected annual energy production reaches 27 billion kWh (GAP Administration, 2003).

The project rests upon the philosophy sustainable human development, which aims to create an environment in which future generations can benefit and develop. The basic strategies of the project include fairness in development, participation, environmental protection, employment generation, spatial planning and infrastructure development (GAP Administration, 1996).

The agricultural development objectives of the GAP Project include the following: Raising levels of income in the rural sector; providing inputs for industrial enterprises in the region; creating employment opportunities so as to minimize out-migration and encouraging export oriented production in the region (Acma 2003).

3. Stages of the GAP project

The GAP had originally started as an energy production and irrigation project seeking to utilize the rich land and water resources of the region. It was later converted into an integrated regional development project upon the completion of the GAP Master Plan in 1989. The Master Plan is an overall guide for the course that regional development will follow and for plans, programs and projects to be developed on more specific terms. The basic development scenario adopted by the Master Plan is to transform the region as agriculture based industrial center (GAP Administration, 1991).

At present, the GAP Project is a human centered and integrated regional development project carried out along with the principles of sustainable human development. The development envisaged under the GAP Project has the goal of creating opportunities for the people of the region fully materialize their preferences and economic potentials. Other than dams, hydroelectric plants and irrigation schemes over the rivers of Euphrates and Tigris, the concept of "Southeastern Anatolia Project" is conceived as a regional development drive aiming the multi-faceted and sustainable socio-economic development of the Region on the basis of a multi-sectoral and integrated approach which covers such diverse areas as urban, rural and agricultural infrastructure, transportation, industry, education, health, housing, tourism and investments in many other fields (Acma, 2001).

The State Hydraulic Works (DSI) is engaged in the program for developing land and water resources in the region. The program consists of two parts each of them covering projects related to the basins of either the Euphrates or the Tigris. The program envisages the construction of 22 dams, 19 hydraulic power plants and an irrigation system that will bring 1.7 million hectares of land under irrigation.



Upon the completion of the project, 29 per cent of the total water potential of Turkey will be managed through the facilities on the Euphrates and the Tigris, which together flow more than 52.9 billion cubic meters of water a year. The planned irrigation area corresponds to 20 % of total irrigable land in Turkey and annual energy production to 22 % of total electric energy potential in Turkey (GAP Administration, 1993/a).

The GAP Region extends over an area of 75,000 km² and a wide range of crops each requiring different climatic conditions are raised in this area including olive, pistachio, hazelnut and persimmon. The region has 3.2 million hectares of land fit for crop culture. Forested areas make up 1.3 million hectares while 2.3 million hectares of land consists of pastures and ranges (GAP Administration, 1993/b).

The GAP focuses on efficient utilization of these natural resources. For the first time in Turkey the management, operation and maintenance of new irrigation systems have been directly transferred to Irrigation Districts, which are organizations formed by local farmers. In 1998, the region accounted for 41.6 per cent of the total cotton output of Turkey. Favorable climatic conditions in the region make it possible to reap two crops a year. The region is also quite fit for animal husbandry. In this context, research projects led by the GAP Administration focus on genetic improvement and development of advanced breeding techniques.

According to studies made, upon the completion of irrigation projects in GAP, the area brought under irrigation will be equal in size to the total area so far brought under irrigation by the State. This will naturally bring along significant changes in agricultural output and crop design. Such irrigation-led crops like soybean, groundnut, corn, sunflower and fodder crops will be the basis of flourishing agro-industries (Acma 2003).

Gradual implementation of the GAP Project, which envisages irrigation on 1.7 million hectares of land and creation of new water reservoirs will significantly alter the land use and water regime in the region. Also in this process, population movements, rapid urbanization and industrialization will bring along new transformations in both rural and urban areas. Other than advantages to be reaped after irrigation, there are some other points and problems to be considered: Problems emerging as a result of excessive and uninformed practices of irrigation; effects of climate change on crop farming and plant cover in the region; corresponding changes in the flora and fauna; erosion and adverse effects of uncontrolled growth on natural, historical and cultural properties. All these make it necessary to reconsider the project with a view to the dimensions of culture and the environment (Acma, 2003).

