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Burdens of 'Development' in Southeastern Turkey: Salinization and Sociocultural Disruption

Master's Thesis

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To those who make dreams come true…

Abstract

The Southeastern Anatolia Region of Turkey is where the two largest rivers, the Tigris and the Euphrates, and most of the arable land of the country are located. More than two decades ago, in order to utilize these resources, The Southeastern Anatolia Project (Turkish acronym GAP) was proposed as an irrigation and energy production project. Today, after going through number of transformations, GAP stands as a "regional development project". However, under the current circumstances it is not offering an environmentally and socially sustainable future for the soil and local people. The introduction of irrigation in the region has caused a significant increase in salt concentrations in the soil, which is defined to be a result of 'lack of education' by the authorities. The aim of this study is to take a broader perspective on the issue with an argument that the reasons of the problem lie in the development idea of GAP. Neglecting the importance of sociocultural values in the region, the project not only causes deterioration of soil through salinization, but also destruction of the local livelihoods.

List of Abbreviations

- The General Directorate of State Hydraulic Works (DSI)
- The Southeastern Anatolia Project (GAP)
- The Southeastern Anatolia Project Regional Development Administration (GAP-RDA)
- The Southeastern Anatolia Project Social Research and Action Board (GAP-SAEK)
- The State Planning Organization (DTP)
- The World Commission of Dams (WCD)
- United Nations Educational, Scientific and Cultural Organization (UNESCO)

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"There is ample evidence to indicate that when the last great glacier lay over the face of most Europe, the deserts today-the Sahara, the Arabian and Mesopotamia-were forested areas with adequate rainfall for the sustenance of the forest and with large populations of animal life […] As the glacier, however, slowly receded to its extinction in the far north, the rain belts that had made a paradise of the Mediterranean region followed after it; and the forests with their animal populations began to dwindle and disappear […] Faced with the prospects of loosing his natural food supply, man slowly turned to horticulture as the only means by which he could provide himself with the food he needed. . But an ample supply of water was needed for even the most primitive of horticultural experiments and that supply was only to be found in the valleys of the existing rivers […] the control of the water of the Tigris and the Euphrates rivers was an important factor not only in the maintenance of horticulture and agriculture in the valleys of those rivers-Mesopotamia-but also building of the social fabric of the people who benefited from that control […] the advantages both to man and nature when the balance is maintained and, conversely the destruction and woeful loss when that balance, that interaction, is broken." (Gruber, 1998, p. 70)

1. Introduction

On one hand, there are vast plains and two twin rivers, the Tigris and the Euphrates; representing fertility in Mesopotamia since the ancient times, huge dams standing as masterpieces of modern engineering and large tribal families which have high standards of living. On the other hand, water diverted from these rivers carrying tons of salt to the soil every year, millions of people loosing their land, soil and traditional means of living and suffering from poverty. It is the "fertile crescent", the upper-Mesopotamia, the Southeastern Anatolia Region of Turkey. The region of paradoxes, extremes and dilemmas…it is the least 'developed' and the most complex.

It was in late 1960s when the government of The Republic of Turkey came up with the idea of activating the natural potential in this region through construction of a series of dams on the Tigris-Euphrates River Basin. The two greatest rivers of the country would bring productivity into the region while energy generation would add to the national economy. Following the river basin studies, the Southeastern Anatolia Project (Turkish acronym GAP) was proposed in 1977 as the greatest project ever implemented in Turkey. It was an irrigation and a hydropower project until the authorities had taken into account the future consequences of such a large-scale change on the whole region. Nine years after it had been put forward, GAP was converted to be a "regional development project".

The development plan of GAP has been revised over time with the changes in the international arena. "Human development" was accepted as a principle and "sustainability" was added to the context with its different aspects. The Tigris and the Euphrates would bring productivity, energy generation would add to the economy, and GAP would "catch-up with targets in the field of human development" closing the 'gap' between the west and east of Turkey (The Southeastern Anatolia Project, 2002b[1]).

Described so far is the part of the project that has been proceeding on the plan for more than two decades. Going down from the processes of engineering, designing and decision-making, to the implementation stage at the local level, it is clear that the reality is different than what GAP has been committed to. The project, which aims to achieve "sustainable human development", is not environmentally and socially sustainable.

The soils of the region that are to feed local people and let them make a living through agriculture are being destructed through irrigation introduced by GAP. Salt from the irrigation water, causes such damage that if continues, could be irreversible removing the vegetation cover and killing the land. Irrigation, as part of the technology introduced by GAP, was new to the local people whose traditional agricultural knowledge and expertise did not include applications of water. Up on top of the project pyramid, where decisions concerning the soils and local people are made, the reason of the problem is defined in terms of the people's lack of technical education.

It would be easy and simple to accept the 'fact' presented. But, with a closer look at the picture, it is argued that behind this one of the most important environmental problems is the point of departure of the 'development' process that GAP has defined for local people. It is not their own cultural values, not the social dynamics in the region, but a preconceived development model. The problem in the background, is GAP's ignoring the essence of any "human development project"; the human content, with all different factors shaping it, and its importance at the acceptance, implementation and production levels. On the stage, is the people loosing their soils and access to their traditional livelihoods.

[1] From this point onward, quotes without page numbers indicate that they were taken from the official web site of The Southeastern Anatolia Project.

1.1 Objectives

"It is not for you alone to complete the task but neither are you free to evade it?"

Hillel the Elder (In Hillel, 1998, p. 647)

While the authorities present causes of salinization in the region as "lack of local people's education", this study is an attempt to challenge this general belief by discussing the development idea to which GAP is attached and its consequences on soil and people. It is argued that the cause of salinization is in fact not considering the social and cultural background of people in the region, which further causes adverse effects on the local livelihoods. The interaction between certain elements of the social system and the project, two major social objectives and the point at which GAP stands in terms of those objectives are also analyzed.

Having been shaped around the main argument above, these are the questions to be answered throughout the study:

- ✓ What is the development model that GAP has been applying to the region?
- ✓ In which ways does this development model lead to salinization?
- ✓ What are the current conditions of salinization and its biophysical reasons?
- ✓ What are the social aspects of the problem, the causes and effects?
- ✓ Who has been benefiting from the positive impact of GAP in the region?
- ✓ What are the possible solutions to the problems of soil and local people, and limitations to these solutions?

It is worth mentioning that, salinization is not the only environmental problem observed in the region. Equally important are others like loss of biodiversity, water and land pollution, and erosion. Salinization, however, is an outstanding outcome of the development practices, especially irrigation applications, with its different social aspects, it is closely related to lives of local people and stands as one of the major threats to both social and environmental sustainability. Other limitations to the study are the following:

- In displaying the current conditions of salinization and social impact of GAP, the data are limited with the Sanliurfa-Harran Plains, which were selected by the project as a pilot area.
- There are different irrigation techniques applied in the region. However, their impacts on salinization are not presented although there is a close relationship between the

two. For the scope of this study, it is assumed that already existing irrigation methods are part of the causes of salinization in the region.

- The political conflict in the region is not included in the analysis. In spite of the fact that the instability in the region has caused a delay in the implementation of activities within GAP, it is not directly related to the objective of this study.

1.2 Methods and Material

"People are not just problems to be resolved but also mysteries to be explored, not vacuums to be filled but riches to discover."

Robert Vachon (In Verhelst, 1990:72)

With the above objective of challenging the given reasons behind salinization, a literature review was completed on possible social and cultural impacts of large-scale development projects and "development" as a concept. The framework is drawn on the critique of one particular model that considers development as a linear path and how it disregards the sociocultural background of local societies that are subject to the development practices. Considering GAP as one of the adherents of the model, the salinization problem was analyzed as a consequence of "following the path".

There are two sets of materials used for the analysis. The first set, the secondary data on the salinity measurements in the pilot area of Sanliurfa-Harran Plains, are examined, displaying the results on the gradual increase in salt levels since the beginning of the project. The second set, which is mostly based on the secondary data from the Social Assessment Report (Kudat and Bayram, 2000; GAP-RDA, 1999b), is used to evaluate the social consequences. The overall analysis is carried out on both quantitative and qualitative data with an interpretative approach, although the method used in examining some factors related to salinization is explanatory.

