WATER ISSUES AND THE EXTENDED UNDERSTANDING OF 'SECURITY': THE SOUTHEAST ANATOLIA PROJECT AS A MULTIDIMENSIONAL POTENTIAL FOR CRISIS?

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1. Ecological Issues and Security: Basic Considerations

> It takes no stretch of the imagination to see that the human species is now an agent of change of geologic proportions. We literally move mountains to mine the earth's minerals, redirect rivers to build cities in the desert, torch forests to make way for crops and cattle, and alter the chemistry of the atmosphere in disposing of our wastes. At humanity's hand, the earth is undergoing a profound transformation - one with consequences we cannot fully grasp.[1]

The past ten years have heralded the end of the bipolar system of power with relatively clear structures and agents in the international system. In consequence the term 'security' and its possible contents came under heavy discussion. After few years of change an unspoken agreement of the necessity to broaden the term has been reached. New aspects have arisen, old ones have disappeared. Ecological issues occupy a prime current position and have become an undeiable part of a new understanding of the term 'security'.[2]

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[1] S. Postel, 'Carrying Capacity: Earth's Bottom Line', World Watch Institute (ed.), **State of the World 1994**, Washington, 1994, p.3.

[2] J. N. Abramovitz, 'Freshwater Failures: The Crises on Five Continents', **World Watch**, September/October 1995, pp. 27-35; P. Ehrlich and A. Ehrlich, 'The Environmental Dimensions of National Security' and E. Keppler, 'Environmental Problems: A Determining Factor of Future Politics' in J. Rotblat and V. I. Goldanskii (eds.), **Global Problems and Common Security, Annals of Pugwash 1988**, Berlin, 1989,

In consequence, ecological or environmental security has become one of the key phrases on the international political agenda. Environmental security requires both a comprehensive and a deep international cooperation network. National interests are focused on ecological aspects because of new kinds of threats, which do not stop at the border of the individual country. Analyzing the global situation, legal frameworks are, to a large extent, not existing or not adequate for new challenges. On the other hand, it is well known that a mixture of regional political differences and debates on scarce resources may cause a far reaching crisis going beyond the borders of a single region.

Thus, an increasing interest has developed among scholars and practioners regarding the effects of ecological issues like scarce access to water, polluted air and ground, dealing with waste etc. on other issues like demographical change, political decision making, economic and technological questions or military considerations.[3]

From a more general point of view, ecology may be one of the trigger areas for far reaching crises.[4] Others are demographic change, politics, military issues, economic issues and technological change. All areas mentioned represent a closely linked network.

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pp.180-190 and 191-217 respectively; T. F. Homer-Dixon, 'On the Treshold: Environmental Changes as Causes of Acute Conflicts', **International Security**, Vol. 16 (2), Fall 1991, pp. 76-116.

[3]C. E. Smith and J. W. Smith, 'Economics, Ecology and Entropy: The Second Law of Thermodynamics and the Limits to Growth', **Population and Environment**, Vol. 17 (4), March 1996, pp. 309-321; J. R. Starr, 'Water Wars', **Foreign Policy**, No. 82, Spring 1991, pp. 17-36; W. D. Sunderlin, 'Global Environmental Change, Sociology, and Paradigm Isolation', **Global Environmental Change**, 1995, Vol. 5 (3), pp. 211 - 220.

[4]Triggers for crises, trigger areas see for instance: A. Smutek-Riemer, 'Diskontinuitüten: Neue alte Facetten in globalen Systemen', **Österr. Milit. Zeitschrift**, Heft 4/1994, pp. 367-374; 'Demographie und Ökonomie: Die anderen Bedrohungsquellen', **Österr. Milit. Zeitschrift**, Heft 5/1994, pp. 471-478; 'Die Früherkennung von Krisen zwischen Anspruch und Wirklichkeit: Anforderung an ein Krisenfrüherkennungssystem aus österreichischer Sicht', **Allgemeine Schweizerische Militürzeitschrift**, 3/1995, pp. 22-24; 'Krisenfrüherkennung: Die Quadratur des Kreises?', **Soldat und Technik**, Mai 1995, pp. 258-260; A. Smutek-Riemer, **Discontinuities and security political implications**, (unpublished paper) Vienna 1993; and P. Kennedy, **Preparing for the Twenty-First Century**, New York, 1992.

Ecologic issues show a number of special features in their performance. There are often longrunning effects, i.e. big time lags between cause and effect, that make assessment extremely difficult, sometimes even impossible. The intensity and speed of performance differ more than in any other area of potentials for crisis. They may reach from creeping causes and effect chains to events with a tremendous impact on the whole system. For reason, complexity and nonlinearity have a very special place in the 'concert of ecological issues'. *Complexity* is the result of interactions between actors within a system. These actors are in a number of relations and are depending on each other in their action and reaction. Relations are often not clear but fuzzy and grey. *Non-linearity* means that causes and effects cannot be assessed with classical mathematical equations. Small causes after crossing a crucial point result in big effects. This is often decribed with the metaphor of a 'butterfly effect'. Similar issues cause 'non-similar' effects. This is a result due to the sensitivity of the starting conditions. One never finds exactly the same starting condition in two constellations of a situation.

