



**SOUTHEASTERN ANATOLIA PROJECT (GAP) IN TURKEY
AND
FOOD SECURITY IN THE MIDDLE EAST**

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Abstract

Turkey's Southeastern Anatolia Project, GAP (Güneydoğu Anadolu Projesi), is a water-based regional development project implemented in a geopolitically important region where transboundary waters under the influence of political factors and changing climate in the global warming era. The analysis of the GAP, which has been under construction for a long time, will be beneficial for new integrated projects and regional development policies.

GAP is located in the geographical area called Upper Mesopotamia, where the first complex civilizations known were born and developed. Moreover, the location of the region at the crossroads of trade routes has made the history of this geography very colorful. Prehistoric settlements of human societies since ancient times haunted lead the stones of today's course and the Republic of Turkey in this region.

In addition, the GAP is implemented in lands neighboring geography that has 60-65% of the world's oil reserves and where the struggle for hegemony is intense. This project, which started more than 40 years ago and is nearing completion encountered many socioeconomic and political problems throughout its progress. In this article, the development process of the original project is outlined by emphasizing the increasing importance of the GAP in providing Sustainable Food Security in the region.

Keywords: GAP, Southeastern Anatolia Project, Food Security, Middle East, Regional Development

1.INTRODUCTION

The GAP was planned to generate 26.9 billion kWh of hydroelectric energy annually by constructing 22 dams and 19 hydroelectric power plants with an installed capacity of 7.302 MW . In addition, according to the GAP Action Plan, 1.058 million hectares of agricultural land would be irrigated after its completion (GAP 2019).

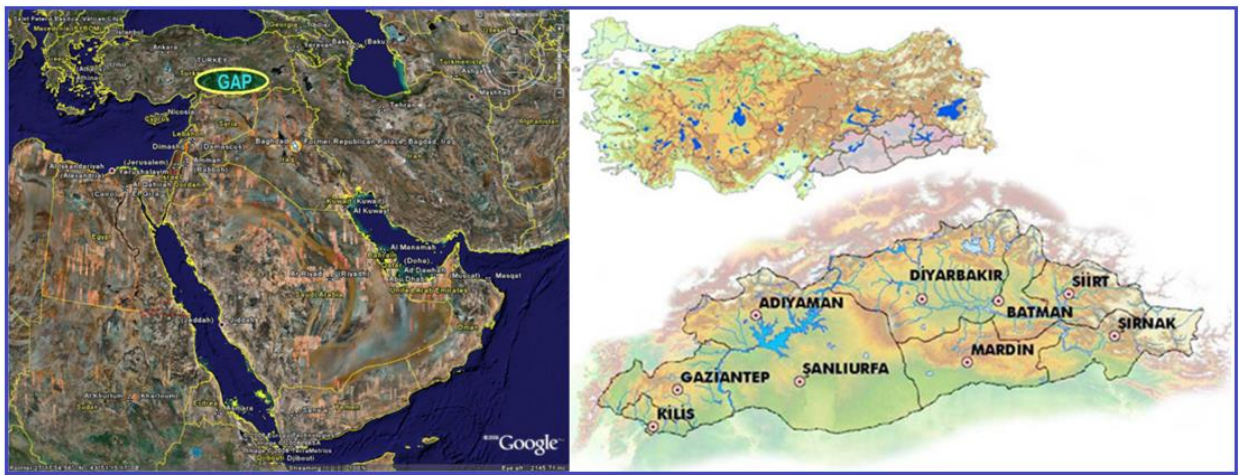


Figure 1 Geopolitical location of the GAP Region and main rivers (GAP 2014).

1.1.Development Process of the GAP

The main purpose of the GAP, which includes 9 provinces shown in Figure 1, is to increase the income level and life quality of the people living in the region by assessing the resources of Southeastern Anatolia Region, in order to eliminate the developmental differences between the region and other regions of the country, whilst ensuring economic and social development by increasing productivity and employment in the rural area. (GAP 2014). It was decided to use the Tigris and Euphrates waters for agricultural irrigation to increase productivity and hydroelectricity generation by constructing dams and irrigation infrastructures.