Constituting an important part of the qualitative analysis of this study, it is worth elucidating the Social Assessment (SA)[2] process that has led to the preparation of the mentioned report. The assessment was carried out in the Sanliurfa-Harran Plains, the first evaluation in May 1997 and additional ones in the summer of 1998, which were followed by a systematic survey. The data used in this study is from the first phase of the assessment, which covered

[2] See Kudat and Bayram (2000) for more detailed information on the Social Assessment Report.

social studies, surveys, individual stakeholder consultations and a broad stakeholder seminar. The survey was conducted in an area covering 178 village and sub-villages. Sampling was carried out in two stages:

1. 35 villages were selected (with a sampling ratio of 20 percent) by stratified proportional sampling
2. 450 households were selected out of 2001 households (sampling ratio of 22 percent) by stratified random sampling

Therefore, the sampling procedure yielded 35 villages and 450 households as sample units. The qualitative information was obtained through in-depth interviews with different groups (landowners, sharecroppers, women, etc.), but observations and informal talks were also used in the preparation of the Social Assessment Report.

2. The Southeastern Anatolia Project (GAP)

GAP has been given such an important position in the future of both the Southeastern Anatolia Region (GAP Region, Figure 2.1) and Turkey as a whole. Not only the physical size of the project, but also the expected outcomes of still ongoing activities rationalize the hopes that have been put into it. To provide a better understanding of the circumstances that local people and the region are under, this chapter attempts to explain the phases that GAP has gone through, followed by some context of the region. Within the framework of this study, keeping in mind that the objectives of GAP concerning different sectors are all interrelated and work in cooperation with one another, more focus is given to the agricultural policies including the use of soil and irrigation practices and social objectives which include the foreseen future of the local people.

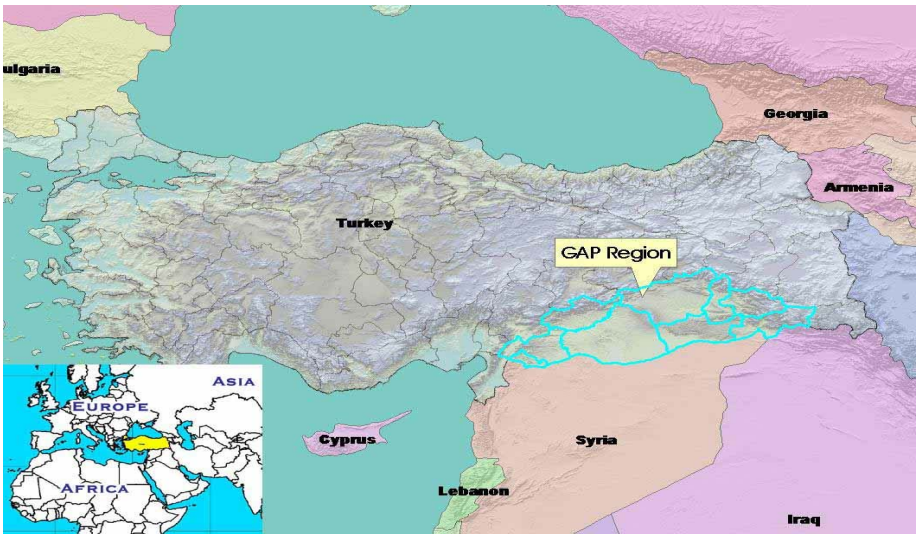

Figure 2.1 The Southeastern Anatolia Region of Turkey (GAP Region)

2.1 The History and Objectives of GAP

"…Southeastern Anatolia will almost be able to feed the whole of Turkey by itself; the vicious circle of underdevelopment will be broken."

Turgut Ozal (In Bagis, 1989, p. 3)

The idea of utilizing water resources for energy production in Turkey records back to the 1930s and the action was initiated by surveys on the Euphrates River basin for the implementation of the Keban Project. The studies on the Euphrates continued with the establishment of the General Directorate of State Hydraulic Works (Turkish acronym DSI). The results of the studies were covered in two main reports: *Euphrates Basin Development Project Report* and *Lower Euphrates Development Report*. Similar studies were carried out around the same time for the Tigris basin by the Diyarbakir Regional Directorate of DSI. As a result of all the efforts made, it was concluded that the two basin projects; the Euphrates and Tigris, could be united under the title of "Southeastern Anatolia Project" (The Southeastern Anatolia Project Regional Development Administration, 2001).

The Turkish government in 1977 put forward GAP first as an energy production and irrigation project in the Tigris-Euphrates River basin. Taking the possible socio-economic consequences of irrigation into consideration, the project was transformed into an "integrated regional development" project in 1986. The State Planning Organization (Turkish acronym DTP) was given the responsibility by the government for the planning, coordination and implementation of a number of different activities within the project in the context of "regional development". DTP continued to be the main coordinator of GAP until the establishment of "The Southeastern Anatolia Project Regional Development Administration (GAP-RDA)" in 1989 due to the complexity of the project and the need for rapid development (GAP, 2002b; GAP-RDA, 2001).

GAP involves the construction of 22 dams and 19 hydropower plants on the Tigris-Euphrates River basin. The project area covers nine provinces in the southeast of Turkey, Adiyaman, Batman, Diyarbakir, Gaziantep, Kilis, Mardin, Siirt, Sanliurfa and Sirnak. It covers an area of 75,358 square kilometers corresponding to 9.7% of the total area of Turkey. Irrigation of 1.7 million hectares of land (Figure 2.2 shows the locations and different stages of irrigation projects), which is larger than the total land currently under irrigation in Turkey, and

production of 27 billion kilowatt-hours of annual energy are projected upon the completion of GAP. By the end of 2001, $13.9 billion had been invested out of an estimated total of $32 billion. Today, about 215,000 hectares of land is under irrigation and more than 12 billion kilowatt-hours of hydropower, constituting 39% of the total in Turkey, is produced in the region (GAP-RDA, 2001).

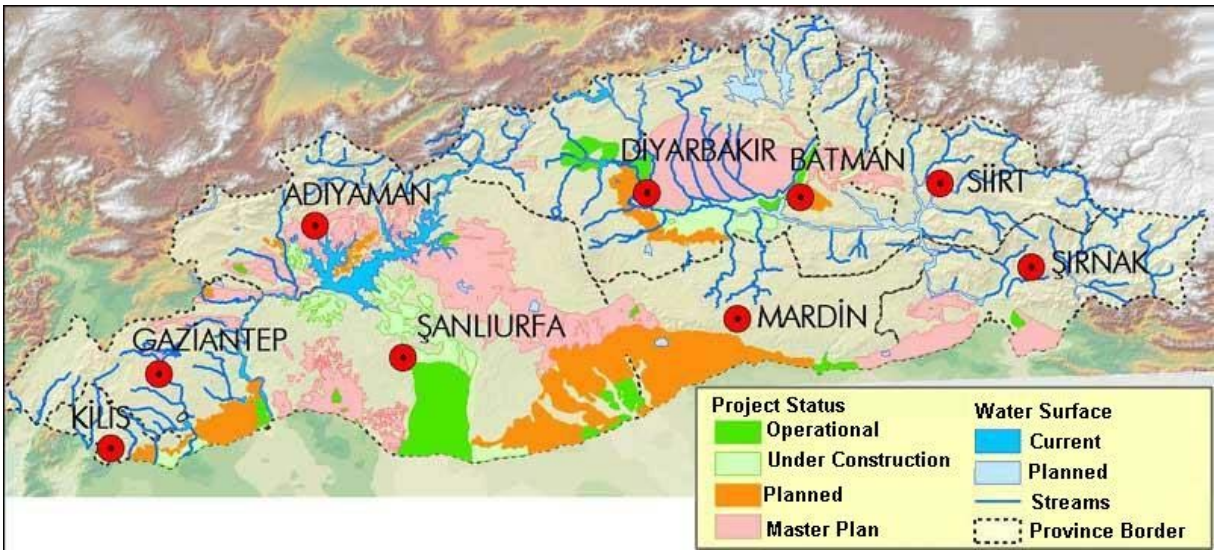

Figure 2.2 Different stages of irrigation projects in the GAP region

All the activities are carried out in the guidance of the GAP Master Plan (1989), which defines the main objective of the project to "transform the region into an export center of agriculture based goods." (GAP, 2002b). However, with the universal changes in the understanding of development, a new plan was prepared and accepted in 2000. It was an attempt to improve the previous strategies by adding 'new' concepts like "sustainability, environment and participation" to them. The new GAP Regional Development Plan addresses the main target of the project as "sustainable human development". The intention of the project, since the preparation of this most recent plan is to increase the overall productivity and welfare of local people through the utilization of resources in the most efficient way possible (GAP-RDA, 2001).

