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## Southeastern Anatolia Project and Turkey's Relations With the Middle-Eastern Countries

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# What is the Southeast Anatolia Project?

The Southeast Anatolia Project (GAP) is the largest and most comprehensive development project ever implemented in Turkey. It evolves around 13 irrigation and energy projects, which will be realised on the Firat (Euphrates) and Dicle (Tigris) rivers. The total area which will be irrigated by these projects is 1,641,282 ha.; 1,083,458 ha. in the Dicle River Basin. In addition, 7,561 MW of hydroelectric power will be generated by these projects. The hydroelectric power generation capacities of the Firat and Dicle River Basins are 5346 and 2215 MW, the total annual electricity production potential being 18,477 and 7,780 Gwh, respectively.

It is planned to complete the Project by the year 2001. Therefore each year 150,000 ha. of land will be brought under irrigation. The largest project of this irrigation and energy system is the Atatürk Dam and Hydroelectric Power Plant, together with the Urfa Tunnels. Total investment cost of the dam, HPP and the tunnels is approximately US \$ 1.9 billion. The total hydroelectric power capacity of this project is going to be 2400 MW (8X300) and the total irrigation area, which is composed of five projects, will reach 852 781 ha.

The project area consists of the jurisdiction of six provinces of Gaziantep, Diyarbakır, Şanlıurfa, Mardin,

Adiyaman and Siirt, covering 73,836 km<sup>2</sup>. This corresponds to 9.5 per cent of the total land area of Turkey. The total population at the 1985 Census was reported to be 4,303,567 in the region, accounting for about 8.5 per cent of the nation's total of 50,664,458.

The development opportunities which will be created in Southeastern Anatolia by these irrigation and energy projects can be easily imagined if one takes into account the fact that the total area to be irrigated by GAP is approximately 50 per cent of the total cultivated area of the region. Thus, it will be possible to increase the existing agricultural production of the region considerably by introducing modern agricultural technology to the

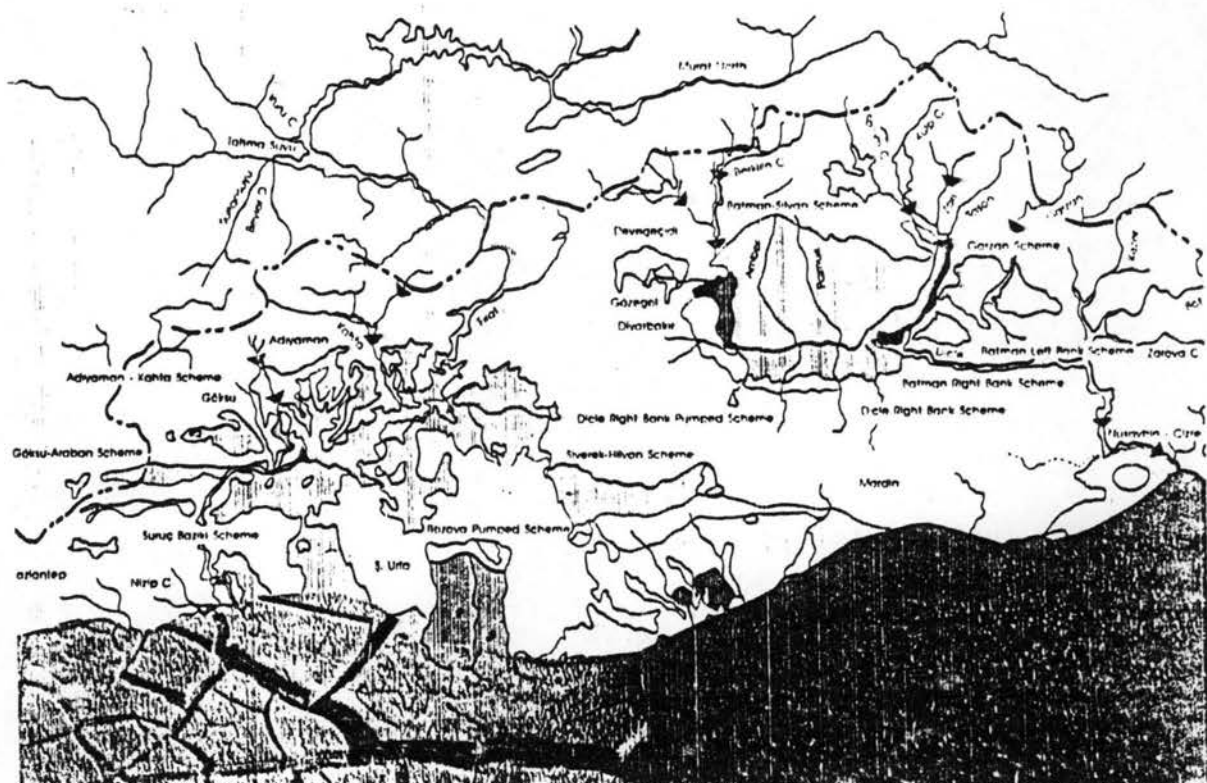
irrigation projects.

This increase in agricultural production will start a chain reaction in other sectors of the regional economy. In order to maximise the benefits of this chain reaction the Government intends to realise the projects within the shortest possible time.

