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Environmental Technology & International Affairs



# The Power of water

## How large-scale dam projects impact on a political level

### Illustrated using the Ilisu dam as an example

A Master's Thesis submitted for the degree of  
"Master of Science"

supervised by  
Ass.Prof. Mag. Dr. Norbert Kreuzinger

Agnes Müller

9906773

Vienna 01.06.2012



## Affidavit

I, **AGNES MÜLLER**, hereby declare

1. that I am the sole author of the present Master's Thesis, "THE POWER OF WATER. HOW LARGE-SCALE DAM PROJECTS IMPACT ON A POLITICAL LEVEL -ILLUSTRATED USING THE ILISU DAM AS AN EXAMPLE", 67 pages, bound, and that I have not used any source or tool other than those referenced or any other illicit aid or tool, and
2. that I have not prior to this date submitted this Master's Thesis as an examination paper in any form in Austria or abroad.

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## Abstract

This report is to evaluate the political implications of large power generation constructions, on the basis of the internationally highly discussed regional irrigation plans in the South East of Turkey, hereby, expanding the limits of interference, by including the directly affected riparian neighbours and consequently, the resulting contributions towards increased conflict potential.

It is to assess the current environmental and political status of the region, thereby taking into account, the socio-cultural history, as well as the environmental importance to the population, inter – and extra-territorial.

This is to take into account the feasibility of possible amendments to the construction plan, prior start, by similarly relegate to potential alternatives, which after installation, during the construction process and depending on approach taken, would directly lead to a decrease in the impact potential, to an absolute minimum, furthermore resulting in a diminution of altercation potential.

The importance, is the evaluation of current events, to be able to rate future undertakings, the scale of the Ilisu dam, while similarly being able to provide for adequate amendments, prior the commence of the construction, via detailed assessment of the respective area in question, hereby including background on regional peculiarities and political history, as well as estimate the incitement of the planned actions.

The international involvement as well as the antagonism allowed for a multiplicity of sources providing literature of diverse consultants, thereby establishing base crucial for further evaluations and estimations. This base and the international interconnectedness provided for up to date data sets as the involvement of NGO organizations contributed towards increased awareness and interest to the respective matter and consequently thereby enhancing transparency.

The report very much illuminates the direct relationship between energy demand and the importance of mutual and sustainable handling of resources. It furthermore implies for energy production and the human need for enhanced technology and economical independence is realisable at the high price of unsustainability for environment and politics, by also inducing on a larger scale than primarily expected.

In times when energy production is of major relevance due to an increase in energy consuming appliances the possibilities for supplying the increased demand is limited and further energy production potential, thereby not taking into account “new technologies”, are to decrease as well. Therefore, it is inevitable to assess current events and translate them to future undertakings of equal size and regional difficulties to be able to attenuate the potential of major disruptions environmentally and politically. The accumulated knowledge shall ensure sustainable and mutual understanding of ever scarcer- resources and shall furthermore highlight the importance of durable conjoint cooperation for a better common future.

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## Introduction

The report is to deplore the political impacts of large dam constructions on the basis of the current controversial development plans in the region of South Eastern Anatolian, more precisely the area surrounding the Ilisu dam and the consequent impacts to the riparian countries, thereby contributing towards increased conflict potential.

The question which is to be elaborated and evaluated concerns whether undertakings of the scale of the Ilisu dam increase the potential of further, to some extent violent, conflicts within an already politically shaken region, by similarly illuminating the potential contributions, towards the altercations, of the impacted down-stream riparian countries. In this particular study, the evaluation is defined by the territorial parameters of the South Eastern Anatolian boundaries in Turkey and the riparian countries Iraq and Syria, hereby presenting the Ilisu dam as example for a large construction majorly contributing towards impacts on several levels by additionally furthermore, including the existing national and international territorial and cultural differences.

Hereby, it furthermore intends to illuminate an already well-discussed issue related to a changed perspective and a broadened scope of impact areas, mainly focusing on the socio-environmental impacts, nationally, but even more importantly the considerations of the impacts the Ilisu dam poses to the riparian countries and the therefore resulting increased conflict potential by similarly increased potential of supporting the Kurdish will for self-determination, partly including means of violence.

As the Ilisu dam project is not only an energy generating undertaking, but also an instrument for improving the overall economic situation within the region, including irrigation projects and efforts to increase the trade importance of South-Eastern Anatolia, the construction quite recently lead to the assumption as to be a tool of oppression. This document is to evaluate the level of impact of the Ilisu dam as a potential agent of repression and the resulting political impact in the, what is called as the, "rule of four", hereby mainly aiming at the contributions of the impacted riparian countries on conflicts battled in the name of water scarcity.



The actual construction and the resulting site, but even more severely the operation of the dam is to cause disturbances of the regional community, thereby majorly contributing towards the resentment of the local population and again the immense augmentation of potential the widened scope of conflict area poses as well as the actual conflicts.

The report is an attempt to connect the current circumstances to future undertakings of equal scale, thereby, hopefully establishing a different approach and respectively hypothetical decrease the risk of potential conflicts for future constructions inter- and extra-territorial. Thereby, the examination of the possible alternatives or amendments as well as the will of the respective government, in this case Turkey's will, to translate and comply is of imminent importance. Furthermore, the assessment of the region, by means of borders and historical interconnectivity, demographical and socio-economical background, as well as the prevalent political situation within the region by similarly broadening the areal scope to include the territorial impacts of its riparian neighbours, in this case Iraq and Syria, was of very much significance.

The effort is to demonstrate the interconnection and interrelation of water as a tool of political and cultural as well as environmental repression. It is also to fortify and confirm the explosiveness of the contemporary situation by similarly comparing the compulsion of water-use as an agent of suppression. The implication arise that future predictions on possible outcomes concerning the water availability and equal distribution between the involved parties need to be based on historical ken of the respective region, population and past conflicts, since for example in this case the historical background clearly connects the current explosive situation to past incidences thereby, unambiguously stating a direct relation between the location choice of the dam as an attempt to change the power of distribution over the respective community and the economical and substantial, pivotal resource: water.

The outcome hereby, shall give an estimation of a direct relation between the construction of the hydro-power plant and the catchment basin to the increase in military presence and the isochronic increase of trans-boundary support towards the regional aim of self-determination. It is furthermore indispensable to assess whether the support increased causal due to the construction or coincidental, by locating the dam within a region of high conflict potential due to past events. The appraisalment thereby, is to hint on potential amendments for environmental and economical

sustainability while simultaneously being capable of supply the increased energy demand and promote economic improvement.

## 1 Scope, Goals and Intentions

*“Does the Ilisu Dam contribute towards increased support of the riparian countries Iraq and Syria to the struggle of self-determination within the Territory of Eastern Anatolia by additionally increasing the regional conflict potential?”*

During the research and the actual commence of writing it became clear that the posed question is not of plain and easy answering.

The chosen research method posed the amenity for a comparison of various materials and datasets, thereby forcing for deeper and respectively better background knowledge, by simultaneously applying that gathered knowledge on the specific issue of the Ilisu dam construction.