Activating at a high level of complexity GAP is no longer limited to hydropower production and irrigation processes, but includes other fields like education, health and environment. The reformulated objectives of GAP, which are set within the framework of the state's overall policy, include the following major points:

- Improving the economic structure of the region and thereby reducing the regional development disparities
- Enhancing productivity and employment opportunities in rural areas
- Enhancing the population absorption capacities of big centers in the region
- Contributing to the economic growth, social stability and export promotion as national objectives (GAP, 2002b).

For achieving the above objectives, GAP has a two-sided approach in development planning. The first is named the "integrated planning approach" which addresses the multi-sectoral nature of the project including all different components. The second, on the other hand, is the "sustainable development philosophy" which is adopted as a policy to be implemented by putting the human factor in the center of all development practices, the sub-projects and plans. The aim is reported as going further than accomplishing only economic development, but instead having sustainability in all different areas (GAP, 2002b).

The Social Action Plan, on the other hand, was prepared by the GAP Social Research and Action Board (GAP-SAEK) in 1994 for the determination of social policies. The plan is divided into two sections, the first on the social structure and the second on the following areas of intervention (GAP, 2002):

1. Organization and participation
2. Population and Settlement
3. Education
4. Agricultural Extension
5. Employment and Incomes
6. Proprietorship and Land Use

GAP-RDA (GAP, 2002b) notes that, the GAP-SAEK aims a "sustainable, participator and fair social development" in the region. In parallel with the targets of the project, some of the objectives within the above areas are strengthening the family unity and democratic patterns, making social and economic measures to increase income levels, ensuring a balanced distribution of income and access to basic resources, integrating different social groups into the process of development, and minimizing the possible adverse effects of new practices.

2.2 The GAP Region

"The wrong question that nature and government had in common was this: Where does 'Maveraunnehir' flow into?"

Ece Ayhan (In Aydin, et al., 2001, p. 457)

The Southeastern Anatolia Region is one the seven geographical regions in Turkey. It is well characterized by the uniformity of the landscape and the two rivers, the Euphrates and the Tigris, which are the largest two in Turkey. They both originate in the mountains of Turkey. The Euphrates is 2,990 kilometers long with an average annual runoff of 31.6 billion cubic meters and it flows south first through Syria and then Iraq. The Tigris is 1,900 kilometers long, carries 16.2 billion cubic meters of water annually and flows directly to Iraq. The two rivers meet at the Persian Gulf, at a point called Shatt-El-Arab. The land in between the rivers is called Mesopotamia, which is also recognized as the "fertile crescent", due to its high fertility and shape (Figure 2.3).

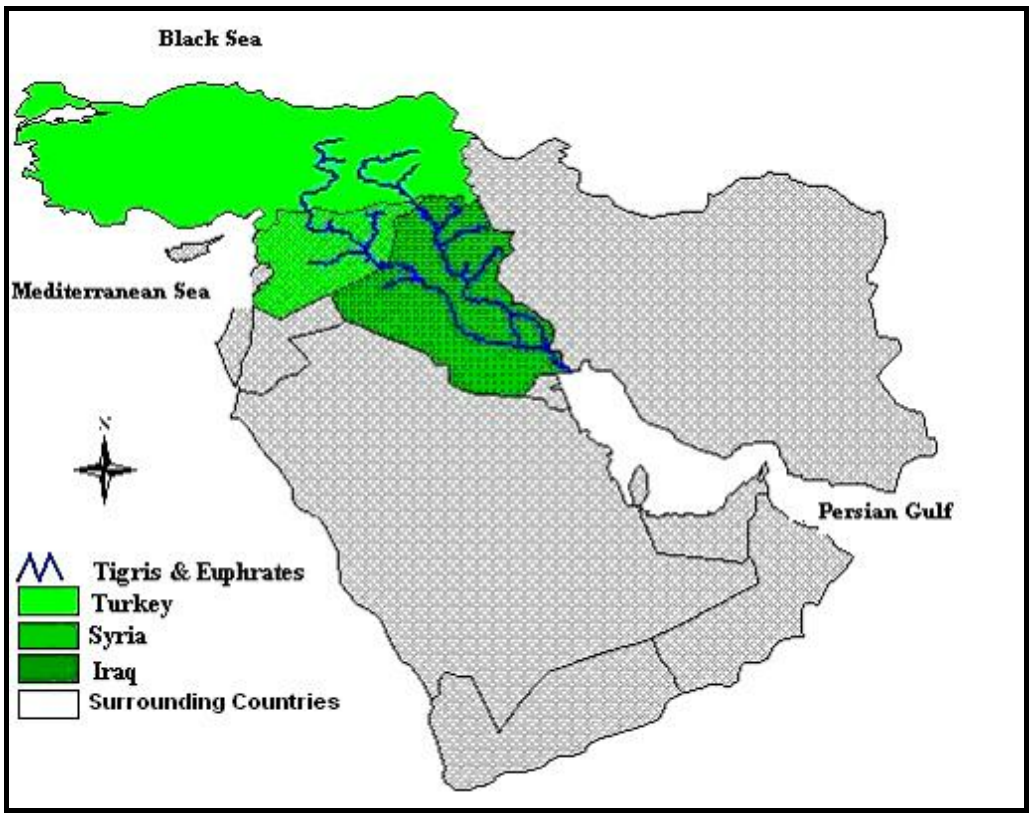

Figure 2.3 The Tigris and The Euphrates

Source: Akmansoy (1996)

The region, in general, is semiarid, with an annual rainfall ranging between 350 and 850 mm. The amount of rainfall decreases going from the northern mountainous areas, where the

highest values are observed, to the southern plains. The temperatures, on the other hand, increase from north to south and from west to east. The lowest degrees are observed in January and the highest in July and August (Ozer, 1998). The average annual air humidity is 50%, but shows variations depending on the season. In the province of Sanliurfa most of the rain is received in March and the least in July and August and the average amount a month is 0.3-136.2 mm. The year round temperatures are between 4.7 and 30.6 ºC and the average air humidity is measured to be 32.7- 86.0%. (Harran University, 2000).

40% of Turkey's total arable land is in the region. Farmers traditionally, have been carrying out rain-fed agriculture, dominated by winter cereals. With GAP however, it has been aimed to have considerable amounts of fiber crops, mostly cotton, summer cereals and vegetables and fruits. Today, 41.9% of the soils is used for cultivation, 36.1% as meadow and pasture and 16.5% constitutes forests and shrubs (Dogan, 2001, p. 69).

According to the results of the 2000 General Population Census, the population of GAP region is 6,604,205 which corresponds to about 10 % of the total population in Turkey (67,844,903). Between 1990 and 2000, the annual average population growth rate in the region was 2.5% while it was 1.8% for Turkey. The population of Sanliurfa is about 1.5 million, which makes up more than 20% of the regional population. The average population growth rate in the province was above 4% between the years 1995 and 1998, higher than both regional and national averages (Chart 2.1). There has been a significant change in the urban-rural ratio in the same period, with urban population showing an increase both in the region and in Sanliurfa due to migration within the region (Kudat and Bayram, 2000).

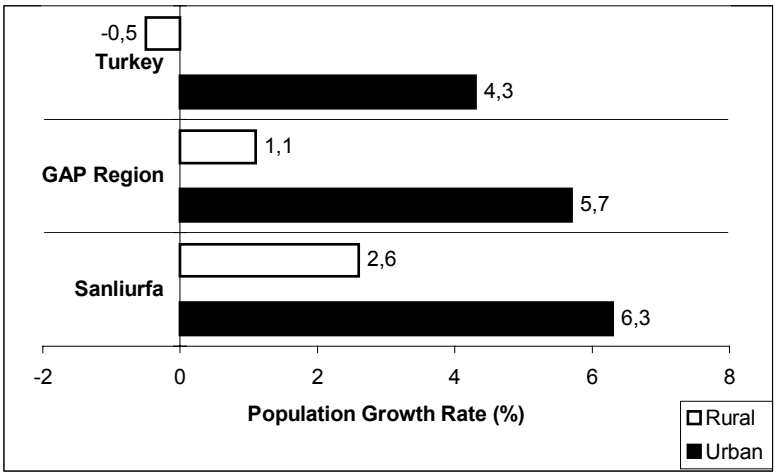

Chart 2.1 Population Growth Rates (1995-1998)

The data from 1997 show that 49% of the economically active population in the GAP region is employed in agriculture, making agriculture the largest sector in terms of the employment it provides (GAP-RDA, 2001). People engaged in agriculture can be landowners or landless people. The landless, in most of the cases work for the landowners as sharecroppers[3]. The landowners consist of two major groups, the small landholders[4] and large tribal families. The region is subdivided into many sub-regions, which are ruled by these families that own most of the land (GAP-RDA, 1999b). The members of the tribal families are both landlords and decision-makers in the communities. Therefore, landownership is shaping the society both in terms of the agricultural practices and social dynamics.