The first studies on the Euphrates and Tigris rivers, which are the water resources of the GAP, started in 1936 in line with the directive given by Atatürk (Bağış. A.İ, 1998). Flow measurements and topographic studies on the Euphrates were made by the Electrical Works Survey Administration (EİE), which was established in 1935. The research studies were completed in 1958 and it was determined that a total of eight dams, three on the Euphrates River and five on the Tigris River, were possible to be established and approximately 20 thousand hectares of land

were estimated to be irrigated. With the establishment of the State Hydraulic Works (DSI) in 1954 and the initiation of their regional studies, the project was further expanded. Seven project packages on the Euphrates and six project packages in the Tigris basin were combined to form a project bundle consisting of 13 projects within the infrastructure of the GAP.

State Hydraulic Works (DSI) undertook the construction of Keban Dam in 1966 and completed it in 1974. In the following years, the Karakaya Dam construction was started, and in 1980 the Euphrates and Tigris projects were combined and gathered under the name GAP. The construction of the Atatürk Dam started in 1981. In 1986, the State Planning Organization (DPT) was given the task of handling the GAP within the framework of integrated regional development and carrying the works out in coordination with other state organizations and stakeholders.

In the GAP Master Plan, which sets the development goals for the region out, is foreseen as a significant change in the Southeastern Anatolia Region, and the things to be done have been tied to a certain schedule. In this process of change, economic and social targets were determined, the main strategy was to ensure the stimulation of agricultural development to make Southeast Anatolia an export region. The development stages of the GAP are given in Figure 2.

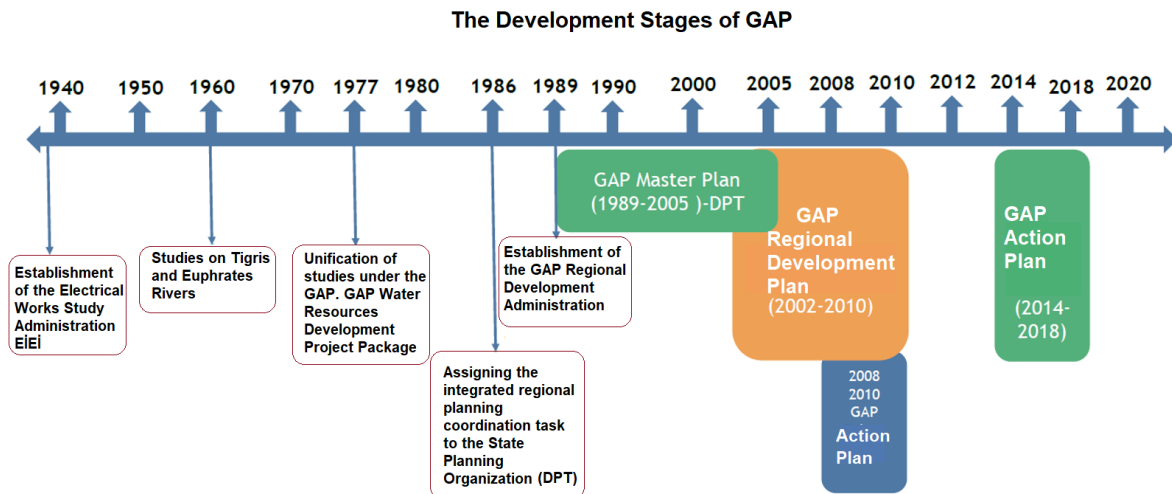


Figure 2. The development stages of the GAP (GAP Broşürü 2020).

GAP Regional Development Administration (RDA) was established in 1989 to take the responsibility of carrying these studies out, and the preparation of GAP Master Plan was coordinated by them. Unfortunately, the Gulf War, Iraq embargo, terrorist activities, economic crisis followed each other at that time interval of scheduled completion of the project. Especially in the second half of the 1990's, the Master Plan had significantly deviated from the targets due

to the financial problems, and it was clearly understood that, it would not be possible to complete the GAP in 2005. On the other hand, global awareness of environmental issues has increased, and concepts such as public participation, ecological pressure and footprint, sustainable development and sustainability of investments, as well as gender-balanced development, all have come to the fore. For all these reasons, the need to prepare a new plan that would bring a different approach to regional development has arisen. (GAP BKİ 2020).