It became highly visible that various materials pose a multitude of viewpoints and opinions, which are in need to be evaluated and verified/ falsified to achieve an overall satisfactory insight but more importantly create a profound and adequate outcome.

The first step towards establishing proof and satisfactory reply for the posed question, whether the large scale undertaking of the Ilisu dam poses a direct relation to the increase of conflict potential of the region and additionally, whether it contributes towards support of the riparian countries Iraq and Syria to the struggle of the regional self-determination, was to inspect the actual plans and blueprints of the undertaking to be able to establish a general outline on what is to be intended and subsequently realised. It was of eminent importance to understand the technical data and the actual impacts, which are disrupting on several interwoven layers of environmental and socio-cultural aspects. At that point it became clear that in order to understand the broad regional coherence it is relevant to assess the violations and the background on the international reluctance towards the irrigation project Ilisu dam, as well as the legal implications and amendments.

This background knowledge was crucial for inter-relating the issue of harm of the environment and human health and security to the increased political explosiveness

of the region, while simultaneously provide for ken concerning the contentedness of the regional inhabitants, thereby again contributing towards increased altercations.

During the phase of sighting and evaluation of the gathered materials, it became furthermore obvious, that, although being a highly discussed and opposed topic, no standardized wording of antagonism was set, but the concerns, which globally arose, were collectively identical and majorly centring on the environmental and cultural impacts of the dam construction. This lead to an aggravation and again meant for assessing and verifying the statements in question and connect them to the actual field of interest, the political impact on the riparian countries and the resulting political contributions and support to the immediate affected communities.

Thereby, the set boundaries also had to be amended, taking into account a far wider spatial limitation, also including historical background and socio-cultural regional aspects, thereby shifting the boundaries transnational. The inclusion of a broader spatial limitation challenged for an assessment of the transnational regional political background, since the areas impacted are quasi dependent on common history. The subsequent historical evaluation and the availability of contemporarily published materials concerning the political contributions towards and already shaken territory allowed for further estimations on current but also future events within the region and is to identify and illustrate the fiscal and political costs of increased energy demand.

Within the first chapters it became observable that not only the expected reduction in water flow and quality is of very much concern to the riparian countries, but furthermore the actual intentions and the missing interest on involvement was , what caused further retention of Iraq and Syria since they are very much dependant on the water flow and utilization. Hereby it was highly visible that the construction of the Ilisu dam was to distort the agricultural usage of the region, comprising the primary tool of livelihood. Nonetheless, also the contentedness of the immediately impacted population as well as the loss of common cultural goods and identity contributed majorly to the current explosiveness of the region. This disaffection also increased the risk for the construction site being destroyed as well as it poses endangerment for the construction-site workers.

Overall, a high degree in inter-relation between all levels of impacts was cognizable, thereby providing base for a proper and adequate evaluation of the status quo by

additionally provide for future amendments to decrease the overall conflict potential within the region in question.

The effort to achieve an appropriate answer to the posed research question is to provide assistance for future undertakings of equal scale to the Ilisu dam and thereby decreasing potential politically preoccupied contention, and keeping the impacts, both environmentally and political/socio-cultural to an absolute minimum. This is to consequently provide for a base to sustainable global concord and a common future based on mutual understanding and respectability.

The approach chosen to illuminate the issue of the Ilisu dam construction is of empirical nature and can be described as the incorporation of a comparative analytical approach by similarly combining and renewing the acquired data sets into a type and hypothesis adequate new report with the aim to illustrate and clarify the current circumstances and the respective results and impacts while merging these data sets to further future issues of potential conflicts and the need for mitigation measures and tools.

The generation of data and information comprised of various different approaches, mainly focusing on literature provided by a multiplicity of experts, national as well as international, concerning the general but also type specific impact of large scale dam projects and the respective environment surrounding the area of construction and the further impacts on the broader surrounding, mainly the riparian countries. The availability and the prevailing international exclamation allowed for a multitude of official and in-official statements as well as private or public announcements and international news coverage. This multitude of reporting and the involvement of several NGO organizations also enabled the examination from a different perspective as it similarly also allowed for a neutral evaluation since, as already mentioned, public and private documents were available and therefore an examination and direct comparison of both sides could be achieved.

Although the inevitable advantages of the plurality of information options, the multiplicity of diverse data sources and diverse data availability was contributing towards an enhancement in occurring difficulties, mainly the problematic of verifying the truthfulness of sources but also the political or social background of documents and its respective author, determining the neutrality of the later. These sources nevertheless, proved for being food of thought in need to be verified/ falsified and identifying its proposition, since its origin was of questionable nature. These

additional researches and the need to dig deeper into the matter, often lead to the discovery of further materials highly important in order to understand the overall statement of affairs.

For the complete, consistent comprehension of the circumstances and the impacts it was of essential importance to also illuminate the legal background of the actual constructions as well as the original and amended Master plan of the GAP itself. It was essential to evaluate the legal frameworks and positions of several institutions, as for example the World Bank or the respective ECAs, and their possible/potential contributions but mainly the commissioned Environmental Impact Assessment report in the early 2000's and its amendments as well as various reviews on the actual EIA. The gathering of information hereby, comprised of severe research due to transparency issues of companies. Nonetheless, the NGO organisations hereby, were a great back up, since all information was available for insight at any time, by additionally providing reviews and further research materials or additional background information.

A further benefit of the international commotion and the heavy NGO involvement was the fact that current up-to date data could be gathered since the respective internet appearance and presence was, with exceptions, frequently updated. In spite of the advantages the NGO internet appearances pose, the detriment hereby, was that the sources of the original texts, mainly written during the past decades, were untraceable. This caused for a different approach of verification and thereby, often again complicating the process of constructive writing, nevertheless, again contributing thereby to an increased occurrence of additional materials.

The timeliness of the issue and the involvement Austria's also accounted for the possibility of actual discussions with the respective company as well as talks to organizations disapproving the dam construction and Austria's contribution and assistance within this undertaking. The possibility to evaluate and interconnect directly as well as the opportunity of having both sides sharing their ken, was to contribute for a better understanding while, additionally proposing the chance of verifying the personal chain of thoughts.

## 2 The GAP and the Ilisu Dam

### 2.1.1 Background on the Great Anatolian Projects (GAP)

Throughout history, the areas around the Euphrates and the Tigris attracted the developers.

At the moment Turkey constructs one of the biggest dam systems of the world. Hereby, approximately two dozen dams are to be built on the Euphrates and the Tigris. This major construction project nevertheless, proposes several problems. The major issue to be addressed besides the impacts crossing borders are the impacts within the Turkish territory. Consequently, it is highly visible that the building of the dams within the territory of Turkey will have large impact on the downstream countries, Syria and Iraq. These downstream resident countries do fear that Turkey will shorten the water supply, since the dams are on the Turkish territory, giving Turkey the handle over the water.

The aim of the GAP is to provide the dammed water as a tool to enhance the export oriented irrigation farming, thereby, when taking 1985 as base, increasing industrial production by 10%, the Service sector by 9%, the Gross Regional Product of around 7.7%, Construction by 6.6%, Agriculture by around 4.9%, hereby expand the scope of agricultural usable soil and land in the Southeast of Turkey.