The adult literacy rates both in the GAP region and in Sanliurfa are below the country averages. In 1990, while adult literacy rate was 80.5% in Turkey, it was only 60.4% in the region. The difference between literate men and women is quite significant. 75.5% of men in the region are noted to be literate whereas more than 50% of women are illiterate (GAP-RDA, 2001). The difference is even larger in Sanliurfa, where 71% of men in 450 households were literate, the number referred to only 18% for women (Kudat and Bayram, 2000).

The per capita income of the region accounted for 47% of the average per capita income in Turkey in 1985. The figure had increased to 52% by 2000. Between the years 1987 and 2000 the rate of annual increase in Gross National Product (GNP) for the region was recorded as 3.45% while the value for Turkey as a whole was 3.63% (GAP, 2002b).

3. Southeastern Anatolia Catching-Up with Western Turkey

"The Republic of Turkey assigns a great importance to the elimination of inter-regional disparities in the process of social and economic development" (GAP, 2002b). The statement, is one of the basic objectives of the GAP Master Plan, and refers to the fact that the GAP region is defined as the most backward region in Turkey in social and economic terms (Kudat and Bayram, 2000). The assumption made is that the only way to improve the conditions in

[3] Sharecroppers work as agricultural labor, using the equipment provided by the landlord. They get 30 % of the total yield, leaving 70 % to the landlord.

[4] "Small landholder", in general, is the term used to define landowners who have land less than a certain area. Different sources have different values for the amount of land in defining small landholders. For the sake of simplicity and consistency, in this study the term is used to refer to those who own less than 75 hectares of land. Small landholders also work as sharecroppers if the land they have is not enough to sustain themselves.

the region and provide a better living for local people is through 'following' the 'modern and developed' western regions of Turkey.

Beginning with the theoretical framework, the aim of this chapter is to display the impact of GAP on soil and people and analyze the interaction within the given context. The current condition of salinization in the region, with a general description of the problem and its biophysical causes are examined leading to the sociocultural aspects, which are evaluated referring to the social objectives of GAP.

3.1 Theoretical Framework

"…God rises the sun from the east, can you bring it from the west?"
Bakara 258

The development concept that has been shaping the agenda of GAP is one of the most widespread models with its understanding of development as a path to be followed by all societies to reach the point where the modern ones stand today (Shanin, 1997; The United Nations Educational, Scientific and Cultural Organization, 1995). In his book entitled *The Stages of Economic Growth*, W.W. Rostow[5] defines five stages, from traditional to consumer, passing through which a society can be 'modern' and 'developed' (UNESCO, 1995, p. 119). In parallel with Rostow's theory is S. N. Eisenstadt's[6] argument that transition from traditional to modern is essential. He goes on to argue that, since the traditional societies lack "imaginativeness and are dominated by narrow ideas, change rather than being driven by the factors within the societies, is required to be external." (Barnett, 1988, p. 185).

The world is classified accordingly; 'developed' and 'underdeveloped', west and east, north and south, to place the societies correctly on this single route and to define which are 'to be followed' and which are 'to catch-up'. Shanin (1997), in his opposition to this kind of understanding of the development process, suggests that according to the adherents of the concept, the path is a linear one from "barbarism to civilization", from "badness to goodness" and from "mindlessness to knowledge" (p. 65).

[5] Rostow, W. W. (1962). The Stages of Economic Growth. In UNESCO (1995). *The Cultural Dimension of Development: towards a practical approach.* (119). Paris: Imprimerie de la Manutention.
[6] Eisenstadt, S. N. (1973). Tradition, Change and Modernity. Quoted in T. Barnett (1988). *Sociology and Development.* (185). New York: Routledge.

Having been accepted as the basis to a number of development practices for the last two centuries, the concept has shaped not only the understanding of development, but also its worldwide applications. As Verhelst (1990) proposes, "the catching-up theory was often to take the form of ambitious five-year plans many of which promoted industry at the expense of agriculture. Huge projects were undertaken…as well as the setting up of extremely ambitious infrastructures […] enormous hydroelectric dams […]" (p. 10).

Being so tightly attached to one single way of development, the concept misconceptualizes or undermines the cultural diversity of different societies and the complexity of their social structures (Shanin, 1997; UNESCO, 1995). By doing so it also disregards the fact that the level of acceptance of any development process and its implementation depend highly on people who are subject to it. Newson (1997) notes that, "Society, if it identifies the project, supports the experts." (p.359). Each society has its own way of doing things, which has been shaped by its own social dynamics, mentality, knowledge and various value systems. Therefore, in order not to be limited to being only a transfer of new methods, but rather being able to bring about positive changes into livelihoods of people, it is required for any development project to take the sociocultural context into account. UNESCO (1995) in line with the above statement, referring to the agricultural component of development states that, "…the status of land, which is still the principal means of production in many developing countries is closely bound up with cultural references: in the allocation of land, in the systems of land use, and also in the management of the environment." (p.103).

For a better understanding, it is worth mentioning that, by culture it is meant, not only the music, art, literature or ancient history, which in most cases constitute the field of interest of governments, international organizations and NGOs, but all aspects of life including different kinds of knowledge, food, language, political behavior, traditional methods of social organization and many more (Verhelst, 1990).

3.2 The Impacts of 'Development' on Soil

"All that we did, all that we said or sang
Must come from contact with soil…"

William Butler Yeats (In Hillel, 1998:3)

The objectives of GAP and the activities carried out within the project stand as applications of the 'catching-up' theory at a smaller scale, giving the western regions of Turkey a higher status on the path to development while defining Southeast Anatolia as 'underdeveloped'. It has been one of the greatest attempts of the project to make the region catch-up with western Turkey. One of the steps to be taken on this pre-defined way is proposed as the first target of the GAP Social Action Plan: "To enhance the presence and influence of modern organizations and institutions in order to remove those traditional ones which impede development…" (GAP-RDA, 2002b).

To achieve such a goal, a massive technology transfer was required since the change was not initiated in the region, but rather came from outside. As Ozer (1998) argues, innovations that the region was introduced to "…were adopted by Turkey from western societies and are transferred from west of Turkey to the east and southeast." (p. 287). Irrigation schemes constitute one of the most important sets of innovations, offering a complete alteration in the agricultural practices. Different from the other physical elements of GAP, like dam construction and energy production, importance of irrigation comes from the close interaction between the local people and soil.

The Sanliurfa-Harran Plains, which is in the province of Sanliurfa, is the heart of all irrigation activities in the region with its potential area of 152,353 hectares. The plain is of great importance for the whole project, not only because it has the greatest share of cultivated area with 36%, but also this area constitutes the most fertile land in the region. It was first opened for irrigation from the Ataturk Dam in 1995, but the southern parts of the plain has been irrigated by underground water from the wells since 1978 (Kudat and Bayram, 2000; GAP-RDA, 1999a). By 2002, the total land that has been under irrigation reached about 118,000 hectares, which is more than 50% of the total land being irrigated in the whole region (Hurriyet, 2002). In contrast with its potential contribution to the agricultural yield, today the plain is recognized by the problem of salinization.

3.2.1 Salinization

"It is this process that eventually doomed civilizations of Mesopotamia. Those civilizations-Sumer, Akkad, Babylonia and Assyria…"

Daniel Hillel (1998: 266)

Soil salinization is one of the problems related to the use of water on irrigated lands, which might result in complete degradation of soil. Irrigation, simply, is the application of water to the "root zone" of the soil for crops to take it in the most efficient way (Hillel, 2000). The uncontrolled amounts of irrigation water, on the other hand, compounded with the effects of poor drainage and high evaporation rates, cause a significant increase in the salt concentrations of the soils in arid and semiarid regions, which naturally happen to have high salt contents (Carpenter and Halcro-Johnston, 2001).