1.2.Management of GAP

As mentioned above, the transformation of the GAP into an integrated regional development project (GAP 2019), led to establishment of the GAP Regional Development Administration in 1989, with its headquarters in Ankara and the Regional Directorate in Şanlıurfa, to carry out the work to be done in this framework. The GAP Regional Development Administration was established for fifteen years, and affiliated to the Prime Ministry and in the beginning, structurally expanded into the Southeastern Anatolia Project Supreme Council and Southeastern Anatolia Project Regional Development Administration in time (GAP 2020).

The GAP Administration has also been assigned to carry the secretariat services of the GAP High Council out. The GAP Supreme Council, which is the highest decision-making body of the organization, examines and decides on all kinds of plans, projects, and programs prepared by the GAP Administration. The Council was under the chairmanship of the Prime Minister, the State Minister in charge of the GAP, the State Planning Organization (DPT), Undersecretariat's affiliated Minister of Public Works; consisted of the Minister of Housing. The Minister of Agriculture and Rural Affairs has also been a member of the GAP High Council since December 2, 2002. When necessary, other Ministers have also been invited to the GAP Supreme Council regarding their issues (GAP 2020).

The initial 15-year period of the GAP RDA was extended for three years in 2004, five years in 2007, five years in 2012, and until December 31, 2019, in 2016. In addition, the headquarters of the organization moved from Ankara to Şanlıurfa in 2009, and the liaison office, which served for a while in Ankara, was closed at the end of 2015 (Gökçe B.). GAP RDA was affiliated to the Ministry of Industry and Technology with Decree No. 703 dated 2/7/2018.

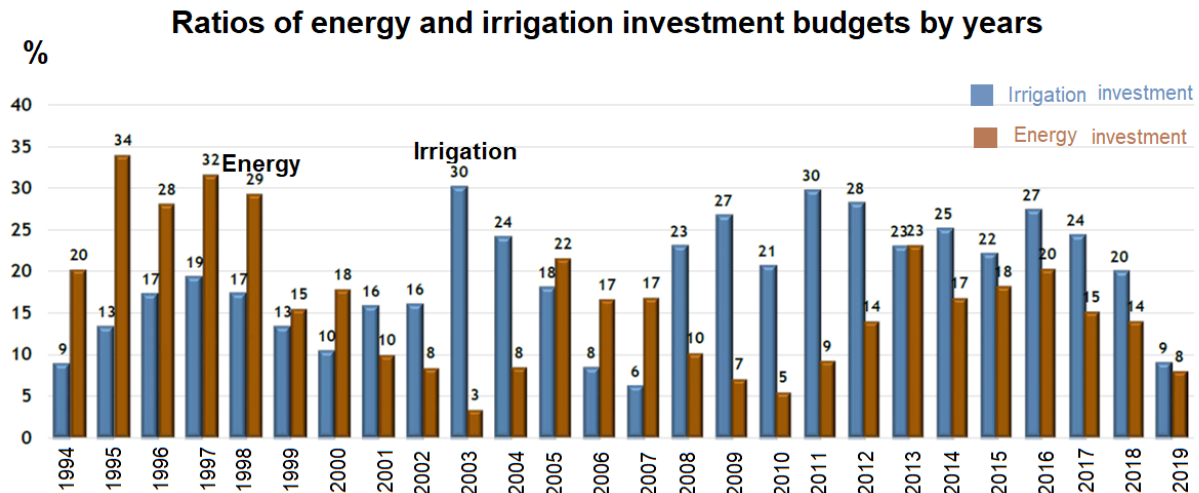


Figure 3. The budget ratio values allocated for irrigation and Hydroelectric Power Plant (HEPP) investments by years in the GAP (GAP Broşürü 2020).

2.GAP REGIONAL DEVELOPMENT PLAN (2002-2010)

In the initial GAP investments more shares were allocated for Hydroelectric Power Plant (HEPP) than shares for irrigation investments, but this policy has been changed in favor of irrigation investments since 2008 (Figure 3). With the decision of the Council of Ministers taken in June 1998, 2010 was determined as the target year for the completion of all investments in the GAP. The necessary coordination task for the completion of the GAP with all its sectoral components on the prescribed date was given to the GAP Regional Development Administration accordingly. Thus, unlike the Master Plan, of which its preparation started in 1989, the GAP Regional Development Plan (BKP), which regards human development as a priority target, emerged in line with the "sustainable development" approach and comprised the active participation of stakeholders from various segments. One important feature of this plan is that its enclosure of an "action plan" consisting of the projects to be implemented.