As a main result of these two features, consequences (effects) are very often difficult to be made out. Finally, hardly any other potential for crisis brings the status of the system to a level of irreversibility like ecological issues do. For the reasons mentioned, ecologogy as a potential for crisis has become a central issue to the analysis of intra- and inter-state conflicts.[5]

The purpose of this paper is then to investigate under which conditions ecological issues, especially access to water, may affect state security and as an extension, international security. Accordingly, the first part of this paper will analyze water as a basic resource and strategic asset in the above mentioned network of issues. This will provide a basis to find out explicit reasons for conflicts and indicators for water resource vulnerability. In the second part, the special situation in the Middle East will be analyzed. Main attention will be given to the relations between demographical change, economic activities, political considerations and the geographical-climatic conditions in the area. Finally, the country case study referring to Turkey and its specific situation with the huge potential of water from the two main rivers Euphrates and Tigris and the Great Anatolia Project will be drawn up.

Ecological issues like scarce water can be seen as an excellent example for an interdisciplinary problem. Therefore, a solid analysis requires an interdisciplinary approach. This will be provided by using the view of historical sociology.

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[5]The term 'potential for crisis' refers to the fact that there is 'something', a constellation of facts which might lead to the outbreak of a crisis, i. e., a crucial phase in the development of society. The outbreak is possible but it is NOT a must.

2. Water: Basic Resource in an Issue Network

> Fresh water is a fundamental resource, integral to all ecological and societal activities, including food and energy production, transportation, waste disposal, industrial development, and human health. Yet fresh water resources are unevenly and irregularly distributed, and some regions of the world are extremely watershort. As we approach the twenty-first century, water and water-supply systems are increasingly likely to be both objectives of military action and instruments of war as human populations grow, as improving standards of living increase the demand for fresh water, and as global climatic changes make water supply and demand more problematic and uncertain.[6]

Scarcity of resources or a restricted power to dispose over resources may represent a potential for crisis in the near future. In this context, water has a special position. The mere disposition does not say anything, but connecting it with demographic change like population growth, urbanization or economic activities, access to water gets a totally different meaning.[7]

Mega cities especially pose a complex level of problems to be solved - supply with clean and useable water is one of the key tasks. Water supply in large and densely populated areas requires access to water. Not having access to the area itself or to the near surrounding means that people are forced to bring water from very long distances to the area where it is required. In any way, one is in a highly dependent relationship and in consequence is extremely vulnerable. The best example is the oil crisis of 1973. It was a kind of artificial crisis provoked by a relatively small number of countries. This crisis showed the dependence, the weakness and vulnerability of the world's economy and the potential for power performed by the former OPEC-countries. As crude oil was and still is one of the key resources for a large proportion of industries, the impact of the crisis and the consequences were dramatic and longlasting.

Concerning water, the situation is a little bit different in comparision to the oil issue. For decades water has not been assessed a scarce good. Changes in the status of a natural resource which has been available in a sufficient quantity usually happen relatively slow and often unnoticed by society. By the end of the twentieth century reality shows a different global picture. 'As we approach the twenty-first century, water and water-supply

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[6] P. H. Gleick, 'Water and Conflict; Fresh Water Resources and International Security', **International Security**, Vol. 18 (1), 1993, p. 79.

[7] S. Postel, 'Where have all the rivers gone', **World Watch**, May/June 1995, pp. 9-19; S. Postel, 'Forging a Sustainable Water Strategy', World Watch Institute (ed.), **State of the World 1996**, Washington, 1996, pp. 40-59.

systems are increasingly likely to be both objectives of military action and instruments of war'.[8] Access or no access to water may force to change fundamental principles in several areas of economy and it may also be the target of political goals and activities. It is the interplay between the given topographical and geographical situation, climatic conditions, economic and political targets and demographical issues like population growth, urbanisation and migration that make water a strategic issue.

3. Water: A Strategic Asset?

> Since mid-century, three trends have contributed most directly to the excessive pressure now being placed on the earth's natural systems - the doubling of world population, the quintupling of global economic output, and the widening gap in the distribution of income.[9]

In the triangle of 'demographical change, globalization in an economic and political sense, and geographical and climatic conditions', access to water plays a crucial role.

Drawing up a pattern of attributes on a so-called strategic resource one can find the following criterias:[10]

1. Degree of scarcity
2. Sharing proportion between states or regions
3. Number of states participating
4. Relative power of the states participating
5. Option of alternative resources (including access)
6. Degree of substitution by other goods
7. Ability to recycle ('renewability') and to bring the resource back in the ecological circulation

These attributes influence each other with different intensity and provoke positive feed-back loops with probable time-lags. Furthermore one has to take into account an intra-systemic networking-effect (i.e. a 'dialogue' between the attributes named above) and an inter-systemic networking-effect

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[8] Gleick, **Water and Conflict**, p. 79.

[9] Postel, **Carrying Capacity**, p. 5.