Salinity, is the term used when the mineral solutes in soils, mostly the cations; sodium, potassium, calcium and magnesium and the anions; chloride, sulfate, nitrate and carbonate, which in minute amounts are essential for the plants, reach such levels that are harmful to their growth. Accumulation of high concentrations of salts in the soil, not only decreases the agricultural yield through its direct effect on plants, but it also leads to changes in soil texture which could be irreversible and affect the whole vegetation structure. Salts may be present in the soil originally or can be brought by surface water or rising groundwater through the irrigation practices. In case of arid and semiarid regions, the excess surface water evaporates at high rates leaving salts on topsoil. Soluble salts found in groundwater, on the other hand, are carried to the upper profiles of soil, when groundwater is raised by excess amounts of water applied (Figure 3.1). Plants also contribute to the accumulation of salts in soil as they take in water, but leave the salts behind (Hillel, 2000; Miller, 2002).

Soil salinity is expressed in terms of the total soluble salt content. It can be measured in deci-siemens per meter (dS/m) by the electrical conductivity (EC) of a given soil water solution (Hillel, 2000).

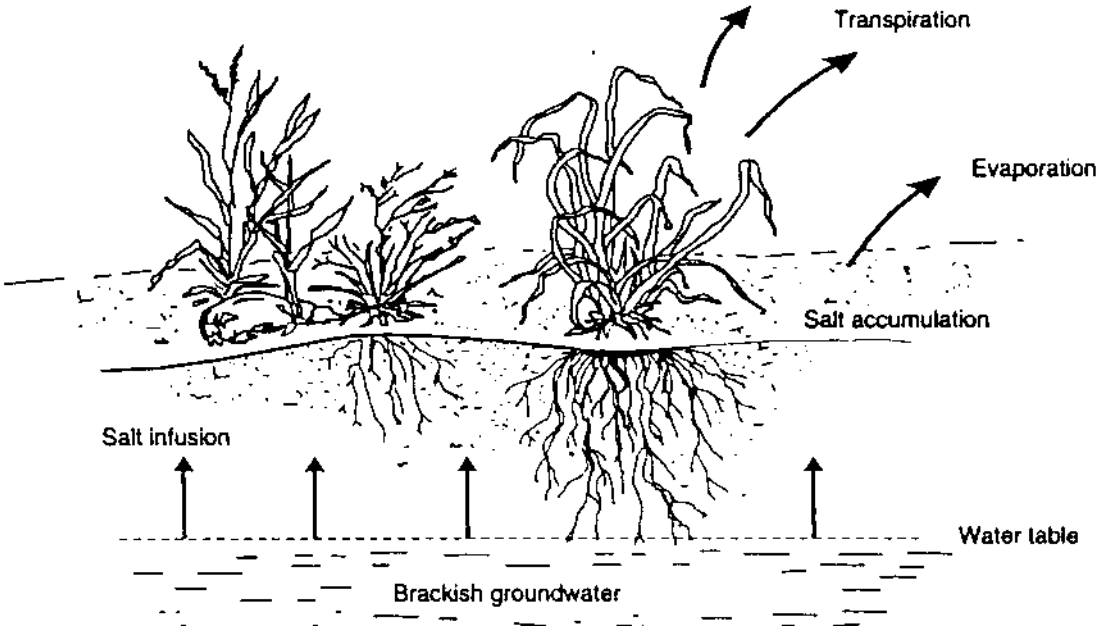

Figure 3.1 The process of salinization

Source: Hillel (2000, p. 3)

Associated with salinity is yet another problem, alkalinity, which is also known as sodicity. Alkalinity takes place when the irrigation water has high concentrations of sodium, which can be toxic to plants. It is measured by the exchangeable sodium percentage (ESP) and soils that have a value higher than 15 are considered to be alkaline. Although salinity and alkalinity are closely related terms, saline soils in principle can be non-alkaline (Hillel, 2000; McCully, 1996).

The most commonly used criteria to classify soil salinity were the ones put forward by the U.S. Salinity Laboratory Handbook 60 (Hillel, 1998). According to the handbook, the classification depends on the salt concentrations of the soil water solutions at 25ºC and the relative concentrations of sodium ions. Therefore, soils affected by salinization can be categorized as the following:

- saline, with an EC>4 dS/m, ESP<15 and pH<8.5
- saline-alkaline, EC>4 dS/m, ESP>15 and pH<8.5
- non-saline alkaline, EC<4 dS/m, ESP>15 and pH>8.5

It is important to note that, although commonly used, the above classification is still arbitrary in the sense that it is not always possible to differentiate between two sets of soils according

to their EC and ESP values (Hillel, 2000). However, it still stands as a useful tool to make distinctions or comparisons with the same sets of soils, as in the case of Sanliurfa-Harran Plains.

To give a better idea of how much irrigation could potentially contribute to soil salinity, it is worth using the following example that D. Hillel (2000) gives in his book entitled *Salinity Measurement for Sustainable Agriculture*:

> "As a rough calculation let us assume that the harvested yield of a crop is about 10,000 kilograms of dry matter per hectare. The salt contained in that harvest is 300 kg (3%). Now compare that with the amount of salt applied in irrigation. Assuming a seasonal irrigation of 1000 mm (equal to 10,000 cubic meters per hectare) with water of good quality, containing 300 mg/l (0.3 kg/m^3), the amount of salt added would total 0.3*10,000=3,000 kg per hectare. Thus the amount of salt added with the irrigation water is roughly 10 times the amount of salt removed in the harvest." (p. 6)

3.2.2 Soils of the Sanliurfa-Harran Plains

"Doth a fountain send forth at the same place sweet water and bitter?"
James 3:11

The soils of the Southeastern Anatolia Region, in general, appear to have high salt concentrations due to both of the reasons mentioned above, natural and human-induced through irrigation. Like in other arid and semi-arid regions of the world, soils of the region already have a high salt content, as they have not been leached due to lack of adequate rainfall (Hillel, 2000; McCully, 1996). In addition to this, applied irrigation water contains dissolved salts adding to the amounts naturally existing in the soil.

The data on salinization in the region are varied and there is not a certain number on the hectares of total land affected by salinization in the Sanliurfa-Harran Plains. According to Agca and Ergezer (1995) in 1968 the saline and alkaline area referred to 11,835 hectares in total. By 1995, however, it had covered an area of more than 20,000 hectares. Dogan (2001) states that 9,590 hectares of land is saline and 4,110 hectares are saline-alkaline. Reported by the GAP-RDA is the total area that has some kind of a salinity problem refers to 22,000 hectares (GAP-RDA, 2002a).

Yet, the figures on the total land affected by salinization are different, it is displayed in all sources that the salinization has been increasing since the first soil survey, which was carried out by DSI in 1968. Table 3.1 shows how salinity changes, in terms of the soluble salt content, had taken place until 1998. There are no comparative data on the EC and ESP values of the soils since those values were measured only during the most recent research carried out by the Harran University (2000).

Year	pH	Total Soluble Salt Content (%)	EC (dS/m)	ESP
1968 (DSI[7], 1971)	7.70-8.10	0.031-0.111	-	-
1987 (Dinc[8], et al., 1988)	7.20-7.70	0.035-0.800	-	-
1992-93 (Ergezer&Agca[9], 1995)	7.42-8.10	0.130-1.450	-	-
1996 (Ozkutlu[10], 1997)	7.40-8.70	0.020-1.44	-	-
1997 (Harran University Faculty of Agriculture, 2000)	7.67-8.40	0.01-1.14	0.316-19.15	0.05-39.12

Table 3.1 Salinity Changes in the Sanliurfa-Harran Plains

Source: Harran University Faculty of Agriculture (2000).

Although the plain was opened for irrigation from the Ataturk Dam in 1995, salinization is assumed to have started with the introduction of underground irrigation in 1978. The data collected in 1987 reveals that the there had been a considerable increase in salt concentrations between the years 1968 and 1987. After 1995, with an increase in the intensity of irrigation, the water table has increased causing even a higher salt content at the topsoil. The slight decreases in years 1996 and 1997, result from the construction of drainage canals in certain parts of the plain (Harran University, 2000; Dogan, 2001).

[7] DSI. (1971). *Asagi Firat Projesi Urfa-Harran Ovasi Planlama Arazi Tasnif Raporu* [Lower Euphrates Project Urfa-Harran Plain Planning Land Classification Report]. Diyarbakir: DSI.

[8] Dinc, et al. (1988). *Guneydogu Anadolu Topraklari (GAT) 1.Harran Ovasi* [The Soils of the Southeast Anatolia 1. The Harran Plain]. Ankara: TUBITAK.