2.1.Basic Objectives of the Plan

In the preparation process of the Regional Development Plan, three main objectives were determined in line with the demands of the stakeholders; these are "Developing development infrastructures and protecting the environment", "improving human resources" and "reducing intra-regional development disparities". This plan, which was prepared after the Master Plan,



focussed on infrastructure building, human resources development, and environmental protection. Meanwhile, with the understanding of reducing the differences of development levels within the region, more local projects have been started to be implemented in the GAP. This step has also emerged as an opening against the delay in social benefits expected from the project.

The Regional Development Plan envisaged that all of the investments and projects determined in the GAP Master Plan and subsequent studies would be realized by 2010. In this plan, principles such as human orientation, participation, human development, social development and sustainability, have been brought to the fore (GAP BKİ 2020).

The total resource need of the Plan covering the period of 2002-2010 was calculated as 23.4 billion dollars with 1998 prices. 12 billion dollars of these investments would be from the state budget; and the remaining \$ 11.4 billion of investment was expected to be covered by the private sector. The development axes given below are taken as a basis in the 2008-2012 GAP Action Plan within the scope of the Regional Development Plan.

2.2.The GAP Action Plan 2008-2012

The plan was prepared basing on the 4 main development axes:

- 1) Realization of economic development
- 2) Ensuring social development
- 3) Infrastructure development
- 4) Improving institutional capacity.

Within the scope of this action plan, 73 "Main Actions" and more than 300 "Projects and Activities" took place.

2.3.The GAP Action Plan 2012-2018

In the 2012-2018 Action Plan, "Increasing Liveability in Cities" was added as the fifth axis to the previous version. 115 "Main Actions" and 494 "Projects and Activities" took place within the scope of this action plan. As can be seen, the plan objectives and development axes of the project were revised by taking the developments into account.

2.4.Target Completion Years of the GAP

The target completion years of the project were specified as 2005 in the GAP Master Plan, 2010 in the GAP Regional Development Plan, and 2012 in the GAP Action Plan, but these goals could not be achieved. According to the 2019 Latest Status Report published by GAP-RDA, the realization rate of energy projects was given as 78% and the realization rate of irrigation projects was 53%. (GAP 2019).

Presence of terrorist activities in the region and insufficient public funds have been effective factors in the continuous postponement of the completion date. The author made the following statement about the completion date of the project in his book published in 2011 (Yıldız & Özbay):

"It seems very difficult to reach the full completion in the GAP before 2023. This difficulty will arise from the fact that the project is an integrated project, includes 40 public institutions and 270 projects, even if the continuity of funding is provided, and it will take a long time for the land and farmers to prepare for agriculture for irrigation investments. It would be more appropriate to accept the year 2040 for the final development situation at the whole Basin scale. "

The current situation of the Project also reveals that the year 2040 is a correct prediction for the final development at the basin scale; however, feedbacks from this project have already been received as hydropower for a long time. It must also be noted that, developments in other areas have taken place as sub-projects at the provincial scale; the increase of the share of GAP region in Turkey's exports can be mentioned as an example in the this context, which reached to 5.34% in 2019, also by providing employment to 235 000 people (GAP Brochure, 2020).