In terms of natural resources, Southeastern Anatolia is one of the most unique areas in Turkey. It is the border gate through which species peculiar to steppe and semi-desert areas enter Turkey and the region rooms in two different living environments, which are not found in other regions of the country. These are:

- i) Banks of the Euphrates and the Tigris, their flood plains and major tributaries of these two rivers,
- ii) Steppe and semi-desert areas especially in the southern parts of the region.

For this dual (wetland and desert) nature it is possible to observe many endemic species of plants, animals, birds and fish in the region. The project that targets agricultural and economic change and thus social transformation through water resources management is transforming



steppes into irrigated farmlands and river beds into dam lakes. While ensuring increases in agricultural output, this transformation, however, may lead to the disappearance of natural living environments of many waterborne and steppe species. Considering this risk, the GAP Administration has since 2001 been conducting the “Project for Exploring Biological Diversity in the Region”. The “Wild Life Project” was launched in 2002 in the context of efforts for rehabilitation (GAP Administration, 2003).

4. Changes of the socio-economic structure in the region by the GAP project

The Region is also named as the “Fertile Crescent” or “Upper Mesopotamia”, and known to be the cradle of civilization in human history. Throughout history, the Region has served as a bridge ensuring passage from Anatolia to Mesopotamia. The Tigris and the Euphrates, two important rivers of Turkey flow through the Region. Both originating from the Eastern Anatolia, these two rivers reach sea in the Persian Gulf. Southeastern Anatolia receives less precipitation compared to the other regions of the country. Hence the idea was to utilize the rich water potential of these two rivers for irrigation and energy production purposes, and to regulate the otherwise irregular flow of both rivers (Unver, 1999).

The integrated project covers not only multi-purpose dam and irrigation schemes but also investments in such development related areas as agriculture, energy, transportation, telecommunication, health, education and urban and rural infrastructure building. The basic development scenario of the GAP Master Plan is to transform the region into a “base” for agro-industrial products. In more concrete terms, the GAP Project envisages the following:

- irrigation of 1.7 million hectares of land,
- production of 27 billions kWh energy,
- 106 percent increase in Per capita income, and
- generation of employment for 3,8 million people (GAP Master Plan, 2002).

5. Promoting sustainable human settlements by projects

The projects and sub-projects used for promoting sustainable human settlements within the GAP Project are follows:

5.1. Eco-City planning approach for Adiyaman

To identify environmental effects in the province of Adiyaman; to integrate the protection of ecological balances, creation of an environment where coming generations can fulfill their needs and the urban planning principles of Agenda 21 to the planning system.

The project covers the city of Adiyaman and its surroundings, particularly the Ataturk Dam Lake that is affected by urban development taking place in Adiyaman. Specific points of



emphasis in the project include carrying capacity, protection-utilization balance and the concepts of Agenda 21.

Carried out as a part of GAP Sustainable Development Program, the project was contracted by UNDP (United Nations Development Program). The project is carried out by IULA-EMME (International Union of Local Authorities, Section for the Eastern Mediterranean and Middle East). Within the context of the project, meetings with local administration and sociological survey studies were carried out. The project is planned to be completed within 2002. The Final Report is now being revised by the implementing agency (GAP Administration, 2003).

5.2. Resettlement, employment and economic investments of people affected by Birecik Dam: A project for planning and implementation

The Consortium "Birecik A.S." took over the construction of Birecik Dam on a BOT (build-operate-transfer) model. The GAP RDA launched the project "Resettlement, Employment and Economic Investments of People Affected by Birecik Dam" to help the people concerned resettle and facilitate their adaptation to their new environments in social, economic and cultural terms. As such, it is one of the 29 projects covered by the umbrella program "Sustainable Development in the GAP Region" supported by the UNDP. . The project was given start in August 1997 and finished at the end of 2000.

Impoundment in the dam started in December 1999 and this process affected, fully or partially, some settlements administratively attached to the districts of Nizip, Yavuzeli and Araban (Gaziantep province); Birecik, Halfeti and Bozova (Sanliurfa); and Central and Besni districts of Adiyaman province. While 9 village settlements were fully affected, impoundment also had its partial effects in 3 more villages and a part of the town of Halfeti. The dam also affected farmlands of 31 more villages while leaving the settlements intact. This means that altogether 44 settlements were affected by the dam.

The total number of people affected by this process was 30,003 (according to the 1997 Census) and 6,500 people from 850 households were subject to resettlement.