[10] Gleick, **Water and Conflict**, pp. 84-86 refers to T. Naff and R. Matson, **Water in the Middle East, Conflict or Cooperation?**, Boulder, 1984; and M. R. Lowi, **The Politics of Water Under Conditions of Scarcity and Conflict: The Jordan River and Reparian States**, Ph.D. dissertation, Department of Politics, Princeton University, Princeton, New Jersey, 1990. Also see M. R. Lowi, 'Transboundary Resource Disputes: The Case of West Bank Water', **International Security**, Vol. 18 (1), 1993, pp. 113-138.

(i.e. a multi-dimensional stimulus and response game with other resources being able to substitute the others and with other strategic targets). Seeing it form this perspective we are facing a complex problem.

Regarding the characterization of a strategic variable as fundamental for our assessment and putting water into that grid, it seems obvious that we are confronted with a 'highly strategic resource'. Treating resources as natural, freely available and free of charge over a long period of time, usually leads to waste. As it is well known, no good is absolutely freely available. All of them are only available in restricted quantities. Sometimes it is difficult to define the exact period of time when a good is to be defined as a scarce one in a stricter sense of the word. Theoretically speaking, fresh water is renewable. In reality fresh water is finite, uneven and poorly distributed, and in many cases subject to a far reaching control by one nation or a larger group.

So far, many nations focused on non-renewable mineral resources (eg. oil or rare minerals). States mostly did not necessarily have to be careful with the regulation of their water resources. On the other hand, if a region or a whole country is cut off from high-quality water supply, it may easilly suffer heavy economic and social damage. 'How fast these limits are reached depends on three factors: (1) the absolute availability of water; (2) the population needing to be supplied; and (3) the level of development desired, as measured by both the need for water and the efficiency with which water is used.'[11]

We also know that complexity makes it impossible to forecast when water will be exhausted. Nevertheless, one may apply an evalutation procedure to assess a country's water vulnerability. Beside general economic, political and ecological conditions, availability of water, sharing proportion and all other attributes named above, one may find some larger quantitative indicators helping in an assessment situation.[12]

One helpful indicator is the ratio between annual water withdrawals (=actual demand and not the potential demand) and the annual water availability (=actual supply). The ratio indicates which country shows 'over-uses or waste'. Assessing this fact from a serial point of view, one may discover potentials for coming crises. Those crises can happen either within a country and/or between countries.

Another indicator points out to the relationship between population growth and water supply. The per capita water availability is the minimum level for an efficient working nation using industrialization standards.

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[11]Gleick, **Water and Conflict**, p. 90.

[12]For the following indicators see, **ibid.**, pp. 99-106.

Showing less than the minimum level, a country may topple into deep economic and social troubles.

The third indicator refers to the share proportion. This is a multidimensional indicator. The more countries participate in one resource (i.e., the higher the fraction), the higher the risk of problems. Moreover it is relevant to make out where the water supply originates and under whose control it is.

The fourth dimension to assess a country's vulnerability is the degree of dependence on hydroelectricity in relation to total electrical supply. The higher the dependence, the higher is the vulnerability to changes in cross-border flows.

4. Water in the Middle East: A Scarce Resource Forever?

The most vital resource in the Middle East is fresh surface and ground water. From a historic point of view we know that water has always been a scarce resource in the Middle East, although many countries have not assessed it as being so for decades. Furthermore, there is a long history of water-induced disputes referring from conflicts on access to water supplies to attacks to water-storage systems during wars.

There are at least four groups of reasons for water disputes in the Middle East.

1. Ecological reasons: Water is neither abundant nor available in a regular quantity and high quality. The rate of availability is volatile. The climate is more or less arid. Only Turkey has a water surplus.

2. Demographical reasons: The Middle East shows an annual population growth rate of 2.2 to 3.7%.

3. Economic reasons: Roughly three quarters of the water needs are used for irrigation.

4. Political reasons: Several times water has been used as a bargaining chip, especially by upstream countries.

Moreover, most of the Middle Eastern countries face not only water shortage but also a heavily declining water quality.

> In terms of resource geopolitics, water has come to be recognized as an important instrument of national strategy and a potent political weapon by many of the region's states. The potential for conflict on water is at

> its greatest when the nations located upstream begin to assert their political and economic advantages over those downstream.[13]

It is the special combination of climatic conditions and geographical conditions that makes water a strategic resource. 'In the overblown cadences of Middle Eastern political rhetoric the "water weapon" has on occasion made the "oil weapon" look puny.'[14] The key issues in the Middle East area are that the water supply is neither reliable nor sufficient to solve the tasks; water distribution is very uneven; the climate is relatively arid or at least semi-arid; population growth per year is about 2% to nearly 4%.[15] Moreover, improved standards of living require more fresh water, but more than three quarters of water are earmarked for irrigation due to far reaching national agricultural projects.[16]

In contrast to this, power to dispose over water on a high-quality level is restricted to a small number of countries ('allocation problem'). In this context, competion to make water useable for economy is growing rapidly. Access to water gives a country a political means for pressure, but it also means access to electric power, to irrigation facilities, to the basis for a sound agriculture, to working places and in consequence social welfare and social peace.