3.INTERNATIONAL DIMENSIONS OF THE GAP

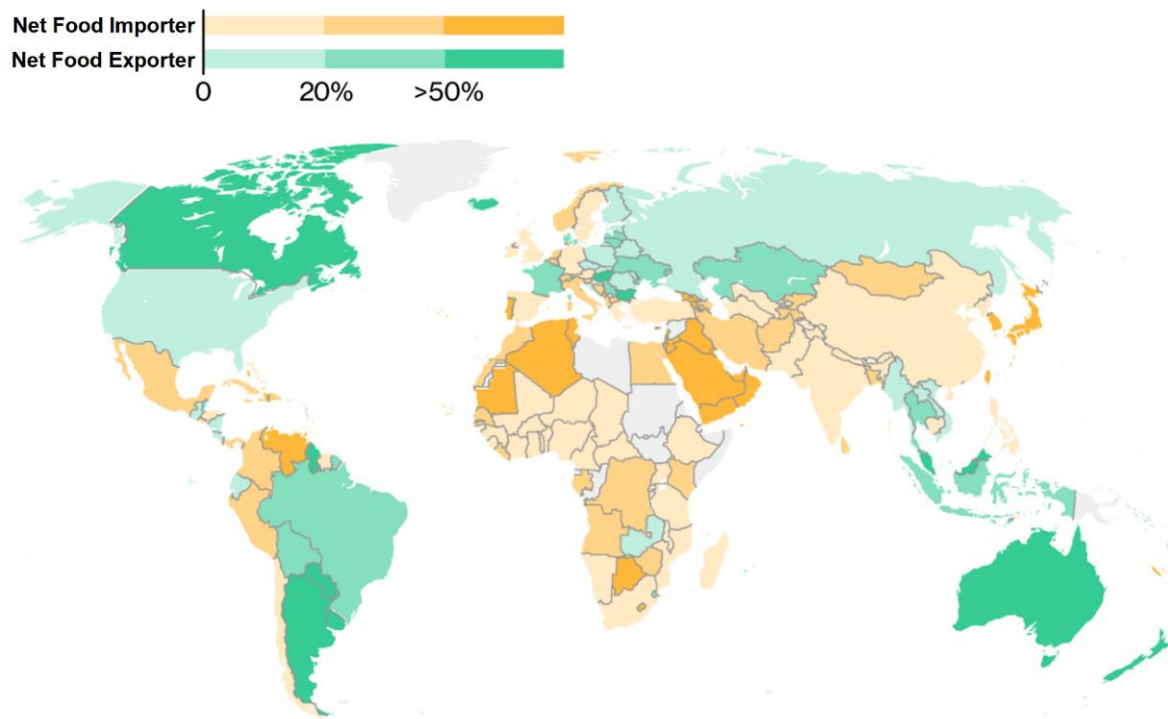
GAP has also affected international relations as an integrated project based on the development of transboundary waters. In this context, Syria, Iraq, and Iran are sharing the transboundary waters with Turkey and interacting with each other. Especially, bilateral and trilateral relations emerged after the GAP has gained international dimensions. Considerable increase in the objections of the riparian countries to the projects on the rivers of Tigris and Euphrates have been observed during the development and internationalization stages of the GAP; especially since the early 2000s, there have been serious internal conflicts and civil war in Iraq and Syria.

Nearly for a decade after the devastating conflict began in Syria, millions of people have been displaced and water infrastructures were destroyed. The current situation in the region indicates that it would be more appropriate to evaluate the transboundary waters of the GAP with a different paradigm than that of the past approach. In other words, the new paradigm should evolve towards the sharing of the benefits of water for regional development and food security, instead of the sharing of water by riparian states for their use (Figure 4).



Figure 4. The GAP Region, Tigris and Euphrates River Basins and riparian countries (GAP Raporu 2008).

The basis of this new understanding of regional cooperation and development should be to benefit from the potentials of the countries in the region at the highest level with a mutual benefit approach, which requires working on joint projects for regional development. These regional projects may be formed in cooperation under the coordination of a common central unit. This institutional structure can play an active role in project development and implementation to activate the local potentials of countries. In this context, feasible common goals can be set to ensure equitable, rational, and effective use of water for water and food security. Accordingly the GAP is evaluated as an integrated infrastructure in this study, which can be utilized for production of common benefits and protecting interests of all parts. In short, the GAP is a concrete project in which cooperation can be realized through joint investments aiming to increase and protect the stability of the region in the medium term. In summary, the GAP has emerged as an infrastructure that could offer various opportunities to beneficiaries who are aware of the advantages of such region-wide cooperation. It is worth to mention here that, the GAP was planned, as an integrated development project, during the Cold War global economic and international relations period and has become a project bordering a region being politically unstable and being reshaped, while political developments related to climate change are increasing the regional benefits of the GAP.