[9] Ergezer, S. & Agca, N. (1995). Harran Ovasinin Sulanan Alanlarinda Toprak, Sulama Suyu ve Taban Sularinin Tuzlulukla Ilgili Ozellikleri ve Bunlar Arasindaki Iliskiler [The Salinity Characteristics of Soil, Irrigation Water and Groundwater and Their Interactions in the Irrigated Areas of the Harran Plain]. *Harran Universitesi Ziraat Fakultesi Dergisi* [Harran University Faculty of Agriculture Journal], *3,* 91-108.

[10] Ozkutlu, F. (1997). *Harran Ovasinin Mevcut Tuzluluk Durumu ve Potansiyel Yayilma Alani* [The Current Salinization in the Harran Plain and its Potential Area of Spreading]. Sanliurfa: Harran University Fen Bilimleri Enstitusu Master's Thesis.

One of the main reasons for salinization appears to be the increase in groundwater levels. Groundwater, which is already high in its salt content, causes an increase in soil salinity, when found at levels close to the topsoil. Changing seasonally according to the amounts of rainfall and intensity of irrigation (the highest in the month of July), the water table levels can exceed one meter below surface, leading to a potential damage for the root zone and topsoil. Although the water which is used for underground irrigation does not have a salt content high enough to cause salinity itself, combined with other factors like dry climate, natural characteristics of the soil, drainage conditions, and excess amounts of water applied, salinity had increased even before the irrigation from the Ataturk Dam had started. The water of the dam, on the other hand, is reported to be suitable for irrigation due to its low salt content. However, as it has been applied in excess amounts, it leaves 1,100 kg of salt /hectare/year in the soil and also causes an increase in the water table bringing the salty groundwater closer to the topsoil. (Harran University, 2000; Dinc, 1999).

One other reason is the poor drainage conditions in the plain. Drainage is provided in a total area of about 15,000 hectares (GAP-RDA, 1999a). Although the drainage canals have decreased the severity of the problem in the areas where they have been built, they are not functioning well in the whole plain. Consequently, they are not effective in preventing the spread of salinization and the increase of the amounts of salts in soil. As reported by the GAP-RDA (1999a) in the *Sanliurfa- Harran Plains On-Farm and Village Development Project Final Report*, drainage is one of the greatest problems. Especially in the south of Sanliurfa-Harran Plains it is urgent to provide proper drainage, since the natural drainage capacity is low due to the topography of the land. Today, in 6,650 hectares of land, construction of canals is continued while for more than 13,000 hectares, the studies are at the planning stage (GAP, 2002a).

3.3 Social Causes or Effects

> *"For the majority, the cause of progress took away, for the sake of scientific planning, the right to choose and even to understand why their own experience was increasingly being negated. Endless planning disasters followed, while the planners earned their promotions and moved on."*
>
> *Teodor Shanin (1997, p. 69)*

While the biophysical reasons of salinization are as mentioned, the statements made by the project administration, repeated in various documents, address another point that has been causing the problem. GAP-RDA suggests that salinization in Sanliurfa is a result of lack of education on how to use water for irrigation (GAP-RDA, 1999a, GAP-RDA, n.d.). Dogan (2001) and Ozer (1998) also support the idea that the problems are related to the fact that local people do no have the required knowledge to use irrigation water. Kudat and Bayram (2000), on the other hand, argue that it is the "poor understanding" of the new methodologies, which lowers the yields and causes environmental problems (p.291).

In the GAP region, the authorities are responsible for the distribution of water to the whole land. Nevertheless, when it comes to the amount to be applied to individual farms, the farmers determine it. The general belief among the farmers is that the yield would increase with increased amounts of irrigation water applied (GAP-RDA, 1999b; Ozer, 1998). Therefore, as the administration and the scholars mention, it is important for the farmers to know the optimum amount of water to be used and be aware of the fact that using excess water is neither good for the future of the water and soil resources nor for the current yield. Yet, explaining the problem only in terms of mismanagement of water due to lack of education, would be taking a narrow perspective on such an issue of complex interactions. In fact, underlying, as argued earlier, are the understanding of development embedded in the activities of the project and the approach towards local people.

Human-soil relation constitutes the major link in the whole chain that GAP is trying to deal with. However, as Ozer (1998) puts forward, this link is the weakest since the interaction, which once depended on rain-fed agriculture, traditional customs and practices that have been inherited over the years, is disrupted with the project. The idea of development, came from outside instead of having been shaped by the changes within the society and so did the new

agricultural practices that the farmers were not familiar with. Their working hours, family structures, value systems and agricultural traditions have been shaped according to their relationship with the soil. UNESCO (1995, p.128) describes the situation as the following:

> "The transformations may affect areas considered essential by the local population; changes apparently confined to the economy or social and organizational reform may result in extensive cultural destabilization, with the population either adopting and attitude of rejection or losing confidence in its own ability to adapt the changes to its need, mentality and way of life and, consequently, losing confidence in the national authorities since they appear to be the authors of these rapid changes-or at least partners of them. This maybe the case, for example, when traditional food crops and agricultural techniques are replaced by the techniques of modern agronomy or mechanized farming…"

The problem is then defined as "…the rapidity, indeed violence, and extent of the changes which are often imposed." (*op. cit.,* p. 129). Saltik (2000), in parallel with the statement by UNESCO, argues that the high rate of change in the GAP region causes deterioration of societal relations and the values that these relations are based on. Two of the social problems he points out are:

- Disruption of "sociocultural values and social control mechanisms" due to increased poverty and the changes in the relationships
- Lack of confidence between the individuals, groups, institutions and organizations

Kudat and Bayram (2000), displaying the results of the SA, also mention that farmers do not trust in the formal governmental officers (especially the ones working in extension services who have direct contact with the farmers). Only 13% indicated that they would get expertise from formal institutions, but the rest stated that they would consult engineers or private organizations.

In addition to the disruption of sociocultural values are the agricultural problems associated with salinization. The yields are and will be decreased due to increased amounts of salt in the soil, although they were expected to increase with the introduction of irrigation. The problem does not only stand as an obstacle to reach higher income levels, but also makes people face the danger of loosing their soil and food security. The continued salinization, could therefore, ruin lives of local people even more and cause a social conflict in the region (Smedema, Abdel-Dayem, Ochs, 2000).

Unfortunately, the problem of the GAP region is not only the way that the "sociocultural destabilization" has been taking place. In addition to that, this rapid change is not leading to any better options for local people under the current circumstances. Paraphrasing Newson (1997), the efficiency of irrigation schemes depends on how well they contribute to the enhancement of agricultural practices. WCD (2000) notes that, if the "loss of access to previous sources of livelihood is offset by new benefits", it is possible for the people who are subject to the changes to have "different but better conditions." (p. 126). However, there has not been any significant positive change in the lives of people. Kudat and Bayram (2000) state that in the Sanliurfa-Harran Plains, out of 450 households interviewed in 1998, 53 % of the sharecroppers and 43 % of the landowners indicated no change. Only 20 % of the landless stated that they could more easily find jobs, and 26 % of the landowners said they had higher incomes. Even in villages where irrigation schemes were completed, only 29 % of the landowners indicated increased incomes. Considering the agricultural share of the Sanliurfa-Harran Plain in the whole region, and the fact that more than half of the plain had been under irrigation by the time, the results give an insight to the present situation. Bearing all the costs of the changes in both their biophysical and social environments, if local people are not 'developing', it is then worth questioning for whom GAP has been put forward.

"…the absolute benefits have accrued directly to the landowners…" is what Kudat and Bayram (2000, p. 274) suggest. GAP, in principal, attempted to give an end to the situation which "cuts off the participation of small landholders and landless in the development processes" (Martinussen, 1997, p. 136). Thus, it has placed "people's participation" and "equitable development" within its goals (GAP, 2002b). However, "the risk", to quote Kudat and Bayram (2000) again, is that GAP "could potentially exacerbate the existing inequalities if no measures were taken to counter the unequal distribution of land." (*op. cit.* 256).

Only a small percentage of the families in the region own a large percentage of the total land. As Akbaba (2001) states, 50,000 families in the region own a total of 4,800 hectares of land, whereas the richest 405 families have 315,200 hectares. In other words, only 6 families own the same amount of land as 50,000 families do.

In Sanliurfa, on the other hand, the results of the SA show that 56% of 450 households are landless, and 45% of those who own land have less than 10 hectares. Only 5% of the total households have lands referring to an area of 40 hectares or more (Table 3.2; Kudat and Bayram, 2000, p.275).