In most of the cases, a one-way perspective for the assessment of causes and effects has been applied. This has led to wrong assessments on a very complex situation, furthermore veiling several other dimensions. We can find several trials on a national as well as on an international level to solve the vital question of water management and to avoid international conflicts. Final and satisfying agreements are still missing. One reason is that no internationally accepted legal fundamentals exist. General legal frameworks are not sufficient to solve such a multi-dimensional and therefore difficult problem. Sometimes one may get the impression that water is assessed to play a more strategic role than crude oil does in the Middle East.[17]

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[13] J. Sinai, 'Water Wars: The Wave Builds in the Middle East', **Strategic Policy**, September 1990, p. 22 referring to A. Hindley, **MEED Special Report: Power and Water, Middle East Economic Digest**, January 10, 1990, p. V.

[14] **IISS - Strategic Survey 1/1992**, London, 1992, p.220.

[15] N. Beschorner, **Water and Instability in the Middle East**, Adelphi Paper 273, Winter 1992/93, London IISS, pp. 3-7; Gleick, **Water and Conflict**, p. 79.

[16] R. S. Chen and R.W. Kates, 'Climate Change and World Food Security', **Global Environmental Change**, 1994, Vol. 4 (1), pp. 3-6.

[17] R. Wilkinson, 'When Rivers Run Dry', **Newsweek**, Feb. 12.,1990, p. 24-25.

Generally, one can say that we are confronted with a complex and networked problem. A satisfying solution is still far from being reached because individual national targets prevail the global conditions - sometimes national governments refuse to take nature into consideration and leave it out of perspective deliberately. This creates a number of water-related problems since water scarcity in the region inbreads various complex issues. The Middle East shows some features which are unique in their combination. It is the constellation of a still developing agriculture and economy, a deep going demographical change and a politically unique situation that brought water issue in the centre of attention.

Agriculture and Food Supply

> Many Middle East governments have been actively promoting a policy of food security and self-reliance as a national economic goal. However, food security is primarily a political and social policy objective which is pursued despite poor economic returns.[18]

Lobbying is the order of the day. Agricultural and chemical enterprises press for realizing certain economic targets supported by necessary legislative surroundings. Comparing the marginal values of the components of costs in agriculture, the value of water has to be assessed as a low one. But pressure by several agricultural groups is a strong one and influences the national budgets. The key line of reasoning is the principle of autonomy in the food question.

Demographical Change

Taking into account the large and rapid growth of population and the related consequences such as rural to urban migration, creation of regional powers and population centres, one can justify investment in irrigation projects. Beside autonomy, these investments create employment and export goods on a high quality level. The key problem is that the global situation in world economy is rarely taken into account. Prices of export goods are too often above the world market price, investments are not sufficient, marketing is not at the accepted international level. A general lack of competitiveness leads to a driving-out movement of the market of these countries.

Political Pressure

Beside diverging environmental conditions and national targets, political goals are the overlayer on the international level. If two or more countries share access to one river, tensions should be expected. International

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[18] Beschorner, **Water and Instability in the Middle East**, p. 4.

mechanisms are, to the extend they already exist, insufficient to solve the complex question. International law concerning access to water and just distribution provides only general hints concerning possible equitable utilization and issues good neighbourliness. In reality, mistrust governs the situation and makes it difficult to overcome tensions.[19]

Summing up, a complex and multi-dimenisional situation is not manageable in a necessary and appropriate way at the current point of time.

5. The Southeast Anatolia Project: Water As a Means Of Power in the Hands Of Turkey ?

The Southeast Anatolia Project (GAP) in Turkey is the largest irrigation project in the Tigris (Dicle)-Euphrates (Fırat) basin region. The basin itself covers Turkey, Syria, Iraq, and Iran. Turkey, Syria, and Iraq have already invested large sums in huge dam projects to make irrigation possible. As Turkey is the upstream country of both Tigris and Euphrates, it has been exploiting water extensively. Turkey interprets this performance as using a sovereign right. This right is strictly refused by the downstream countries which are in a multi-layered pressurized situation. The headwaters of Tigris and Euphrates are located in Turkey.[20] Natural flows of the two rivers vary during the year and over the years. More than 98% of Euphrates, including the main tributaries of Khabur, Balikh and Sajur, originate in Turkey. On the other hand, Turkey accounts only for 28% of the basin area.

The Turkish contribution to Tigris is about 45%. The remaining part is contributed by Iraqi tributaries with Irani headwaters (e.g. the Adheim, the Diyala and the Lesser and Greater Zab). Both the Tigris and the Euphrates converge in Iraq (in Qurna). In the following they are joined by Karun river which originates in Iran. The point at which the three rivers of different origination converge is the Shatt al-Arab which drains into the Gulf.

Proceeding on the assumption that Turkey is going to complete the GAP according to plan, Euphrates and Tigris will be drastically limited in their water flow. Syria and Iraq would have a lot of problems to carry their point in increasing irrigation facilities and agricultural areas. Furthermore the downstream water quality would certainly deteriorate drastically. This mainly would be due to oversalting, pollution, soiling and to fertilizers based on chemicals.[21] A third river in discussion is the Orontes (Asi) river. Syria, as

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[19] See for instance Sinai, **Water Wars**, p. 22.