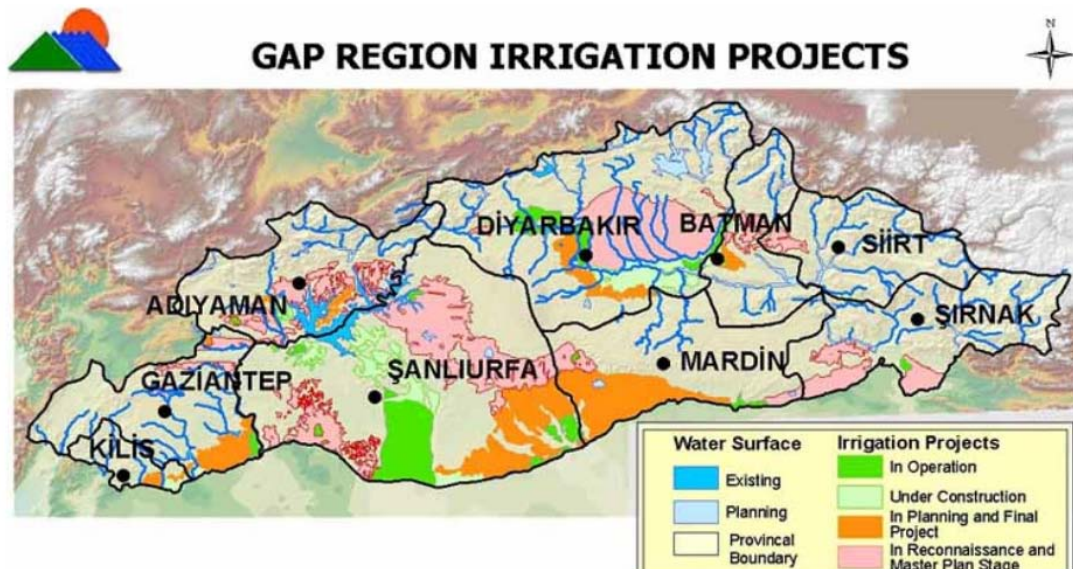


Figure 1 Area of Irrigation Projects (Source GAP 2011)

This expected increase is to also shift the share of agriculture from a current 40% to 23%, consequently creating enhanced industrial output and production of around 9% (from 15% to 24%) and services from 44% to 53% (GAP 2011).

SECTORS	1985	2005
Agriculture	40 %	23 %
Industry	16 %	24 %
Services	44 %	53 %
Gross Regional Product (GRP)	100 %	100 %
GRP Growth Index	100	445

Figure 2 Changes in economic structure over the base year 1985 (Source GAP 2011)

The most favoured achievement is to harness the Anatolian regions of aridity, through shifting it towards an agriculturally usable area, creating an expected increase in crop yield is 104 % in wheat, 69 % in barley, 388 % in cotton, 556 % in tomato, 24 % in lentil, and 80 % in vegetables (GAP 2011). Due to previous experiences and prior undertakings of similar problem sets, presumed worries are that the projects are to increase the salt water intrusion of the irrigation surface as well as the destruction of the cultural identity within the Kurdish territory (International Lakes and Rivers, Nr.34, 2000).

The Great Anatolian Project (GAP) is the biggest regional development project of Turkey, about 32 billion Dollars, and comprises of 22 dams and subsequently 19 hydro-electric power plants alongside the Euphrates and the Tigris. These additional plants are estimated to produce a further 27 billion of kilowatt hours of energy, at an installed capacity of 7460MW (GAP 2011), which should cover 30% of the Turkish demand, thereby additionally bring around 28,5% of water potential under control (GAP 2011). The plans go back to the state founder Kemal Atatürk, who already in the 1930s identified the building of the dams as a challenge for the Turkish nation. Until now, already 14 dams and 7 power plants had been constructed. The GAP-region stretches across the areas of the rivers Euphrates and Tigris. Affected of the project are nine Turkish provinces capturing a total territory of 76.000km<sup>2</sup> (which is around a tenth of the Turkish territory). By the end of the project around 1.7 billion

hectares should be irrigated and subsequently opened to agricultural use. Nevertheless, until now only around 20% were realised.

### 2.1.2 General Framework, Principles and Goals of the GAP

The Greater Anatolian Project is created to design economic, social and regional changes via construction and integration of new built dams, hydroelectric power plants, irrigation projects and infrastructural progress in the areas of transportation, health, education and employment opportunities beyond agriculture. (GAP/Consortium 2000).

It is framed around several subprojects, which reside on the Euphrates and around the Tigris. The subprojects furthermore, consist of 21 dams, 19 hydro- power plants and several irrigation projects. (Lyne 1991). These projects will, when finished, enhance the enlargement of the irrigated land, in one of the most depressed regions in Turkey.

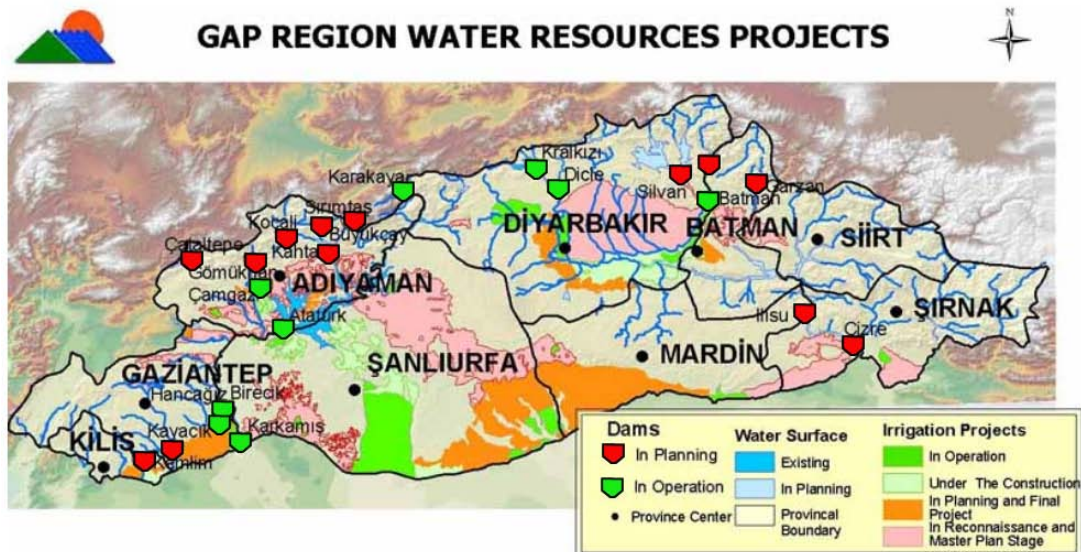


Figure 3 GAP Water resource projects (Source: GAP 2011)

The Master Plan of the GAP which was composed in 1989 and revised in 2002, modified the plan towards an integrated regional development project, based on sustainable investment in agriculture, industry, transportation, education, health and rural as well as urban infrastructure building.