Size of landholding (hectares)[11]	Sharecroppers	Landowners	Percent of total
No land	97	0	56
0.1-4	3	21	10
4-10	0	24	10
10-20	0	28	12
20-40	0	16	7
40+	0	11	5
% of total	58	42	100

Table 3.2 Landownership in the Sanliurfa-Harran Plains

Source: Kudat and Bayram (2000, p. 275)

As a result of the state of the landownership in the region, the risk has unfortunately become the reality of the people. The landowners, who have the chance to increase their yield through irrigation, are the only ones benefiting economically and socially from the 'development' that GAP has brought. Although it is recorded that the per capita income of the sharecroppers increased between 1991 and 1997, since the job opportunities increased with the introduction of labor-intensive crops, the income gap between the landowners and sharecroppers has deepened (GAP-RDA, 1999b). In 1991, the per capita income of sharecroppers referred to 68% of the per capita income of landowners, but by 1997 it had decreased to 34%. Table 3.3 (Kudat and Bayram, 2000, p. 280) displays how unequal distribution of land results in the unequal distribution of income.

Household Type	Household size	Income from crops	1991 per capita income	1997 per capita income
Sharecroppers	6.2	2469	457	165
Landowners	7.3	8769	1323	543

Table 3.3 Annual household income from crops and income per capita (U.S. dollars)

Source: Kudat and Bayram (2000, p. 280)

[11] The area unit used in the original table is "donum" (a Turkish unit of land area) which is converted to hectares for the sake of consistency of the area units in this study (1donum=0.13378 hectares).

The increase in the income levels of sharecroppers however, will not last long since through mechanization the need for labor will eventually decrease even worsening the current conditions (Kudat and Bayram, 2000; Saltik, 2000; GAP-RDA, 1999b; Ozer 1998).

Not only the recent studies, but also the social surveys carried out even before the irrigation started in the region, report the complex social dynamics and the resulting inequalities in the distribution of land. Noted in the study of *Trends of Social Change in the GAP Region* (The Turkish Chamber of Agricultural Engineers, 1992), is the dependence of the agricultural production patterns on the tribal relations. The surveys were carried out in 10 urban sites and 47 villages in five of the provinces; Adiyaman, Diyarbakir, Gaziantep, Mardin and Sanliurfa. The results show that 40% of the households were landless and one third of the total was small landholders. GAP-RDA, in a book entitled *GAP: Social Policy Objectives* (1997) also underlines the fact that there had been no changes in the landownership from 1992 to 1997. (Kudat and Bayram, 2000). Thus, the issue is not new to GAP. With the knowledge on the social dynamics of the region, it was required for the project to take those into consideration before altering the whole system in the region. Ignoring the importance of the traditional structure of the land tenure as part of the sociocultural composition, GAP falls far behind its objective of "equitable development".

While the inequality within the region continues to cause an adverse impact on the landless and small landholders, at the national level, the positive outcomes of the project are remarkable. Although, agriculture is the basis of all development activities in the region, and is the largest sector that local people depend on, energy production has always had a higher priority than the irrigation projects. By the end of 2000, construction of 12 dams and 6 power plants had been completed, constituting 64% of the whole energy projects. On the other hand, only 12% of the irrigation projects had been realized, covering an area of about 215,000 hectares, and more than half of the irrigation projects are still at the planning stage (Chart 3.1). What is more, 80% of the energy produced in the region is consumed in other parts of Turkey (GAP-RDA, 2001; Saltik, 2000).

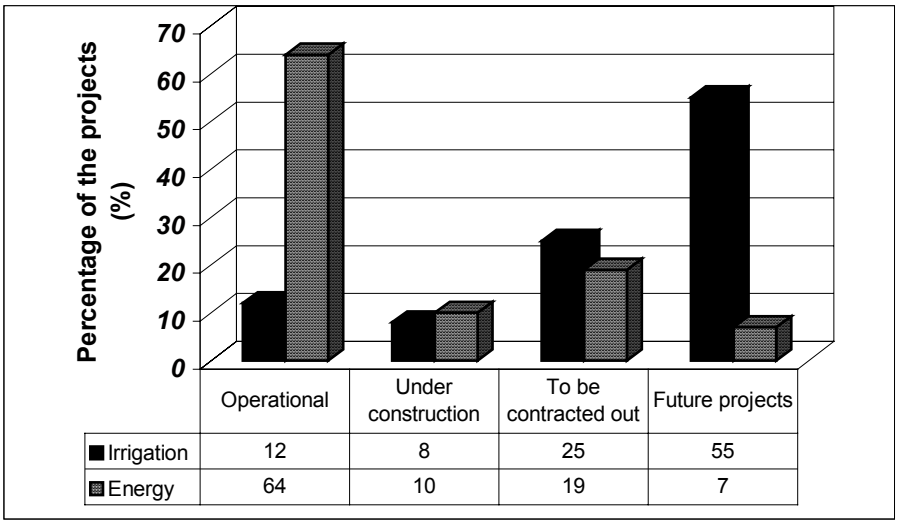

Chart 3.1 Different stages of energy and irrigation projects

Therefore, although the negative effects of the project are locally concentrated, with its negative impact on the livelihoods of local people both through the changes in the social systems and its impact on soil, the main benefits are provided at the national level.

4. Towards Sustainability

"Correcting the unsustainability of development is not simply a matter of choosing different technologies intervening in the environment. The mechanisms of perceiving, choosing and using technologies are embedded in social structures…"

Richard Norgaard (In Redclift and Woodgate, 1994, p.58)

Having demonstrated the current conditions in the GAP region, this chapter opens up a discussion with the aim of taking a broader view on the subject, considering different aspects and angles and presenting some suggestions on possible solutions underlining their limitations.

To start with the problem of salinization, there are two basic techniques suggested in the related literature for reducing its severity. One is decreasing the amount of water applied, which is in excess for plant growth. The second is providing drainage canals in addition to the natural drainage systems, through construction of surface drains, pumped wells and horizontal pipe drains (Bos, 2001). Application of different irrigation techniques depending on the crop type and the soil could be helpful in the achievement of the first method[12].

[12] See Hillel (1998) for different irrigation methods and their efficiencies.

Drainage however, being the 'key' to the solution of the problem, is essential especially in the Sanliurfa-Harran Plains where natural drainage conditions are inadequate. For the scope of this study, instead of technical applications of different drainage systems[13], the reasons for the failure in building them and the pre-implementation requirements will be discussed emphasizing extended roles of drainage.

While its importance is widely accepted, the general tendency in agricultural projects is that construction of proper drainage canals is neglected until drainage becomes the major constraint for agricultural development (Smedema, et al., 2000). Yudelman (1989) and McCully (1996) address three main reasons for this failure:

- The potential for future salinity problems usually does not take part in the project documents as engineers and designers find it unnecessary to build the canals in the first years of the project before salinization is observed.
- Policy-makers, politicians, bureaucrats, irrigation agencies and donors tend to invest in new projects instead of constructing canals for the already existing schemes. For this reasons, provided drains are poorly built that can deteriorate soon after.
- The whole process of construction is extremely expensive, especially in those areas that are already suffering from salinization.

The above points describe the situation of salinization in the Sanliurfa-Harran Plains. Other physical projects within GAP have been going on without solving the problem of salinization and drainage, which could be explained by the interest of authorities in new components of the project rather than going back to improve the existing irrigation schemes. As a result, in a considerably large area there are no established drainage systems and most of the construction is at the planning stage.

Due to the complexity of the issue, suggesting drainage as a solution brings about other factors including economic, social and political aspects to be taken into consideration. The driving forces behind the construction are varied depending on the project. To provide a general idea of required preconditions Smedema, et al. (2000, p.230) propose the following:

- ✓ Conducive public policies need to have been adapted to make investment in drainage attractive to the land users

[13] See Bos (2001) for selecting criteria of suitable drainage systems.