[20] See for instance Beschorner, **Water and Instability in the Middle East**, p. 29.

[21] 'Send for the Dowsers: Irrigation in Mesopotamia', **The Economist**, December 16, 1989.

an upstream country of this river, uses water extensively for its irrigation schemes. This caused a lot of problems in the Turkish province of Hatay which is also claimed by Syria.

Water is one of the key issues which has been under discussion between the countries named above for several years. Moreover one has to diagnose a variety of multilayered problems. At least three issues are affected. First, the unsolved question of Kurdish autonomy. It affects Turkey which is the country with the largest proportion of Kurds. Secondly, the relations with Syria are very much influenced by the unsolved water question, but not only. Syria has often been blamed by Turkey for supporting the marxist and radical Kurdish group PKK. Third, the relations with Iraq are touched by water questions.

The GAP: Basic Aspects[22]

The GAP is the centrepiece of a vast Turkish plan to change the geographical and ecological situation of Mesopotamia, better known as the region between Tigris and Euphrates. The GAP is currently the largest regional development project in the world. It has multi-dimensional and complex consequences regarding economic, social, political and ecological aspects. Those groups of consequences do not stand for themselves alone but form a network of causes and effects. Some of the consequences can be seen within few years. Others will take decades to become really effective. The project is intended to bring progress and welfare in the areas of irrigation, energy, industrial and service development. Moreover Turkey could play a kind of catalyst between the West and the Middle East countries. A lot of European, US and Japanese companies are highly interested in the GAP.

The project was started back in the era of a two-tier block system. Turkey was and still is a country lying in both spheres of interest. Since 1990, though the international situation has changed drastically, the key intentions of the projects are still the same. Turkey tries to become a regional power. It is not actually clear whether the country is going to turn to the West, to the East or to the Muslim countries of the former Soviet Union. The fact that it is the head-country of at least two important rivers in

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[22]For general project description, network effects and long-term consequences in a comprehensive context see: A. Mosser and A. Smutek-Riemer, **Früherkennung von Krisen in politisch-sozio-ökonomischen Systemen, dargestellt anhand der Veränderung der Position der Türkei von 1987 bis Mitte 1995**, unpublished study, Vienna 1995; A. Riemer, **Die Türkei an der Schwelle zum 21. Jahrhundert: Die Schöne oder der Kranke Mann am Bosporus**, Wien, Frankfurt/M., 1998.

a large area could help Turkey to shape and redefine its position on a geopolitical level.

The key attributes of the GAP

The GAP is the show project for Turkey's intentions in the geopolitically relevant areas. The **key attributes of the GAP** are the following:[23]

In its final stage the GAP will cover 13 irrigation and energy sub-projects. These are the Euphrates Basin Projects, the Lower Fırat Project, the Karakaya Dam and Hydro-electric Power Plant, Moreover, the Lower Fırat Project, the Suruç-Baziki Project, the Adıyaman-Kahta Project, the Adıyaman-Göksu-Araban Project, the Gaziantep Project, the Tigris Basin Project, the Garzan Project, the Cizre Project and a number of so-called Miscellaneous Projects.[24]

As already mentioned the two key rivers Euphrates and Tigris are to be tapped. The total irrigation area is about 1.7 million hectars. More than 1 million hectars are located in the Tigris basin. The whole project is intended to bring 7.561 MW of hydroelectric power. The total electricity production potential is estimated at about 27 billion kWh. Euphrates and Tigris are intended to bring 40% of hydroelectrical potential and should supply about 65% of electricity in Turkey, both in the full implementation phase.[25]

Originally, the project was to be completed in 2001. Moreover it was intended to irrigate 150.000 hectars of land per year. Currently there is a backlog of about 3 to 5 years due to financial problems and the unsolved Kurdish question. The core project is the Atatürk dam and its power plant. 'The project has been designed for surface (flood) irrigation largely in open channels, with some localized pilot sprinkler systems, and is therefore highly water-consuming.'[26] The total cost for the hard core are about US $ 2 billion. 'Turkey started work on the Atatürk dam on the Euphrates in 1981. It is intended as the centrepiece of a 30-year development plan for the country's mostly dirt-poor south-east.'[27] In January 1991, Turkey started to fill the reservoir behind the Atatürk dam. Therefore it had to cut the flow of

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[23] Zentrum für Türkeistudien (ed.), **G.A.P. Southeastern Anatolia Project: Its Impact on the Turkish Economy and on the Middle East Balances**, Essen 1989, p. 5; http://www.mfa.gov.tr/grupc/gap.htm and http://www.mfa.gov.tr/grupc/gap1.htm

[24] See http://www.mfa.gov.tr/grupc/gap2.htm.

[25] Beschorner, **Water and Instability in the Middle East**, p. 30.

[26] **Ibid**, p. 31.