The principles of sustainability and participation were observed closely in the process of supporting socio-economic adaptation and resettlement. Furthermore, the people concerned and other relevant parties were kept informed about the process at all stages of the project and their participation to decision-making was sought. There was an information and consulting office functioning in Halfeti for this purpose.

To attain previously set objectives, activities were carried out under three separate but closely interlinked components :

- Social component relating to social life, organization and management,
- Economic component relating to employment and investments,
- Spatial component relating to resettlement (GAP Administration, 2003).



5.3. Halfeti District Center

The maximum water code of the dam is 385 meters. After impoundment, Basbostan neighborhood of the district center of Halfeti completely remained under water while Cekem neighborhood was largely affected. The neighborhoods of Simaliye and Rustiye were affected partly by the waters of the dam.

The project considered alternative settlements for those parts of Halfeti center affected by the dam. Finally Karaotlak location at a distance 8 km to the district center was preferred for having 2,790 decares of available land.

With the technical and logistics support of GAP-RDA, the TRGM took the basic map of the new area as the basis of the development plan. This development plan was completed and approved by the relevant authority (Council of Ministers) on 29 September 1998 and then transferred to the Mass Housing Administration (TOKI) for the construction of houses. Upon the intervention of the Governorate of Sanliurfa to take over construction, developments took another course and finally 220 dwellings (each 100 m², 3 rooms and a saloon), 1 basic education school, a three-story hospital building and 30 shops of varying sizes were constructed and delivered to their residents and users as of the year 2001.

The Municipal Council of Halfeti had decided on 14 July 1998 to include the new settlement area in Karaotlak within its municipal boundaries. This decision was approved on 20 November 1998 by the Ministry of Public Works and Settlement.

A team composed of specialists conducted observations in the area on 16 April 1998 to check the present status of the district center of Halfeti partly inundated and to see whether surrounding areas were fit for settlement or not. Upon the report prepared by this team, the GAP Administration completed necessary geo-technical assessments specified in the report under the supervision of an academic from the METU and with the technical support of the EIEI (Administration for Electricity Surveys) and a team composed of the representatives of the parties concerned conducted another survey-observation in the area on 23-24 September 1998. This observation led to some protocols signed by relevant parties and corresponding works were undertaken by the EIEI in October (GAP Administration, 2002).

5.4. Participatory urban rehabilitation project in Mardin

To protect historical and cultural properties in Mardin, particularly its architectural heritage and urban fabric and to stress the importance of these as valuable inputs for recent development of the city and for future generations.

The project was launched upon a protocol signed by the GAP Administration, UNDP and Istanbul Technical University in December 2000. The Swiss government contributed a grant of 350,000US\$ to the project.

The project consists of socio-cultural researches, development of a rehabilitation implementation strategy and guide for the city center and realization of an implementation project in a pilot location, in Sipahiler Bazaar located at the old trade center of the city. This pilot work will lay the ground for the implementation of a series of other similar projects in other cities of the region and serve as a model.



The final reports of the Social Impact Assessment survey carried out within the first three months of the project were discussed in the summer and fall of 2001 at different platforms including the Mardin City Council. The study was also used as an important document in meetings held between the World Bank, Ministry of Culture and UNDP on "Investment Program to Protect Mardin".

The file and texts prepared by the Ministry of Culture for the inclusion of the city of Mardin in "World Cultural Heritage" were examined, further developed and enriched by updating and addition of new documents by the project manager and his consultants, and GAP - RDA. The outcome report was presented to the expert of ICOMOS (International Council on Monuments and Sites) who was in Mardin for a field research between July 17 and 19, 2002.

GAP Administration and project management are following the works which is initiated by Ministry of Culture for the candidacy of Mardin and help for the demand of document preparation.

The documentation and analysis studies on the urban architecture of Mardin are complete and the archive activities are still ongoing.

All the photographs gathered together as a part of the project has been archived.

The restoration project of a pilot site, Sipahiler Bazaar as a model for implementation of restoration so as to be promoted later on for tourism purposes has been completed, and the lighting up facilities are still under construction.

The studies of the preparation of the city guide "Step by Step Mardin" is ongoing.

Critical assessment studies on the existing 1/5000 and 1/1000 scale Preservation Plan for the city of Mardin was completed (Yasinok, 2000).