Source: UN's Food & Agriculture Organization Global Perspectives Studies

Figure 5. States of countries in the world food trade (Global Trade)

4.FOOD SECURITY OF THE ARABIAN PENINSULA

With the rapid population growth in the Middle East and the Arabian Peninsula, the demand for food is also increasing. As shown in the map issued by UN (Figure 5), the Arabian Peninsula is seen as a net food importer. There is an annual food market of 30 billion dollars in this region. Distant countries such as the European Union, USA, Australia, New Zealand, Brazil, and Canada stand out in this food market(Şahinöz A, 2011).

In an interview, Prof.Dr.Ahmet Şahinöz said, "Middle Eastern countries cannot meet their food demands with their production due to geographical reasons. Therefore, food imports of these countries will increasingly continue for many years. A production planning in the GAP region is required by considering the structure of food market of the Middle East countries." (Şahinöz A.).

With the further development of the GAP, a significant part of the demand in this market can be optimally met from the production in the GAP under much more favorable conditions. When the relations in the region are considered with the understanding of win-win instead of zero-sum, geographic proximity, consumption patterns, and similarity in consumption habits will facilitate cooperation in this field. However, it is not unlikely that the political



developments in the region, together with climate change, will cause the securitization of water and feed instability. The GAP is an infrastructure that will provide many opportunities for stability and cooperation in the Arabian Peninsula if it is planned from today.

5.LESSONS LEARNT FROM THE GAP

The Southeastern Anatolia Project has demonstrated that the goal of completing an integrated regional development project is primarily based on water as a time-bound resource, therefore giving a date for its completion is not appropriate. However, it is worth considering the criticisms, which are known have been risen regarding the floods affecting settlements, historical and cultural assets, forcing internal migration, being the source of increasing inequalities and social degeneration, being detached from the realities and needs of the people of the region, and finally being incapable of achieving to the promised changes within the prescribed time (Bilgen A, 2018).

While preparing the Master Plan, it was not taken into account that the integrated character of the GAP, which includes agriculture, industry, transportation, education, health, rural infrastructure sanctions, would weaken the probability of the completion of it in scheduled time. This situation caused the weakness of the integration and the connection of the project components. Product planning could not be appropriately implemented in the project and cotton production exceeded the planned level.

In 2008, the GAP Report of the National Industrialists' and Businessmen's Association (Bilgen A.) it was stated that "This delay not only decreased the technical profitability of the project but also caused the postponement of the development expected from the project in socio-economic terms." The same opinion was shared by Mehmet Kaya, President of the Diyarbakır Chamber of Commerce and Industry at that time (Kaya M.).

The GAP Regional Development Administration aimed a total development with the project. However, the insufficiency of the funds allocated to the project, the socio-economic and cultural differences of the region from other regions, and the terror problems affected the holistic progress of the project. Besides, the training of the farmer and the preparation of the soil could not be carried out in coordination with the agricultural infrastructure during the project implementation.

5.1.Some Factors Delaying the Completion of the GAP

The reasons causing a delay in the completion of the GAP in 2005 as planned, or more precisely, further progress in the project, can be listed as follows (Bilgen A.)

- Institutional factors such as central government, cumbersome bureaucracy, lack of institutional capacity, and lack of coordination between state institutions,

- The administrative structure of the GAP-RDA and administrative factors such as uncertain tenure, institutional capacity, and lack of authority arising from this structure,
- Economic factors such as insufficient financial resources, insufficient public, and private sector investments,
- Security factors such as preventing the private sector from investing in the region due to PKK terrorism supported by regional and non-regional countries,
- Political factors such as insufficient political will and lack of political stability

5.2. Benefits from the GAP

- While the rate of participation in the workforce was 34% in 2007, it has reached 42.2% in 2015, in parallel with the increase in the employment rate in the region, and the employment rate, which was 28.3% in 2007, has risen to 35.2% in 2015.
- Exports, which was 3.3 billion dollars in 2007, has reached 8.8 billion dollars in 2015, the share in the country-wide exports has also increased from 3.1% to 6.1%; while total exports of the country have increased by 34%, the region succeeded to increase exports by 168 %.
- New universities have been established in the region and the schooling rate increased.
- The number of hospitals in the region has increased and the capacities of existing hospitals have been increased.
- There has been an increase in transportation services as well; highways have been developed, new airports and terminals have been built (Su Krizi 2020).