[27] 'Where Dams Can Cause Wars', **The Economist**, July 18, 1987.

Euphrates for several weeks.[28] It was the first time and several ones were following in this gradual process.[29]

Another core of the project is represented by the two Şanlıurfa Tunnels. The plains of Urfa and Harran (about 260.000 ha) are going to be irrigated by the two tunnels. The Şanlıurfa Tunnels, a major unit within the GAP Project, will irrigate 476.374 hectares of land, 358.000 hectares by gravity and 118.000 hectares by pumping. The system consists of two circular concrete-lined tunnels each with diameter of 7.62 meters and a length of 26.4 kilometre.[30]

The GAP covers nine provinces in the Euphrates-Tigris basin, namely Adıyaman, Batman, Diyarbakır, Gaziantep, Kilis, Mardin, Siirt, Şanlıurfa and Şırnak.[31] The area of more than 73.000 square kilometers and more than 4 million people are going to be affected. Due to topographical problems, Hakkari and Van provinces in the southeastern Turkey are not included into the project.[32]

The key targets of the GAP[33]

Water resources are, in comparison to the other countries, abundantly available in Turkey.[34] The key problems are an uneven distribution and facilities not enough developed to be utilized. The GAP was introduced originally back in 1950's, but recently the biggest political support for its completion came after 1980 first from the military goverment, then by the former Turkish Prime Minister and later President Turgut Özal who was an engineer by education. He intended to fertilize the large area of South-East Anatolia using a natural resources available in huge quantities to support his mega-vision. Özal's plan was to trigger a chain reaction. When the project is completed, plants were to be built on the Euphrates and Tigris rivers which together flow more than 50 billion cubic metres of water annually will regulate 28% of Turkey's total water potential. More than 1.7 million

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[28] If Turkey wanted to fill the dam at once it would have to cut the flow of Euphrates for about 2 years. This is not possible. Therefore it has to do it step by step in accordance with the other countries affected by this action.

[29] See 'Survey of the Arab World (3): Parched - How to fight over water, and waste it too', **The Economist**, May 12,1990.

[30] See http://www.mfa.gov.tr/grupc/gap9.htm.

[31] See http://www.mfa.gov.tr/grupc/gap3.htm.

[32] See http://www.mfa.gov.tr/grupc/gap5.htm.

[33] See Zentrum für Türkeistudien, **G.A.P. Southeastern Anatolia Project**, pp. 13-14.

[34] A. İ. Bağış, **GAP: The Cradle of Civilisation Regenerated**, Ankara, 1989, p. 45.

hectares of land will be irrigated.[35] Fertilizing a key part of the country, which was until then the poorest and arid area in Turkey, could help to raise the standard of living and make people in the area less dependent to western Turkey. The GAP should lead to a rise in income in the region by improving the general economic structure. The gap in income between the GAP region and other regions within the country is to be narrowed. Productivity and employment in the rural areas are to be raised. Assimilative capacity of the cities in the region are to be increased. Sustained economic growth, social stability and efficient use of the regions' resources as well as water management for the benefit of the region and the whole country is planned. Moreover the regions' cropping pattern and in consequence of the region's productiveness should be improved. Agro-manufacturing industry and settlement incentives are promoted to stop migration.

Moreover the project was intended to improve the situation of the Kurdish people in general who represent the main part of the population in the area. Unemployment which is one of the biggest problems in the area could be affected as well positively. Thus, migration from the East/South-East to the West, especially from the Kurdish population, could be reduced and cities in the West could be kept at a reasonable and controlable level. In further consequence, social problems in the large cities in the Western part of Turkey could be reduced (five cities cover about 75% of the Turkish population which is currently at a level of 64 million).[36] Finally, exports were intended to be increased considerably, and as a consequence the economic and social situation should improve. Although agricultural needs account for the larger proportion of water consumption in Turkey, the other key problem is the large cities in the West and their water logistics. The long-term question will be how to supply them with high-quality water. Turkey shows by far the most rapid population growth rate per year in Europe. It is currently at 2.2%. In 1997, Turkey had about 64 millions inhabitants. The forecast for 2000 is about 70 millions. The regions with rapidly growing water needs are the cities of İstanbul (roughly 11 million inhabitants), Ankara (the capital gets its water from the rivers Kızılırmak and Sakarya which are about 100 km away from the city) and İzmir. Furthermore the tourist areas require more high-quality water.[37]

Another key motivation for the Turkish water projects is to reach self-sufficiency in the area of domestically produced hydroelectric power.

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[35] See http://www.mfa.gov.tr/grupc/gap6.htm.

[36] F. Şen, 'Wirtschaftliche Entwicklung und Umweltproblematik in der Türkei', **ZfT aktuell**, No. 10, Essen 1992, p.19.

[37] A. Riemer, '**Demographic Obstacles to Stability in the Middle East: Turkey as a case study country**', paper presented at the Third pan-European International Relations Conference and Joint Meeting with the International Studies Association in Vienna, September 16-19, 1998.

Currently, the country imports a large proportion of electricity (about 50%); moreover Turkey has a large oil bill.[38] If Turkey was to realize one of its main economic intentions - an economic growth of 5% per year - electricity needs would double every 10 to 15 years.