Further priority was given to the irrigation projects, which comprise, depending on regional division, of canal construction works, irrigation network completion, mainly



connecting and amending the current systems, land consolidations and on-farm development works, as well as the building of dams and hydro-power plants.

As for so far, around 9 dams are in operation and another 13 are in planning, as well as a water holding capacity sufficient for irrigating one million hectares of land. (GAP/Consortium 2000).

In 2008 approximately 272.972 hectares of land in the basins of the two mentioned rivers, Euphrates and Tigris, were brought under irrigation. This states that only 15% of all planned irrigation investments were realized until now. Hence, this leads to a delay concerning the increase in the range of crop and development of the agro-based industry (GAP/Consortium 2000), which is dependent upon the realization of the irrigation investment. Conclusively, the main achievement and goals the GAP intends to execute, shall ensure economic growth, social development, including an increase of employment expansion within the region of South Eastern Anatolia, to subsequently improve the welfare level of the citizens resident in that region. The governmental targets respond mainly to the infrastructural needs including irrigation, which will speed up the economic and social development within that territory. Hereby, the GAP Action Plan also includes policies and strategies, as well as actions towards achieving the completion in a medium term. (GAP/Consortium 2000).

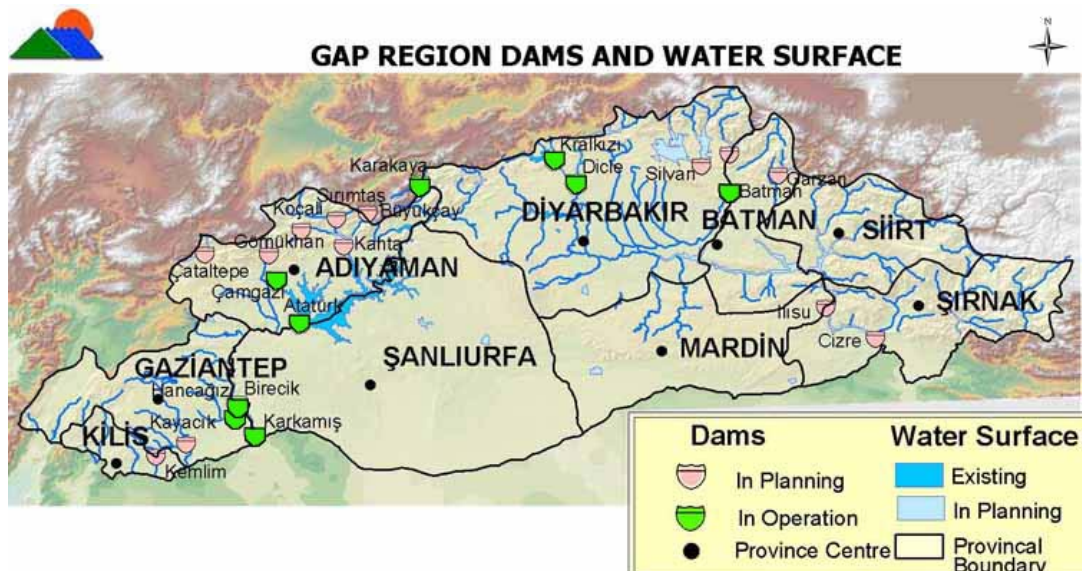


Figure 4 GAP Region Dams and Water Surfaces (Source: GAP 2011)

It is obvious that the governmental focus is on achieving economical standards, mainly employment, competitiveness and production. Nevertheless, this implies a severe increase in energy necessary to be capable of obtaining a better functioning and sustainable growing economy. Inevitably resulting in the need for more power plants to be created, subsequently forcing the environment to adapt to the respective dams and planned power plants for the additional amount of the urgently needed KWh (GAP/Consortium 2000).

### 2.1.3 Details of the technical side of the Ilisu Dam

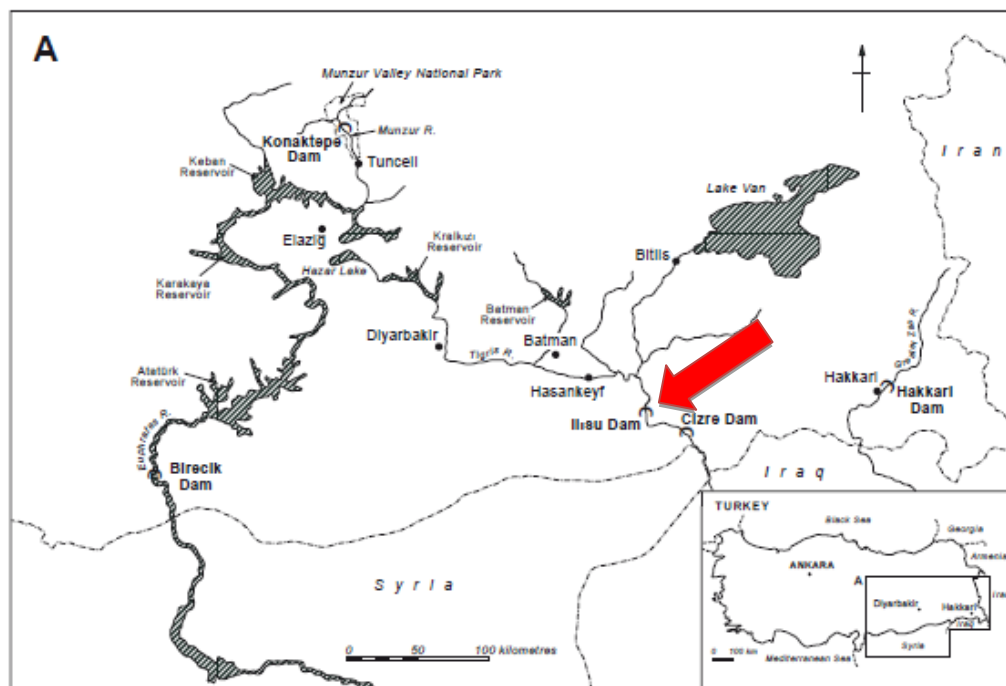
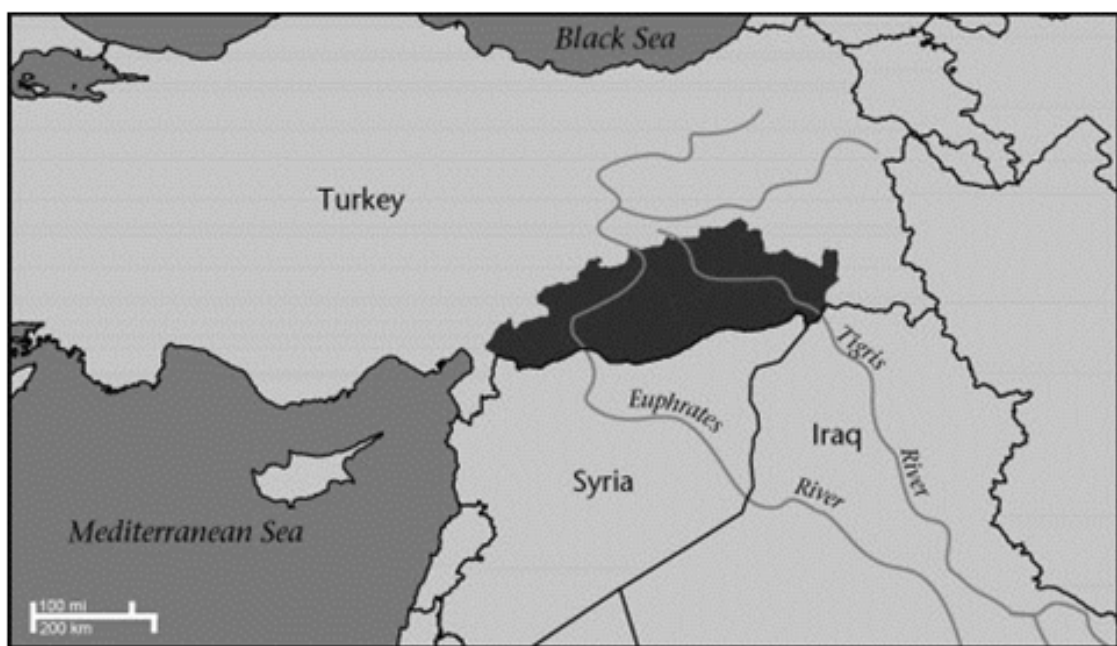