6. CONCLUSION AND DISCUSSION

The GAP as an integrated regional development Project, which has been going on for almost half a century; it definitely is worth investigating for similar water-based development projects.

Considering the integrated feature of the GAP and its development phases, it has been revealed that it would not be possible to complete within the specified periods, after the first 20 years. It should be regarded as an ongoing process, although postponing the completion date many times caused unrest and a decrease in social expectations from the project, some deviations from the project goals, the uninterrupted continuity of the project for decades is considered a highly important success.

First of all, the extension of the project completion time made it possible to talk about a GAP with more flexible boundaries and expandable objectives. Since the beginning of the implementation of the GAP, many changes and developments have been experienced in the fields of water management, security, economy, and international relations, as well as scientific and technological advances in the world. The GAP has been a project where two generations of

directors have worked and developed in the field of technological and new management models.

Many changes, transformations, and fractures from the Cold War to the present have brought many different concepts such as social development, emancipation, security, sustainability, participation, good governance, and democracy to the agenda of the project executives in the GAP's practices. Accordingly, the flexibility of the GAP made it possible to constantly redefine the project and to be developed and reproduced accordingly.

When the history of the project is examined, it will not be surprising to see that the completion of the GAP with all its functions and new developments will extend towards the mid-2000s. Mass migration from the border to the GAP region, due to both the Gulf war and the Syrian civil war, military and international political developments in the region are reshaping the regional impact of the GAP on a wider scale, as well as extending the completion period of the project. For example, the GAP Region has prevented the social problem from getting worse by accepting most of the mass migrations caused by the civil wars in the region. 1,162,302 is the number of Syrian refugees in the GAP region's total population, 32,42% of the number of Syrians in Turkey: This is the One-third of all registered Syrian refugees in Turkey live in Sanliurfa and Gaziantep cities. It should be noted that developments in the GAP have had a significant effect on providing this opportunity to refugees(GAP 2019).

As of 2019, 571,591 hectares (54%) of irrigation projects, which are subject to criticism due to their slow walking in the GAP, have been put into operation (GAP 2019). The completion rate of energy projects in the GAP is given as 78%.

Hydro energy generation projects that have been completed earlier than irrigation projects, which have been spread over a long period in the GAP. This time difference causes many speculations about the reasons of this delay.

The reason of early completion of the energy projects in the GAP is these energy projects are their easiness of starting and shorter payback period than irrigation projects, as well as contribution to meeting the increasing energy needs of the country, and their much less need for secondary preparations. Additionally, farmers, soils of the fields to be irrigated, irrigation unions, agricultural product warehouse, logistics services, and marketing facilities should be prepared for irrigation practices. Setting this necessary chain takes time and needs to be well prepared, considering the fact that chains are as strong as their weakest link. Due to the security, socio-economic and socio-cultural characteristics of the region, various problems were experienced in the realization of these preparations as steps that complement each other. For example, failure to comply with the planned crop pattern, improper irrigation in the Harran Plain resulted in salinization. Some irrigation projects had to add drainage systems afterward.



While the drainage waters returning from irrigation to a transboundary stream, any disruptions in the purification and reuse of these waters created problems. Since the cotton planting in the region exceeded the plan targets, the weaknesses in the institutional structure of the water users organizations decreased the progress rate. State Hydraulic Works (DSI) General Directorate has decided to convert all irrigation projects, including those that have been implemented, into modern irrigation systems in the region in the early 2000s.

Progress of the GAP has been much slower than that planned in the beginning, but it should be noted that it reached to the current level of realization slowly but without any interruption. 22 dams and 19 hydroelectric power plants, 9 drinking water projects, and about 1 million hectares irrigated area will serve not only Turkey, but also the whole region's food security and stability.

The experiences gained from the GAP show that a water-based integrated regional development project requires more attention for farmer education and training in parallel with building engineering infrastructures such as dams ,irrigation channels etc..

Considering about 40 year period of implementation, it would be a more realistic goal to complete such a large and integrated project in interrelated sub-regional parts.

In conclusion we should be aware of that, the GAP has potential to serve not only development of Turkey, but also peace and stability of the whole region.This can be achieved by regional development and mutually beneficial approach among the neighboring countries in time.

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