- ✓ Functional institutional frameworks and qualified professional cadres need to be in place to provide guidance to and to undertake planning and implementation of the drainage systems and its operation and maintenance
- ✓ Some research and pilot work generally need to have been done to establish best drainage practices and to familiarize the farmers with new technologies

According to the results of the SA, in Sanliurfa-Harran Plains, all of the respondents of the survey who lived in areas where drainage appears as an "acute problem" said that they would contribute to solving the problem. One third of the landowners stated a contribution up to 10% while 28% of them up to 20% and the rest stated contributions in smaller amounts. The figures, although do not refer to great amounts, reflect the willingness of the farmers for contribution. It is also suggested that, including landowners in the cost recovery could be an effective tool in equal distribution of the benefits as well (Kudat and Bayram, 2000). Broadening the historical use of drainage, Smedema, et al. (2000), speak of the potential contribution of drainage in lessening the governmental intervention. Considering the low performance of government-controlled irrigation systems (due to their inabilities to provide the services required by local people) in the whole world, making the agricultural systems user-oriented would help achieving both environmental and social sustainability. It is important however, to make sure that a new cost recovery system would be helpful in bringing about solutions, but should not lead to any further social problems.

Introduction of widespread drainage canals would be part of the technology transfer to the region, which has been noted to be unable to bring any positive change into the lives of local people. Therefore, it is important to fulfil the preconditions, especially the ones concerning the local people's interests.

One can however, argue that as in the case of drainage, despite their destructive effects on the livelihoods, technological innovations are essentials of development projects. According to Newson (1997), it is the multidisciplinary nature of large-scale projects that makes it inevitable for developing countries (in the case of GAP it is the region) to get outside consultancy once the project is planned. But as mentioned earlier, he also states that the success of the implementation depends on "how it is perceived to enhance or diminish local people's lives" (p. 248). Thus, to overlook the importance of the acceptance level of modern

technology by the society that is subject to it could result in waste of economic and social resources.

Cultural values, on the other hand can also be destructive for a society. As UNESCO (1995) puts it forward, while some affects social lives positively, others can cause negative impacts. Sarkar (1999, p.241), in his critique of the "cultural approach to development", argues that "emphasising cultural identity" leading to "people's right to be different" is not acceptable since it would also mean to accept the negative forms within a culture (like "subordinate status of women", child marriages, feudal landownership, etc.).

Nevertheless, acknowledging the validity of the above statements under certain conditions, it is argued that one should also consider the fact that it is still not the traditional ways of living or cultural values in a given society that causes 'backwardness', but it is rather the evaluation of 'developing' structures within a 'developed' context. It is then hard to rationalize 'their' actions as it is for them to take up the titles and goals put forward for 'their' development. R. Chambers (1995, p.16) addresses the importance of the "balance between these two realities" in his book entitled *Poverty and Livelihoods*:

> "There remain deep dilemmas over 'our' knowledge and values and 'theirs'. Our knowledge has an advantage with the physical universe and with whatever is microscopic, macroscopic, large-scale or distant from where poor people live. With these our linked communications, instruments and science empower us. But their knowledge has an advantage with the local, the social, whatever is continuously observed and experienced, and whatever close to them touches their lives and livelihoods; and they are the only experts on their life experiences and priorities. But our power in the past had overwhelmed their knowledge, hidden their analytical abilities, and allowed us to assume that we know what they experience and want. The problem is one of balance between two realities- ours, which is powerful, and theirs, which is weak. Standing back and standing down, we need to search for overlaps where their realities and aspirations can give rise to practical concepts which we can then use to help empower them."

Therefore, the best way to overcome adverse effects of both transfers of new technology and negative forms of culture appears to be avoiding sharp distinctions between the "two realities". "A human community can preserve the essential values of its identity and cultural integrity by modifying the social context to improve its quality of life. Traditional beliefs and practices are therefore not always a brake […] they may even become driving forces." (UNESCO, 1995, p. 217). Suggested by UNESCO (*op. cit.* 175), below are three different ways of adding the sociocultural context into the picture:

- Clarifying cultural values by reducing them to questions of utility or self-interest as a function of the population's response and reactions to specific issues

- Bringing out the social or cultural utility of the proposed options
- Applying a procedure for negotiation between development officials and local populations, bearing in mind the limits of all participation experiments bound up with other elements of the culture of the population concerned, the scale of the proposed changes the authority of the decision-makers and the economic and social interest of change

One of the first large-scale irrigation projects in the world was the Gezira scheme in Sudan, which was proposed after the construction of the Sennar Dam on the Blue Nile in 1925. Today, it is known as an example of social success and the reason is given as the two-way interaction between the applications and their impact on the society. The project "performed well because it provided food and security for people" and lead to incorporation of "a profit sharing arrangement" which eliminated "the possibility of large landowners taking over." (Newson, 1997, p. 253).

Being a constraint to the development of local people, the status of landownership in the GAP region is one of the most important issues to be resolved. In parallel with the above statements, one can also argue that landownership could be considered as a 'negative cultural value' and so be included in the traditional organizations that are to be removed according to the GAP Social Action Plan. However, it is clear that, GAP has changed other means of traditional livelihoods, but has not achieved to reverse the negative impact of the status of landownership in the region.

One of the most widely accepted solutions to the problems associated with landownership is allocating land resources to the landless and small landowners through political interference, which involve land reforms (Martinussen, 1997). Supported by the argument that small and medium-sized landholdings are more efficient that large ones, reallocation appears to be both socially and economically reasonable. Martinussen (1997) however, notes that although successful examples have been observed in South Korea, Taiwan, Egypt and a few more countries, the results in most cases were not satisfactory since the social structures did not permit the proper functioning of the new systems.

Considering the strong tribal relations in the GAP region and the possible difficulties in the applications of land reform, supporting the landless and small landholders through

establishing or strengthening cooperative societies, chambers and other forms of civil society organizations is suggested for the time being. These organizations first of all, would be effective in ensuring the access of landless and small landholders to information. Education, although is not the cause of the problems, can come up as part of the solutions. Kudat and Bayram (2000) note that, current training activities are not reaching the target groups. 42% of the farmers, who answered the questions of the survey carried out in the Sanliurfa-Harran Plains, indicated that they learned irrigation by trial and error. As mentioned earlier, this is partly a result of the weak relations that the farmers have with the officers. The civil society organizations then could take part in building trust among the local people and increasing their awareness in such crucial issues like sustainable agriculture, environmental protection and use of new technology. Second of all, through consultation and dialogue these organizations could contribute to increasing the degree of participation of local people in the project.

"Participation of local people" has taken its place in the literature as one of the basic development policies of GAP. It has been aimed to encourage participation at different stages of the project, like planning, implementation, monitoring and evaluation. However, according to Kudat and Bayram (2000) there are no investigations or documentation on to what degree this has been accomplished. "The development of water resources, the construction of the Ataturk Dam and the decisions concerning water allocation for different purposes were not subject to local level participation, but massive public support was assumed." (*op. cit.* 284). The fact, once again, leads to the central argument of this study that even the decisions directly related to the lives of local people were given based on some assumptions without reflecting their actual needs that would be based on their own sociocultural values. Quoting UNESCO again, "In the case of projects that have been 'sold' to the population but were designed and 'granted' from outside to meet needs and solve problems identified without reference to the population, participation will be conditional and relative only." (UNESCO 1995, p.216).

5. Conclusions

"Perhaps in another era of enlightenment, another era of love and respect for the land as something alive, these great artificial waterways will once more grace the land with their beauty and their life-giving properties."

Jacob W. Gruber (1998, p. 77)

Education, which is presented as one of the possible solutions to the current problem of salinization, should not lead one to reason the problem in terms of 'lack of education'. Rather, the problem has its roots embedded in the whole development idea of GAP. Large plans, gigantic designs, deep hopes and broken promises… Nothing in the region looks the same as it does in the documents. Taking one step back, looking at the problem from the starting point of the project, it is clear that pushing the region to go after western Turkey, through sheer technology transfers and attempts of removing traditional means of living, has caused both salinization and sociocultural disruption.

The current levels of salinity in the Sanliurfa-Harran Plains make drainage the best option in solving the problem. However, as the earlier examples of implementation of new methods display, it is not enough to bring only the technology, but is required to make sure that it really is a viable option for the soil and local people. Real active participation, research, guidance, public policies or any other tool useful to enable the policy-makers, designers, engineers, bureaucrats, social scientists and authorities to take the social and cultural values into consideration is essential.

Not only in constructing drainage systems, but when putting forward new projects and proposing solutions to the existing problems, ensuring that the physical, environmental and social systems in the region are in coherence is required. It must be considered that, each construction undertaken has impact on the environment and society and the extent to which local projects are realised depends on their compatibility with the two.

Finally, "…development has shown itself to be not a neutral concept of universal application but attached to a specific type of society." (UNESCO, 1995:82), so there should never be a "gap" between the sociocultural elements of a society and the development model suggested for that society.

6. References

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