Figure 5 Ilisu dam project map (Source: Ronayne M.)

The Ilisu Hydro-Electric Dam and the intended power plant is at the moment the largest project, within the structure of the GAP. It is part of the \$56 billion infrastructure development scheme of the GAP, already including a reserve of \$52.824 (GAP 2011).

After completion of the GAP it is estimated that the plants and dams built are to supply Turkey with an annual amount of 27 Billion KWh of electricity. This should in addition help creating a further 5.5 million new jobs, regional (Turkish US Embassy), by implementing labour force training programs for” occupational skill building” (GAP

2011) by simultaneously provide jobs, to those graduating. At no point, clarifying the amount of actual available jobs as well as not revealing the respective sectors of job availability, consequently illustrating a vague future of employment, but refers to the increase in educational facilities and training programs in order to consequently increase the potentially available work force (GAP 2011). Hereby, special emphasis shall be given to the incorporation of women and the youth, by providing occupational consultancy and guidance services to around 20.000 people within the region of South Eastern Anatolia as well as entrepreneurs starting their own business (GAP 2011).



**Figure 6 Borders: Iraq, Turkey, Syria (Source: Harris Leila M. 2008)**

The area of the proposed Ilisu Dam is located around the Tigris River, approximately 65 km upstream of the Syrian and Iraqi borders. The dam consists of a Concrete Face Rockfill Dam, which will be 135 m in height and around 1,820m in length. Hereby, it is planned to provide a storage capacity of 7.4 billion m<sup>3</sup> and subsequently 3,833 GWh (Andritz 2011) after completion. Hereby, it is the largest hydroelectric project in Turkey at the moment. During the construction period the Tigris has to be diverted through three tunnels in order to secure a dry construction area. It is planned that the powerhouse should contain 6 turbine generators. Hereby, the project, which will cost around \$2 billion, was planned as a private sector “*Build-Operate-Transfer scheme*” (the cornerhouse 1999). However, it was failed to find an

adequate bidder to adopt the plans intended, so that Turkey tried to operate on its account, by simultaneously, due to its complexity, awarding the contract to an international engineering consortium comprised of the Swiss companies Colenco and Maggia, as well as the Turkish Dolsar and Rast (Bosshard 1998). Furthermore, the construction was subcontracted to several international companies, as for example the English company Balfour Beatty, the Italian Impreglio as well as the Swedish Skanska. The equipment supply was also outsourced and is to be provided by the Swiss company Stucky, the Turkish Temelsu and the Austrian Andritz Hydro. Hereby, leading the way will be the Turkish civil company Nurol. (Andritz 2011)

The construction started in 2008 and is expected to be in use by 2012. It is questionable whether the placing into operation can be achieved, since the explosiveness of the contemporary circumstances also lead towards threats against the construction site and the employed workers. The difficulties, due to which the problematic arose, comprise of a national and international level, since the bordering countries Syria and Iraq are majorly affected by the construction of the dam and respective power plant.

Besides the difficulties within an international context, the project is highly controversial due to the social political and archaeological reasons and subsequently impacts the construction of the Dam establishes. Hereby, the intended project violates 5 policy guidelines of the World Bank on 18 accounts as well as core provisions of the UN Convention on the NON-Navigational Uses of Transboundary Watercourses.

Furthermore, several NGOs are concerned about the Ilisu proposal. The major concerns are centred around the impact the dam will have on the water rights of the downstream countries, the overall environmental impact, the cultural/archaeological impact, as well as concerns relating to the matter of the resettlement and subsequently missing compensation and resettlement plans to the inhabitants of the respective region. (the cornerhouse 1999)