Looking from an outside position, one must state that the local impact of GAP and especially all positive consequences on the economic and social level are to be assessed very conservatively. Some experts estimate the impact to be very controversial and of a delicate nature. Analyzing the current status of South-East Anatolia, one has to say that transportation roads, education facilities and agricultural facilities are not at the necessary status to make efficient use of the dams built so far. On the other hand, the 'land owners problem' is still unsolved. South-Anatolia is still governed by a mainly feudalistic system. Roughly 5% of all families own 65% of the land. 70% of the Anatolian population have only 10% of the land.[39] Additionally, about 70.000 people in the area of the Atatürk dam had to be displaced. A large proportion of them went to Şanlıurfa. They received a certain sum as a compensation for resettlement troubles. Most of them invested the money in new houses and not in agricultural land.[40] They did not use the chance to acquire land and help to shift the rate of land ownership. Saying it frankly, so far nothing has changed fundamentally.

Despite domestic problems, backlogs and troubles with the Kurdish population, GAP gives Turkey a strong bargaining chip. It is already influencing its relations with the other countries in a crucial way. By analyzing the political situation and the individual national targets, a water crisis can be foreseen as a distinct possibility.

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[38] Beschorner, **Water and Instability in the Middle East**, p.30.

[39] See F. Şen, 'Zur aktuellen Lage der Kurden in der Türkei', **Zentrum für Türkeistudien Aktuell**, No. 7, Essen, 1992, p. 9; A. Smutek-Riemer, Zur türkischen Militürintervention in den irakischen Kurdengebieten, **Österr. Milit. Zeitschrift**, Heft 4/1995, pp. 443-446; A. Smutek-Riemer, **Die Kurden: Eine nicht ausreichend integrierte Minderheit als regionales Krisenpotential? Eine ethnische Genese der kurdischen Stümme im Irak, Iran und in der Türkei und ein Versuch einer Krisenpotentialabschützung für die Türkei**, Wien, 1996; Riemer, **Die Türkei an der Schwelle zum 21. Jahrhundert.**

[40] See Beschorner, **Water and Instability in the Middle East**, p. 32.

6. The Relations Between Turkey and Syria: A good example for transboundary water disputes and multi-dimensional consequences[41]

Turco-Syrian relations have been tensioned for years for several reasons, not only because of the unclear water issue. The step from tension to a violent conflict is a very small one which can be taken within few days. This was shown last autumn when the Turkish army moved a considerable number of troops at the Turco-Syrian border. There are at least three key reasons for the difficult relation between Turkey and Syria.

The first and most immediate problem between the two countries is the unsettled water problem. Syria is a downstream country of Tigris and Euphrates. Controversial water schemes in Turkey have created serious bilateral problems. As Syria is in an economic transformation phase, it is dependent on a working water supply to realize its agricultural targets. Syria is deeply affected not only by access restriction but also by the bad water quality of Tigris and Euphrates. Currently, a number of bilateral agreements do exist. A regulation, comprising Turkey, Syria and Iraq do not exist so far, although it was planned in an agreement between Turkey and Syria in 1987. The Common Technical Committee from 1982/1983 restricted its work only on technical issues and not on issues touching sovereign rights. This status without clear regulations and provisions is a very dangerous one because the more the issue is unclear the easier it can be used as a bargaining chip in the linkage politics the countries have liked to do in the near past.

Secondly, Syria is under suspecion of supporting members of the PKK (Kurdish Workers Party) and the Armenian Secret Army for the Liberation of Armenia (ASALA). Turkey blamed and still blames Syria to support both extremist movements by granting them facilities to launch incursions into Turkey. Especially PKK caused a lot of problems for the Turkish Army and damaged the international reputation of the country.[42] The former president Turgut Özal and his successor Süleyman Demirel made clear that Turkey is not going to tolerate activities started by PKK in the Syrian Bekaa Valley which has been the basis of the PKK training academy for years. Demirel and his prime minister Tansu Çiller several times threatened

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[41] M. Jouejati, 'Water Politics as High Politics: the Case of Turkey and Syria' in H. J. Barkey (ed.) **Reluctant Neighbor, Turkey's Role in the Middle East**, Washington, 1996, pp.131-146; and M. Muslih, 'Syria and Turkey: Uneasy Relations' in Barkey, **Reluctant Neighbor**, pp.113-130.

[42] 'Send for the Dowsers: Irrigation in Mesopotamia', **The Economist**, December 16, 1989; 'Survey of the Arab World (3): Parched - How to fight over water, and waste it too,' **The Economist**, May 12, 1990; 'Mesopotamian mists: Turkey's Atatürk dam,' **The Economist**, July 25, 1992.

to take adequate measures to destroy PKK bases, wherever they are located. In the beginning of the 1990s, Turkey took more diplomatic steps and launched several talks with Syria. In September 1992, both countries came to an agreement that Turkey is not going to cut off water supply if Syria as a *quid pro quo* states to outlaw PKK actions from territory under its control. The military activities in autumn 1998, however, showed quite clearly how serious the situation can become within a few days and without the involvement of the Turkish government. The interlocking of terrorism, the foreign support of terrorist organisation, the unsolved Kurdish issue in Turkey, plus the open water question turned out to be an explosive mixture.