The important increase in agricultural production will bring about dramatic changes in the economic and social life of the region. It will also be a great opportunity for laying the foundations of industrialisation in the South East. Since there will in any case be a need to establish various plants, which either supply inputs to agriculture or process the outputs of the agricultural

## TECHNICAL FEATURES OF ATATÜRK DAM AND DAM LAKE

Volume of Embankment	84.500x10 <sup>3</sup> m <sup>3</sup>
Average Annual Flow	26.654x10 <sup>6</sup> m <sup>3</sup>
Minimum Storage Capacity	36.470x10 <sup>6</sup> m <sup>3</sup>
Useful Storage Capacity	12.000x10 <sup>6</sup> m <sup>3</sup>
Total Storage Capacity	48.470x10 <sup>6</sup> m <sup>3</sup>
Reservoir Surface Area	817 km <sup>2</sup>
Drainage Basin Area	92.338 km <sup>2</sup>
Height from Foundation	176 m.
Height from Riverbed	169 m.
Crest length	1914 m.
Crest Width	15 m.
Crest Elevation	549 m.
Riverbed Elevation	333 m.
Minimum Water Elevation	526 m.
Maximum Water Elevation	542 m.



sector, it will be relatively easy to turn these initiatives into general industrialisation activity by way of a large-scale planning exercise. The other elements of such a planning exercise will be identification and solution of the problems to be encountered in the social and physical infrastructure, on the one hand, and the financing of all these activities on the other hand.

It is quite obvious that such a big irrigation area will create important business and development opportunities in other sectors of the economy through backward and forward linkages.

There will also be social and economic problems and imbalances which will be instigated by increased production.

Therefore in order to make use of the development opportunity and to realise a smoother transformation of the regional economy, a multidisciplinary integrated project approach has been adopted by the Turkish government.

GAP has already aroused significant interest on the part of foreign companies and firms. A number of important delegations have visited the region and subsequently presented business proposals. Foreign-owned or partially foreign capital based joint ventures are engaged in vital sectors of Turkish industry.

#### Business Opportunities In The GAP Region

The area enjoys a favourable environ-

ment for large-scale, intensive agriculture. Irrigation will provide the region with a very good opportunity for utilising its agricultural potential. Therefore important increases are expected in crop production following the realisation of irrigation schemes. This increase will create a new investment climate for developing agro-industries and agricultural input producing industries in the Region.

The types of agro-industries depend largely on the market opportunities which will determine the extent to which each product will be processed in the region. The composition of agro-industries will determine the development opportunities in packaging industries. If preliminary crop pattern estimations prove to be profitable in

## TECHNICAL FEATURES OF ATATÜRK HYDROELECTRIC PLANT

Width	49 m.
Height	55 m.
Length	257 m.
Total volume	340.000 m <sup>3</sup>
Number of turbine generators	8
Installed Power of each group	300.000 kwh. (300 MW)
Total power of plant	2.400.000 kwh. (2400 MW)
Loading factor	30 %
Capacity of power production	8.9x10 <sup>9</sup> kwh. Hours/Year
Hydraulic turbines	8 no middle speed vertical type Francis turbines.
Output tension of each generator	15.750 Volt
Frequency	50 Hz
Speed	150 rpm
Number of power transformers	24
Power of each transformer	105.000 KVA
Input-Output tensions	15.750-380.000 Volts

## TECHNICAL CHARACTERISTIC OF THE TUNNELS SYSTEM

Type	
Length of tunnel	26.4 km. each, two parallel tunnels
Grade	T1-0.00062802, T2-0.00062948
Excavation diameter	Approximately 9.50 m.
Inner diameter	7.62 m.
Lining thickness	0.95 - 0.40 m.
Amount of rock bolt	4.600.000 kg.
Amount of shotcrete	300.000 ton
Amount of excavation	3.000.000 m <sup>3</sup>
Amount of concrete	1.150.000 m <sup>3</sup>
Amount of discharge	328 m <sup>3</sup> /se
Area to be irrigated	476.374 ha.
Geological formation	Calcareous marl, clayey marl
Hydraulic load	T1-40.25 m. T2-39.74 m.

view of market conditions, important increases are expected in cotton, sugar beet, oil seed, vegetable and fodder crop production. It is evident that the expected increases in crop production cannot be realised without increased use of modern agricultural inputs such as fertilizers, improved seed varieties, machinery and pesticides. A list of possible investment opportunities in the GAP region based on selected sectors and fields of activity could provide an initial stimulus to potential foreign

investors.

### Agribusiness

For foreign investors agriculture represents one of the easiest ways of entering the Turkish market. Low interest financing is available, labour is inexpensive, imports are largely unnecessary, whereas domestic and export markets show high demand. There are attractive near future investment opportunities in the agricultural sector

and in the agro-industries such as seeds, seedlings, nursery production, green-houses, integrated livestock production, and integrated poultry production. The Ceylanpinar Agricultural Enterprise is one of the establishments looking into joint investments with foreign firms in the field of agriculture and agro-industries including food processing and canning, edible oil, packaging and storage facilities.