## 2.1.4 Time Line of Events- a brief introduction to the history of the Ilisu dam

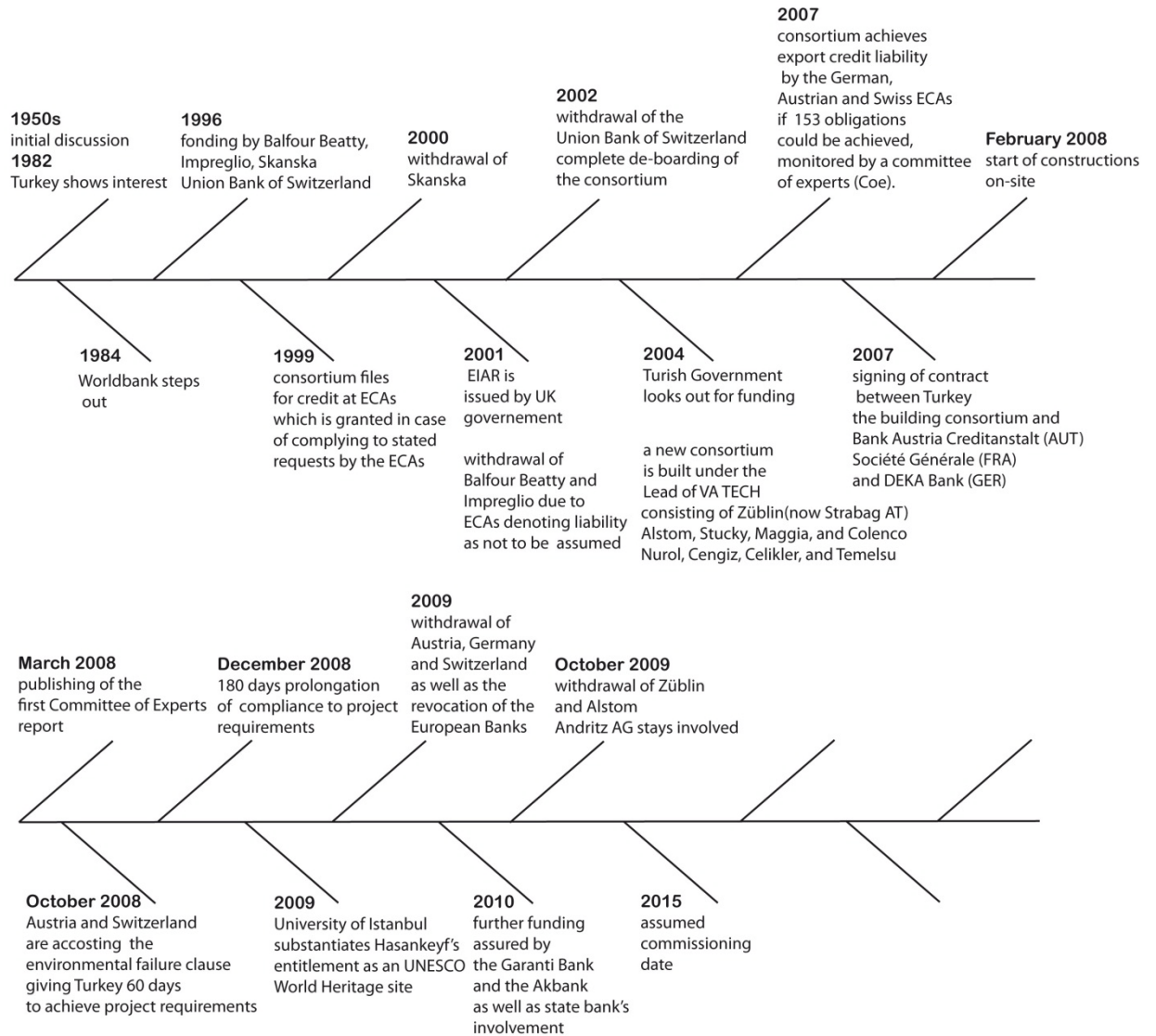


Figure 7 Timeline (Source: own)

The first plans for the construction of the Ilisu dam were created during the 1950s but were put back until 1982 when the intended plans came to work with the Turkish government. Nevertheless, it took until 1996 to achieve founding by an international consortium. In this year, Balfour Beatty (GB, Impreglio (IT), Skanska (SE), the Union Bank of Switzerland (CH) as well as three Turkish companies were granting monetary support towards the construction of the Ilisu dam Project. In 1999 the consortium, led by the British company Balfour Beatty, filed for credit at the export-credit agencies (ECAs), although already being criticised by the public due to the dam's immense environmental and social impacts. The ECAs, published a report in December 1999 including four conditions which Turkey had to comply with in order to be eligible for financial support. The conditions stated that Turkey has to provide purification/waste water treatment plants to ensure the good water quality and to be able to reduce potential increase of wastewater produced by the big urban settlements in the immediate surroundings. Furthermore, it was foreseen that there has to be proof of appropriate sewage discharge flow, as well as showing appropriate resettlement plans of the inhabitants of the area and the preservation of the ancient city of Hasankeyf. These conditions, and the difficulty to convert the project to the requirements set by the ECAs resulted in a de-boarding of the consortium starting in 2000, by the withdrawal of the Swedish company Skanska. One year later, the British Balfour Beatty and the Italian Impreglio also backed out after the ECAs denoted that they liability may not be assumed. Furthermore, in 2002 the Swiss Bank withdrew their financial support, justifying their decision by the ecological and social impact the Ilisu dam poses to the region of South-Eastern Anatolia. This collapsed initiative bid was revalidated in 2004 by the Turkish government, hereby, again looking for funding and appropriate Business partners. This desperate search for business partners led to a newly formed consortium, this time led by the Austrian VA Tech Hydro (since 2006 Andritz) and comprised of the German company Züblin(now Strabag AT),Alstom, Stucky, Maggia, and Colenco as well as Nurol, Cengiz, Celikler, and Temelsu. This international consortium requested for insurance by the German, Austrian and Swiss ECAs. In 2007 their request was approved and an export credit liability was granted, if only 153 specially cited amendments/obligations could be achieved, monitored by a committee of experts (Coe). This caused international protest, a response to the made decision of granting support towards the irrigation plans of Turkish government and the concluding impact on the area in question. Later in 2007 the Swiss Zürcher

Kantonalbank withdrew from the project stating that the construction does not comply with the bank's sustainability principle. This nevertheless, did not jeopardise the, also in 2007 signed, contract between Turkey, the building consortium and the banks Bank Austria Creditanstalt (AUT), Société Générale (FRA) and DEKA Bank (GER). With the promised commitment, Turkey started with the on-site disposition/ expropriations of the Kurdish inhabitants. Herby, neither inform nor discuss this step with the Committee of Expert. This move alerted several NGO's as well as raised further international protests. Six months on, in February 2008, the actual construction commenced. Hereby, the first constructions were mainly maintenance and worker's quarters as well as levelled streets and interestingly military camps to overview the site. In March the first report of the Committee of Experts was published, concluding in misconduct of international standards. The Committee stated that none of the necessary amendments and obligations have been fully achieved. Therefore, it was recommended to suspend the execution of construction work for a minimum of two years. This did not stop Turkey to continue building the dam. This caused the Turkish organization Doga Dernegi, primarily concerned about the environmental protection of the area, to initiate the supra-regional campaign "Stop Ilisu- Save Hasankeyf". Hereby, the increased awareness towards the problematic the construction of the dam raised also led to support and participation of national and international celebrities as for example the Turkish pop-singer Tarkan. Only, three months later the Committee of Experts published their second report now fortifying that the project is a failure and environmental disaster. Furthermore, this report foresees a further delay of the construction of at least three years in order to meet the set requirements. The second reprehension showed impact and caused a drastic decrease of construction activities on the Ilisu dam Site. In October 2008 the first withdrawal phase started, when Austria and Switzerland presented a document accosting the environmental failure clause, hereby granting Turkey 60 days to achieve project requirements. The Deadline, set on December 23<sup>rd</sup>, was prolonged for another 180 days giving Turkey time until July to comply with the requests stated by the Committee of Experts. During these additional 180 days the University of Istanbul substantiates Hasankeyf's entitlement as an UNESCO World Heritage site. The fact that the region is highly deserving protection, caused even more international uproar and consequently increased the number of celebrities participating, including Nobel laureate Orhan Pamuk, director Fatih Akin as well as several Austrian and German actors and politicians. The resulting increased public awareness caused the withdrawal of Austria, Germany and

Switzerland in 2009, presenting the Ilisu dam as a creative precedence, since for the very first time an existing export guarantee was annulled due to ecological and/or social/cultural concerns. Within the same month of the withdrawal from Austria, Germany and Switzerland, also the European banks declared their revocation from the Ilisu dam project. The wave of recantation was not to stop there. In October of the same year Züblin and Swiss Alstom review their involvement inclining abjuration. The Austrian company AndritzAG (former VA TECH) is not reconsidering but wants to stay involved. In 2010 the organization Doga Dernegi announced that a fund for the Ilisu dam construction was assured by the biggest private banks of Turkey, the Garanti Bank and the Akbank as well as state bank's involvement. The validity was assured by all three involved banks, causing Doga Dernegi to extend its scope including a campaign against the private banks Garanti Bank and Akbank. The involvement of the state bank provided enough monetary support to continue the construction activities on site. It is assumed, that if everything works out accordingly to schedule that the Dam should be finished and ready for use at the end of 2015. Thereby, already overstretching the intended finishing date set within year 2013. (Doga Dernegi 2010)