Third, Syria still claims the province of Hatay from Turkey.

> This province, formerly Alexandretta, part of the French mandate of Syria, was ceded to Turkey in 1939. In October 1989, Syrian airforce planes shot down a plane belonging to the Turkish land registry office flying over Hatay, whilst in December 1989 the Syrian Minister of Information stated at a press conference in Nicosia that Syria still did not recognize Hatay as part of Turkey.[43]

The Orontes river is the water basis for Hatay. Turkey is in a *vice versa* position because Syria does not consider the Orontes to be an international river. Syria has been refusing to negotiate the Orontes matter so far and has been linking it with a solution of the Euphrates question. As Turkey is not going to comprise, both problems will stay unsolved and are therefore a potential for crisis. In consequence, every discussion on water aspects automatically involves all three issues. Thus, a solution does not seem achievable in the near future.

7. The Relations Between Turkey and Iraq: Kurds and Water - Hints For Closer Ties[44]

Kurdish separatism and unsettled water questions have been playing the key role in the relations between Turkey and Iraq. Iraq is affected by the GAP, especially by water which is over-salted. Iraq's problem is water quality rather than water quantity. Water management and soil salinity are the main issues to be tackled. The variable flows of Tigris and Euphrates has Iraq subject to a number of droughts and floods.

Summing up, it was the Kurdish separatism affecting the bilateral relations and less the water issue. Nevertheless water can become a dangerous issue or a kind of a bargaining chip in case the Kurdish question will not be solved within a reasonable period of time.

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[43] Beschorner, **Water and Instability in the Middle East**, pp. 36-37.
[44] P. Marr, 'Turkey and Iraq' in Barkey, **Reluctant Neighbor**, pp. 45-70.

8. Conclusion: Three Countries - One Potential For Crisis

> Water already contributes to conflicts among nations, and future conflicts over water are increasingly likely. Nations fight over access to water resources in some regions of the world and use water and water-supply systems as instruments of war, while growing population and developments are increasing the competition for limited water supplies, and many countries depend on sources of supply that are under the control of other nations. Human needs for water are growing. Many countries in the Middle East ... use water at a rate faster than natural processes can replenish it, leading to falling ground water levels, reliance on expensive desalination projects, and imports of water across the borders.[45]

As the unsettled water disputes from time to time lead to tensions which may become serious for the whole region, prerequisits to come to a détente should be discussed.

First, negotiations have to be conducted within a mutually accepted legal framework for a fair utilization of the rivers (especially Tigris, Euphrates and Orontes). This should also include a regular exchange of data and information. A special issue is the negotiations on the question of sovereignty. Turkey still blocks any talks on national sovereignty because of previous negative experiences. Moreover Turkey cannot foresee any positive aspects of a *de facto* giving up of sovereign rights. Turkey considers the exploitation of Tigris and Euphrates as its sovereign right which is not to be dealt in international negotiation. President Demirel said that water is an upstream resource and compared it to the Arabian oil; Turkey does not interfere as a downstream country in oil matters. Therefore, Turkey requests no interference in the water question. Moreover, it blames Syria and Iraq to have wasted Tigris and Euphrates water for several years.

Assessing the global situation, military conflicts are not realistic. Neither Iraq nor Syria are able to challenge Turkey. Economic ties, even if they are in the grey area, are too strong. All countries are facing difficult domestic situations.

One can assume that Turkey will continue its works in the GAP. Protests against water cut-offs will be answered with offers to negotiate the economic issue. However, 'as long as the issues of border security and

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[45] Gleick, **Water and Conflict**, p. 111.

Kurdish nationalism have not been resolved, one can expect water to be used as a bargaining card'.[46]

The guiding issue of this paper was to investigate under which conditions ecological issues, especially access to water, may affect state security and, as an extension, international security. In ecological questions, as we face a development characterized by very small steps and changes over several years, one is tempted to neglect it in global observations. On the other hand, the result and its consequence may play a key role in the global evolution and lead to irreversible turning-points. Ecological issues are usually a long ranging potential for crisis. Causes and effects very often show a quite a long time-lag.

Turkey plays a crucial role in the Middle East. The affluent access to water and the upstream position give the country a bargaining chip which can be utilized when necessary. Probably water and its geopolitical location at a multidimensional interface are the only assets the country currently has. As the GAP has showed, water is an issue affecting national and international security. The combination of demographical change, economic activities, a large share of agriculture, a high level of dependence on agricultural products for a sustainable food supply and climatic conditions provide a fertile ground that scarce water, restricted access and monopoly positions may lead to a decrease in national and international security. The important result is that it is not water *per se* but the combination of issues standing in a kind of interplay and therefore creating a potential for crisis on several levels. This makes the whole issue even more serious.

[46]Beschorner, **Water and Instability in the Middle East**, p. 44.