5.5. The Project for Support to the Re-Settlement, Employment and Socio-Economic Development of Population Affected by Ilisu Dam

This is a special project designed to support the people of rural settlements and the district centre of Hasankeyf which are both to be affected by the programmed Ilisu Dam construction on the Tigris river. The project aims to help these people in terms of re-settlement, employment and economic, social and cultural adaptation to a new life. It is one of the 29 projects supported by the United Nations Development Programme (UNDP). The project will draw on a similar one which is the Project for the "Re-settlement, Employment and Economic Investments of People Affected by Birecik Dam", and similar activities will be realized. The full title of the project is the "Project of Support for the Re-settlement, Employment and Socio-economic Development of Population Affected by Ilisu Dam." The project will also focus on the salvation of historical properties located in Hasankeyf and its surrounding area. A work to be conducted parallel to the project will save such moveable historical remains somewhere else before being flooded. For those which can not be moved, a detailed documentation work is envisaged (i.e. films, relieves, etc.), (GAP Administration and UNDP, 1997).



6. Ongoing projects

6.1. GAP Biodiversity Research Project

To conduct an assessment in relation to biological diversity in the GAP region, identify priority areas in this respect and analyze the impact of the project on these areas; to make proposals for sustainable utilization of natural resources.

The region of Southeastern Anatolia has its uniqueness in terms of its natural endowments. It is the border zone through which species peculiar to steppe and semi-desert regions enter Turkey and thus it has two living environments where species not found in other parts of the country exist. These environments are:

i) The courses of the rivers Euphrates and Tigris, their flooding plains and main tributaries.

ii) Steppe and semi-desert areas in the southern part of the region.

These two natural environments (wetlands and semi-desert areas) room in many endemic species of plants, birds, fish and other animals. An assessment of this rich biological diversity in the region will contribute substantially to the literature on the environment and also give insight as to the possible impacts of the GAP and therefore appropriate measures to be taken so as to preserve this biological diversity.

The project is implemented as a part of GAP Sustainable Development Program, by Turkish Society for the Protection of Nature (DKHD) in coordination with GAP-RDA with the financial support of UNDP. The project started in April 2001. The first eighteen months of work has already been completed and during this period, a literature review and fieldwork have been carried out under the following titles: birds, large mammals, reptiles and botany. The project method uses fieldwork accompanied by satellite images and aims at obtaining the physical (on map) distribution of relevant data.

A database will be created as a result of the project. This database will be updated regularly according to the needs of the Region and will be open to all those interested parties. Two briefing meetings have been given so far (one given to the representatives of related state ministries and institutions, and the other to the representatives of foreign mission and related international organizations in Turkey) except than those briefing and training meetings carried out regularly in the region during field work. Three Progress Reports have been prepared so far and shared with interested parties (Ozbilen, 2001).

6.2. Studies on the Present and Prospective Climatic Features of the GAP Region

To analyze changes in climate and hydrology, on the basis of regional climate models, caused by the projects on the development of water resources; to develop models on the present and future climatic conditions in the region; and to assess the possible effects of climate change on water resources.

The project envisages the following for the GAP region:



- Detailed identification of present climatic conditions and prediction of changes in climate likely to occur in the future;
- Assessment of negative or positive effects that these changes may have on the hydrology, water resources and vegetation in the region; and introduction of relevant measures against negative effects;
- Search for ways of making maximum use of positive effects; informing all sectors, agriculture in the first place, on possible future climatic conditions; and contributing to the development of pertinent strategies in this regard;
- Regular monitoring of climatic parameters, identification of an implementation plan and corresponding policies; and establishment of a built-in system for monitoring-evaluation.

The project is carried out by the Faculty of Agriculture, Ankara University and it will be realized in three stages. The first stage covering such works as the analysis of climatic data and forming a database for water resources were completed in July 2002. The remaining stage will be completed within 2002 (GAP Administration, 2003).

6.3. Wildlife Project for the GAP Region

To protect biological diversity in the region by creating new living environments for settled and migratory species, including those under the threat of extinction, which live particularly along the course of the Euphrates and around other rivers and dam lakes in the GAP Region.

The Southeastern Anatolia Project is one of the major projects in the world that aim change The Project (GAP) is designed to bring along social change through agricultural development based on the management of water resources. The project has already transformed water thirsty tracts of land into irrigated areas and river courses to dam lakes. However, while enhancing agricultural development in the region, the project may cause the disappearance of natural living environments of many species. The present project is thus a "rehabilitation/regeneration" project targeting the minimization of negative effects on the natural system. What is desired is to regain natural systems otherwise disrupted by human activities and to introduce a model that can be adopted elsewhere in the country and in the world.