### **2.1.5 Political concerns**

Relating matter to the Ilisu Dam, it is highly visible that the amendments taken to construct the Dam, sets Syria and Iraq under very much pressure, since Turkey claims solely power over the water of the Tigris and the Euphrates. The Ilisu project is to reduce the water flow for the downstream countries by around 10%. Additionally, Turkey, until now, did not manage to prepare for a peaceful settlement concerning the water management with its bordering and affected neighbours. It still relies on the assumption that being an upstream part of the river, should grant special rights to it. It therefore, uses the locational issue to pressurize blackmail to the other involved parties. This leads to the defensive demeanour of Syria, which is consequently in order to secure itself from the threat, supporting the Kurdish PKK guerrilla. Hereby, the current crisis between Turkey and its neighbours is to be understood in the context of the conflict over water, where Iraq did threaten to bring the issue to an international tribunal, if Turkey will not change its current water and dam- building policies.



In 1997, the majority of votes within the UN General Assembly supported the Non-Navigational Uses of trans-boundary Waterways (rivernet). Hereby, the convention tries to prevent substantial negative impacts of projects on international waterways on neighbouring states. Turkey was to reject the convention. This nevertheless, does not imply that Turkey is not bound to take into account and abide by the laws. It is even more highly clear that even though Turkey did not sign the agreement, they are bound to the principles and obligations laid down. As stated by Chazournes, Crawford and Sands in 2007:

*“[The Convention’s] principles reflect general obligations on all states under customary international law. Of particular importance are: Article 5(1), which provides that ‘watercourse states shall in their respective territories utilise an international watercourse in an equitable and reasonable manner’ (emphasis added); Article 7(1), which provides ‘watercourse states shall, in utilising an international watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to other watercourse states’; Article 11, which provides ‘watercourse states shall exchange information and consult each other and, if necessary, negotiate on the possible effects of planned measures on the condition of an international watercourse’; and Article 12, which provides that ‘before a watercourse state implements or permits the implementation of planned measures which may have a significant adverse effect upon other watercourse states, it shall provide those states with timely notification thereof. Such notification shall be accompanied by available technical data and information, including the results of any environmental impact assessment, in order to enable to notified states to evaluate the possible effects of the planned measures.’”*

The legal obligations envisage that Turkey has to notify, consult and negotiate with its downstream riparian countries about the Ilisu project.

*“These obligations arise under the international law on watercourses and under international environmental law and reflect the principle of “good neighbourliness”, as set out in Article 74 of the United Nations (UN) Charter and in the dictum of the ICJ that the principle of sovereignty embodies” ( The cornerhouse 2007) “the obligation of every state not to allow its territory to be used for acts contrary to the rights of other states” (Corfu Channel Case -UK v Albania- 1949 ICJ Reps 4, 22). Furthermore, Article 5(1) states that “watercourse states shall in their respective territories utilise an international watercourse in an equitable and reasonable manner”. It is even more expected of the watercourse state to take suitable actions*

preventing a harm of other watercourse states (Article 7(1)). In order to achieve the goal of sustainable utilization, it is inevitable to have all involved watercourse states exchange relevant information and consult each other, to negotiate on possible impacts and outcomes of the taken measurements (Article 11). This is of major importance when implementing planned measures. Article 12 provides that in case of “*a significant adverse effect*”, the state causing the problem is therefore, to notify the state affected thereof.

The ICJ strengthens the provision stated, by referring to them as the principle of the “*perfect equality of all riparian states*” (The cornerhouse 2007), which expands to “*the use of the whole course of the river and the exclusion of any preferential privilege of any one riparian state in relation to the others*” (The principle was invoked by the Permanent Court of International Justice in the Case concerning the Territorial Jurisdiction of the International Commission of the River Oder See Territorial Jurisdiction of the International Commission of the River Oder, Judgment no. 16, 1929, PCIJ, series A, no.23, page 27). This again is to affirm and substantiate the legal obligation of Turkey to notify, consult and negotiate, with all affected countries, irrespective of their location; upstream or downstream.

Article 16 of the ILC states that supporting a country, in any means thereby resulting in severe impacts within another states territory is also to be held responsible for participating and doing so.

”A State which aids or assists another State in the commission of an internationally wrongful act by the latter is internationally responsible for doing so if:

- (a) That State does so with knowledge of the circumstances of the internationally wrongful act; and
- (b) The act would be internationally wrongful if committed by that State.”

This respectively explains the legal difficulties the Ilisu Dam causes.

The irrigation projects of the GAP reduce the downstream flow massively, giving Turkey predominance over the water and consequently providing Turkey with the possibility to apply pressure on the downstream riparian countries; Syria and Iraq. Given the technical details to the Ilisu dam it is highly obvious that the reservoir filling itself will absorb half of the annual stream-flow. Furthermore, the spare capacity of the reservoir gives Turkey the possibility to block any water flow to the downstream countries for several months. (rivernet 2011)

### 3 Impacts

The big reservoirs the GAP constructed, as for example the Ataturk, were displacing several 100.000 people. Respective compensation is depending on property of land and mode of accommodation. Most of the territory in Southeastern Anatolia is owned by large landowners; consequently, many landless families did not get compensation at all. Those families were quickly and quietly dislocated to the slums of the big cities, as for example Istanbul. Since most of the inhabitants of that region are Kurds, also the war between the Turkish Army and the Kurdish guerrilla, affects the situation massively. Those circumstances impede the possibility for the people concerned to voice any protest or unhappiness/dissatisfaction. The on-going conflict will still remain a major issue, since it is to assume that Turkey would not invest into the Anatolian region, if a possible split off and consequently an autonom Kurdistan would occur. The GAP also poses to be a symbolical as well as developmental tool to possibly integrate Eastern Anatolia within the Turkish framework. (Karsch) This nevertheless, leads towards the assumption that the integrational process will not focus towards the recognition and acceptance of the Kurds as a national minority.