### Animal Husbandry

In order to overcome the present obstacles and contribute to the attainment of the development objective the strategy for livestock development foresees the improvement of local cattle and sheep by artificial insemination, disease control and import of quality breeding stock in order to increase milk and meat production. Maintaining self-sufficiency, increasing export margins, promoting more intensive stock-raising practices especially for cattle such as controlled grazing, the introduction of improved grasses and legumes, a shift to cutting and feeding as well as hay and silage production during the period of rapid pasture growth and increased production of supplementary feed concentrates are also necessary. Furthermore, commercial establishments for stock raising, processing of livestock products and marketing need to be encouraged.

### Irrigation and Hydropower Generation

There are eight sites in the region which are reserved for dam and hydroelectric power plant construction under the Build-Operate-Turnover (BOT) arrangement. The magnitude of the possible projects exceeds 1600 megawatts of hydroelectric power. Opportunities in the water resources development

Comparison of the GAP Region and Turkey by Selected indices, 1985

Index	Unit	Turkey	GAP Region	GAP Share (%)
Land Area	km <sup>2</sup>	779.459	73.863	9.5
Total Population		50.664.458	4.303,567	8.5
Population Growth (1965-85)	% p.a.	2.4	2.9	--
Population Density	/km <sup>2</sup>	65	58	--
Urban Population	% to total	53.0	49.9	--
Economic Structure	% in GDP/GRP			
Agriculture		17.7	39.6	(9.0)
Manufacturing		25.2	11.7	(1.9)
Gross Domestic Product	10 <sup>9</sup> TL	83.785.419	3.365.559	4.0
Per Capita GDP/GRP	10 <sup>3</sup> TL	1.822	862	(47)

Source: Statistical Yera Book of Turkey 1987

area include dams and hydropower plants via the BOT model, pump and gravity irrigation systems, establishment of pilot areas to introduce new irrigation methods and better farming techniques, as well as computer and electronic equipment used for water distribution control.

### Transportation

Intensive economic activities in the GAP region necessitate the upgrading and expansion of the transportation network. Motorway expansion and toll collection, road transport facilities and services, railway extension and realignment, the improvement of regional aviation resources will be essential with the development of intra-regional and international trade.

### Telecommunications

The government has initiated a rural development project in the GAP region which will result in over 27 towns of more than 50,000 people by

the year 2000. A review of existing telecommunications systems and a quantification of the need for additional services in the region are required for development of alternative systems.

### The Chemical Industry

Turkey can currently supply all the fertilizer that it requires; 25 to 30 per cent of fertilizers are imported but our country also exports about the same amount of different types of fertilizer. With the increase in demand, there will be a need for the construction and operation of new fertilizer plants in the GAP region since it is not economic to transport fertilizer for long distances. On the other hand a tremendous increase in demand for pesticides and herbicides as well as polypropylene packaging materials is also expected.

### Industrial Zone and Infrastructure

When the irrigation and power generation projects are completed, in parallel

with the increase in agricultural production the development of agro-industries will also take place. Agro-industries and related industries will be established within the pre-planned industrial zones. There is an existing, full-capacity industrial zone in Gaziantep which will be expanded, and other zones are to be developed in certain cities for textile machinery, agricultural machinery and equipment.

### Forestation and Wood Products

By 1988 71,000 ha. of energy forest had been established in the region. In 1988 a further 7,770 ha. of energy forest plantation was planned. The goal is to promote poplar plantation in order to be able to meet the increasing demand for firewood and industrial raw material, while the remaining production can either be exported to the Middle East countries or used for furniture and packing materials.

### Hotel Construction and Management

With the increase in economic activities there will be a large number of entrepreneurs, as well as academic researchers visiting the region with the intention of investment, marketing, promotion, and research. Events such as conferences, seminars, and fairs will be a common scene. At present accommodation is inadequate and accordingly the planning, construction and management of such facilities are priority needs.

### Urban Development

Unplanned development, sub-standard housing and insufficient urban infrastructure are the main problems, especially in the large cities of the region.

The drastic changes in the economic and social life of the region will result in a migration to the large cities. High unemployment already drives people towards the possible job markets in

large cities and towns. This migration will grow as the region is developed through the GAP initiatives. In order to resolve the urban problems urban land management is necessary with planned and programmed infrastructure. Physical amenities such as water and electricity supply, storm drainage, sewage treatment facilities, roads, housing and communications systems are needed.

## Turkish State Railways' New Attempts

### SALOON CAR

The Saloon Car, prepared with quality features overclassing the luxury and comfort of a first class hotel room with its telephone, telex, telefax, data and modern terminal facilities to secure easy access to all sorts of business transactions besides its comforting bedroom, bath, kitchen and office room, is ready to serve businessmen particularly.

In the saloon car with American bar and an 8 person rest corner placed in its lobby, hot and cold service is available.

Also, the car consists of three double bedrooms, an 8 person meeting room, a large suite with toilet and shower and convenience to live, work, and sleep for two persons. It has an independent heating and turbo ventilation system. Lighting is automatically arranged. A cook, a waiter and a conductor gives continuous service in the car during the trip.