The project is included in the investment program for 2002 and its work definition has been prepared. Two field trips have been organized so far-one in May 2002 and the other October 2002-with the aim of determination of the project area. The work to determine the project area continues in cooperation with related ministries (GAP Administration 2003).

6.4. Environmental Education Project (Midyat and Nusaybin)

The project aims to increase the environmental health awareness and environmental sensitivity of children at the primary school level (age group 10-11) by implementing environmental education programs in Mardin-Midyat and Nusaybin.



There is a need for day-to-day information and sensitivity on various issues due to the rapid socio-economic transformation and environmental problems faced in the Southeastern Anatolia region. It is significant to find solutions to problems before the problems already occur, and awareness is an important key to prevent problems. Therefore, it is crucial for the young generation in the Region to grow up with environmental awareness so as to reduce the number of environmental problems today and in the future, and to create continuity in finding solutions to environmental problems.

Within this context, teachers in primary schools who will later on increase the level of environmental awareness in the students are given a training seminar on how to "share" nature with children. For the organization of these training seminars, GAP-RDA acts in close cooperation with Ministry of Education and its branches in the region, local administration, local institutions and NGOs who are experienced in environmental training.

Within the scope of the project, realized with the donation received from the Royal Embassy of the Netherlands, an environmental education training was given in Mardin-Midyat and Nusaybin, to 50 primary school teachers in each, in December 2002 in cooperation with WWF Turkey (World Wild Fund Turkey), experienced in environmental education. In addition to this, a more detailed environmental education pack has been revised according to the peculiarities of the region and distributed to participants. The project involves the voluntary implementation of this Environmental Education Guide by teachers during a whole school semester and gives their feedback. A second follow-up workshop and a field trip is planned to take place in April 2003.

The last and third workshop held in June 2003 with the invitees from local administration and other stakeholders where strategies for an extensive environmental education will be discussed (GAP Administration, 2003).

6.5. Social Component and Related Activities

These activities can be summarized in three categories :

1. Research and surveys to assess the socio-economic structure of the region and attitudes and expectations of the people concerned: There was a questionnaire applied to the inhabitants of 13 settlement units directly affected by dam construction and impoundment. Information was gathered through face-to-face interviews with 1,307 households and in-depth interviews were conducted with various groups.
2. There were community meetings in individual settlements in order to inform people about the construction and expropriation processes, their rights deriving from these processes, alternatives for settlement and other activities; and to solicit their opinion on social, economic and spatial planning. All draft plans were presented to the discussion of people and their final shape was given under the light of these opinions and suggestions.
3. There were various training and support programs to facilitate the social and cultural adaptation of people to their new environments after resettlement. A Multi-Purpose Community Center (CATOM) had been established in Halfeti at a very early stage to draw inputs to the planning and implementation of the project. The following are some training courses-activities carried out for this purpose:



- Driving
- Beekeeping
- Food processing
- Photography
- Chess
- Saz (a musical instrument) playing
- Painting
- Demonstrative mushroom culture
- Tiling
- English
- Cutting-sewing
- Hair dressing.

The CATOM that used to be at the center of Halfeti moved to a new place after resettlement and is presently continuing its activities in its new place (Ozbilen, 2001).

6.6. Economic Components and Related Activities

The economic component of the project is related mainly to funds paid out as compensation and the aim is to channel these funds to productive investments. Other activities in this component include the introduction of new crop types and non-agricultural sources of income to compensate for what has been lost as a result of dam construction and impoundment, corresponding organizations and infrastructure. Training, orientation and consulting services have been programmed for this purpose. For example, the GIDEM (GAP Entrepreneur Support and Guidance Centers) extended consulting services to people who sought lucrative fields of investment.

Training, demonstration and support services also focused on the introduction of new income generating activities. One example is the promotion of beekeeping in areas affected by Birecik Dam. In this context there is cooperation with the Development Foundation of Turkey (TKV) under a protocol. This initiative includes support in input provision, marketing, training and technical information.

Additional financial support from the FAO was used to demonstrate new agricultural practices in Meteler village (Birecik) and 2 greenhouses were established in the village. Another new initiative was related to turkey farming where 100 turkeys were provided to 4 farmers in the village of Asagicardak (Nizip).

The working group of the consulting firm developed a scale 1: 25,000 sub-regional development plan, including the details of proposed investments in each settlement unit. The



FAO gave support to the organization of two workshops (13 - 15 July 1998 and 4 - 7 May 1999) to discuss the feasibility and other aspects of these proposals. After discussions participated by the representatives of relevant agencies, local governments, potential entrepreneurs, specialists and local people, demonstrations were made in such specific lines as turkey farming, greenhouse cucumber culture, fish hatching, mushroom culture, etc. (GAP Administration, 2003).

6.7. Spatial Component and Related Activities

In this component, the first principle was to identify new settlement areas in the same region in line with the preferences of the people. Then, with the participation of people, new places of settlement were determined. Following this, the basic maps of these identified places were taken in cooperation with the Directorate General of Agricultural Reform (TRGM) and Directorate General of Rural Services (KHGM), which was followed by parcel and development plans. Actual settlement in these places took place, depending upon the preferences of the people concerned, through technical and/or credit support to those constructing their houses or settlement by the means of the State.

A sub-regional development plan of scale 1: 25,000 was developed by considering all relevant natural, social, environmental and spatial data and infrastructure in the area and this plan was approved on 31 May 1999. The plan covers all settlement units affected by Birecik Dam and reflects decisions relating to urban and rural land use patterns for a term extending to 2017. A note added to the plan includes a list showing corresponding organizations in charge and investments needed for each decision. Prior to the official approval of the plan, the document was presented to representatives from all related organizations and agencies and their opinions and criticisms were taken to give the plan its final shape. The KHGM and TRGM both used the provisions of the plan relating to resettlement as inputs to their work programs for 1999.

The following are some details regarding the process of resettlement :

- Meteler village : Completely inundated. A land of 57.5 decares at higher codes was identified as the new settlement area of the village. The Regional Directorate of Agricultural Reform planned for 46 building parcels in the area and villagers constructed their houses on these parcels.
- Keskince village : Here again an area at higher codes was identified as the new settlement place and 125 parcels were allocated to new settlers. The people constructed their houses on these parcels with the credit and technical support of the KHGM. Relevant governmental agencies constructed necessary infrastructure.
- Dorucak village : 33 families from the village applied for transfer including 30 who also applied for credit. 18 of these families chose to be resettled by the State and these families resettled with the help of the KHGM. For others who wanted a transfer as a community, a new place at higher codes was identified and 82 housing parcels. The people concerned then constructed their houses on these parcels with the help of the KHGM.



- Savasan village : 45 families applied to the KHGM for transfer as a community. 59 parcels were produced for these families again in an area at higher codes. Families constructed their houses organization while infrastructure works were undertaken by relevant governmental organizations.
- Gozeli village : 95 families applied for transfer as a community and all requested credit. An area extending over 200 decares was identified and 122 housing parcels (842 m²) were allocated. Here again, people constructed their houses and infrastructure works were completed by the government.
- Kavunlu-Belkis village : 24 families applied for resettlement by the State. Consequently, necessary plans were made by the KHGM; houses were constructed and distributed to families. There were 20 families preferring to construct their houses with the credit support of the state. These families were allocated parcels and they constructed their houses on these parcels. According to the legislation in force, compensations for those who want to be resettled by the state have to be kept in a resettlement fund. Thus many people in the target group don't go for this option and choose to settle in an urban or rural area by their own initiatives. Information relating to those resettling some other place in the same area has already been given above. There were also 116 families applying to the government for urban settlement. These people were allocated a land of 86 decares in Gaziantep (city). (GAP Administration, 1999).

6.8. Pollution Control in the Dam Lake and Tributary Streams

The Birecik dam had originally been planned only for irrigation and power generation purposes. But later, it was considered that drinking and use water needs of the centers of Gaziantep and Nizip could be provided by this reservoir. This radical change had serious implications on the activities of the GAP Administration in designing alternative places of settlement and the resettlement process thus fell also within the scope of the Regulations on the Control of Water issued pursuant to the Law No. 2872 on the Environment.

To ensure smooth progress in project activities, there was need to conciliate the provisions of the Regulations stated above and original data from the project area. Consequently a joint observation-survey work was carried out in the area from 20 to 24 April 1998 with the participation of specialists from relevant parties. Data obtained in field survey-observation was evaluated in a series of meetings held with the Directorate General of Environmental Protection and taken as a base in the scale 1: 25,000 sub-regional development plan. (GAP Administration, 2002).

6.9. Institutional Framework and Coordination

The GAP Administration had to perform rather heavy coordination functions in relation to the project mainly for the diversity of parties involved in it. Considering this, it was decided to create a "Higher Commission for Resettlement in Birecik Dam" upon the approval of the Prime Ministry. Secretarial works of this commission were undertaken by the GAP



Administration. The higher commission met 8 times to discuss issues relating to the project and its progress and took relevant decisions to solve emerging problems.

Apart from this higher commission, there was also a Project Monitoring Committee in the region and this regional committee made meetings to discuss various problems and suggestions. The committee also held wider meetings attended by the local representatives of governmental agencies including the Governorate of Sanliurfa, District Governors in the area, mayors, NGOs, village headmen and people affected by the dam lake (Ozbilen, 2001).

7. Policies and strategies for optimal human settlement and Ecocity approaches for the region

In the Southeastern Anatolia Region for providing optimal settlements and harmonizing them with eco-systems the following policies and strategies can be proposed;

The eco-city development should be four stages in the region:

- concept initiation and comprehensive planning,
- eco-scope planning and legislation,
- eco-engineering design and development,
- ecosystem monitoring and management (Chapin and Kaiser, 1995).

Eco-city development needs five motivations in the region:

- administrative authorizing,
- scientific supervision,
- industrial sponsoring,
- citizens' participation and
- medium motivation (Hamm and Muttagi, 1998).

Strategies for eco-cities in the region:

a) Planned and safe city

1. Protection of heritage sites, monuments, etc
2. Pedestrianization of commercial areas
3. Restriction of certain hazardous industries/ processes/ activities



4. Environmental management plans (incorporation of environment considerations in master plans, sectoral plans)

5. Proper traffic and transport systems

6. Training and capacity building in planning and development authority (Brewer, 1988).

b) Pollution-free city

1. Polluter pays (fines)

2. Clean fuel for vehicles

3. Battery operated and low emission vehicles in certain zones

4. Bicycle ways

5. Green rating of industries

c) Clean cities

1. Green belt scheme

2. Protection areas national parks, zoological / botanical gardens

3. Open spaces

4. Water body/ river front open spaces landscaping (Wackernagel and Rees, 1996).

d) Energy efficient city

1. Alternate energy sources (wind mills solar energy)

2. Piped gas supplies to the house holds

3. Preparation of environmental actions

4. Planned and safe city

5. Pollution free city

6. Clean city

7. Green city

8. Energy efficient city (WCED, 1987)



Inter-sectoral and institutional mechanisms in the region should be:

1. Central and state government
2. Central and state pollution boards
3. Environmental authorities
4. Urban development authorities
5. Transport authorities
6. Health authorities
7. Town and country planning boards
8. Forest department
9. District administration (Miguel, 1999).

Priority actions in the region should be:

1. Identification of responsibilities
2. Involvement of all stake holders, central state government, district administration, planning development authorities municipal corporation, industries, overseeing and coordination chief secretary
4. Resource conservation
5. Adoption of eco-friendly technologies
6. Budgetary requirements
7. Monitoring and surveillance mechanism (WWF and NEF, 1994).

Conclusion

The GAP Project, the most important development project of Turkey, is maintaining its plays in the agenda. The frictions going on around the region and the conditions chancing rapidly make the area and establishments more and more important.

Its seems possible that the sustainable development and eco-city approach, which has been added to the project recently, will change remarkably the establishment and development of the region.

The project going on different levels aim at the diversity and a healthier establishment human settlements.



The study pointed out that the GAP Project developing in a multi-dimensional and sustainable human settlements. In this stage, interrelations of the project completed and going on are getting crucial to harmonize the projects. Particularly, from the EU perspective the planning and funding of the projects in the regions are gaining a vital quality.

It will be possible to provide optimal human settlements and to settle eco-cities, if appropriate policies and strategies are developed for planning and timing of the projects.

In the last section of the study, a series of policies and strategies have been presented for the region. As, in order to be a area of investment and peace in the future, it depends on achieving sustainable human settlements, protecting environment and sustaining diversity.

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