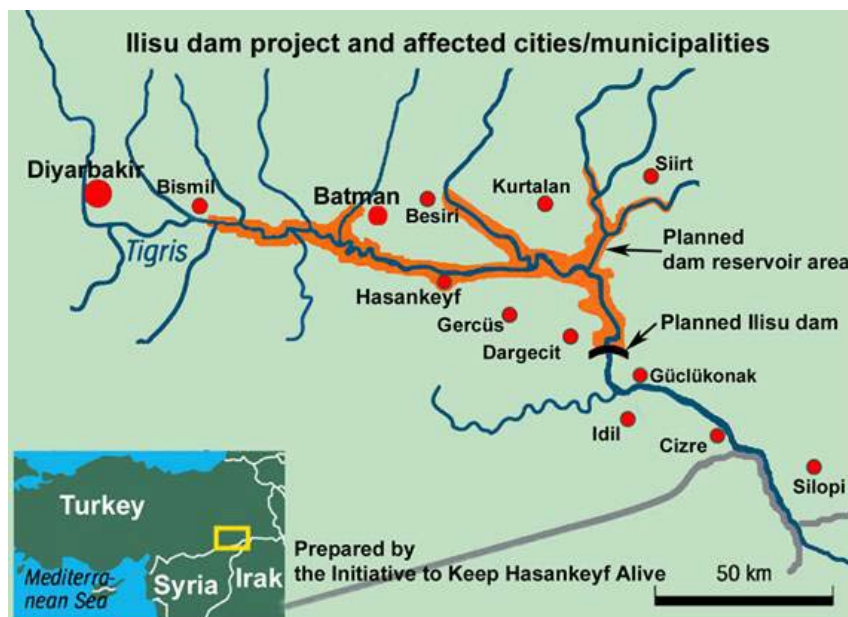


Figure 8 Ilisu dam and the affected municipalities (Source:eca-watch)

#### 3.1.1 Social Impact of the Ilisu Dam

The Ilisu, will flood 52 villages and 15 small towns. This will affect presumably around 15.000 to 20.000 people. An exact and accurate number of people affected

could not be achieved, since the surveys were accomplished through helicopter rides over the respective territory. Assumptions nevertheless, imply that around 25.000 people will be displaced and another 11.000 will lose their farmland and consequently, livelihoods (Kerim Yildaz, Quoted by Kerim Yildaz, executive director of the Kurdish Human Rights Project and chairman of the Ilisu Dam Campaign). These issues produce secondary and tertiary effects, which were not visible during the initial planning phase, such as displacement of local communities and the isolation of others, which are to be cut off from their neighbouring community. It was recognized, only after the actual dimensions of the dam were known. This inevitably leads to the conclusion that it is virtually impossible to turn back the effects. The major difficulty is that the people affected were not consulted, nor asked for their opinion and views. The conducted Environmental Impact Assessment (EIA) was unpublished publicly, neither to the inhabitants affected nor to any NGOs. It was officially admitted that the EIA was only conducted for the Export Credit Agencies (ECAs) and the creditor banks.

This means for a renewal to the already pre-existing conflict as well as a potential for escalation. This situation and the fear of the people for a possible re-emerging of conflicts have severe relevance for the discussions about the GAP, in that the reveal possible pressure and life threat of the posed situation to the community. The everyday life situation of the people of that area has not much time to deal with any additional upcoming problems, such as the construction and damage the Ilisu dam provides. This as well proposes that the construction builders themselves will work under a “high risk” environment, since potential threats of attack are to be imposed on them. Hereby, the people stated that they do not want conflict. The women of the region stated very firmly that the priority needs to be seen in the light of maintaining peace and to prevent from conflict (Ronanye 2005).

### **3.1.2 Environmental Impacts of the Ilisu Dam**

Solid waste and wastewater of the major Turkish cities, as for example Batman and Siirt, are dumped into the Tigris River, without prior treatment. The intended Ilisu reservoir will reduce the self-cleaning capacity of the river considerably. The, with the construction involved companies, Sulzer and ABB, regard this instance as “one of the most important project risks” (rivernet 2011). Herefore, planning wastewater treatment is essential. A contributing treatment plant is planned and will be

established in Diyarbakir, the second biggest city in the region. This waste water treatment plant is reportedly financed by the German Government. Nevertheless, it is unsure if the intended treatment plant is to be build, entirely financed, or contributing towards a sufficient environmental positive impact. Until now it is unclear if the intended waste water treatment plant will as well provide the cities of Sirt and Batam with sufficiently treated drinking and service water.

The area around the intended Ilisu dam is as well affected by the severe environmental cuttings for the construction of the dam and power plant. The Ilisu reservoir will presumably infest the region surrounding with Malaria and Leishmaniosis, a certain harmful subspecies of the sand fly. It is expected that the health education programs and the setting up of laboratories around the region will relief this problem. The experiences of previous undertakings of almost same appearance did provide survey material stating that these mitigation measures will neither contribute towards a better overall health system, nor to an appropriate protection for the people against new waterborne diseases.

The biodiversity of the region is to be harmed severely, implicating the immediate fauna to be affected the most. Besides the impact on the fish, which are not capable of surviving in the deep waters of the Ilisu basin, which together with the high sedimentation rate, will assumingly contribute to the extinction of organisms in the area, also the birdlife is affected massively. The area enclosing Hasankeyf, Güçlükönak – Taşkonak and Bostanci form a single important ecosystem within this region. Therefore, by tampering too much with the fragile ecosystem would do more harm than good (Doğa Derneği,2006). The “Schweizer Vogelschutz SVS/Birdlife Schweiz” conducted, in 2006, a survey, stating the specially endangered birds of the Region, where the natural habitat will be destroyed by the proposed Ilisu Dam. Hereby, majorly affected are the Bonelli’s Eagle, the Griffon Vulture, the Egyptian Vulture as well as the striped Hyena and several other species. It is evident that the irrigation-plans of the Dam propose several difficulties, from which not all are stated in the EIA.

The water is to pass the Ilisu reservoir thereby transferring most of its nutrients and sediments onto the catchment basin, consequently further degrading important nutritive substance when flowing downstream. This means for the downstream a lack of nutrient matter, which in turn is to cause negative alterations of the river structure, erosion and disturbance of the river bed, by consequently destroying the small islands within the Tigris. No adequate data sets were provided by the EIA, however, assumptions concerning the annual sedimentation load of the Tigris were

assumed to be around 15-30 million m<sup>3</sup>. This is to fill up the reservoir with 10-20 % of material, within the next 50 years of operation. The life expectancy of the reservoir is believed to 80- 100 years, conveying an underestimation of the sedimentation rate, when the project was planned (rivernet). This in turn, will also have impact towards the change of the sudden habitat and the spreading of tropical diseases. (Biricik 2004)

When evaluating the environmental circumstances and the impacts likely to occur, it is of imminent importance to discuss the Environmental Impact Assessment (EIA) and its findings and evaluations. Several NGO organizations heavily criticised the lack of details the EIA provides in general but furthermore criticizing the skipping of important aspects in order to be able to fully assess the current situation and the inter-connectivity between the single layers of problem sets. Depending on the different organizations and the respective backgrounds the criticism posed varies, but unambiguously states an overall disaffection. When assessing the criticism of the “Schweizer Vogelschutz SVS/BirdLife Schweiz” it is obvious that their focal point is at the securing the birdlife but besides that the organization is also heavily opposing the lack of scientific stable data sets and proposals for a sustainable overall solution of the needed reduction of environmental consequences. It is furthermore animadverted that no detailed “Environmental Action Plan” was established as well as the misconduct in lack of involvement and lack of notification was pointed out (Schweizer Vogelschutz SVS/BirdLife Schweiz, 2006).

When furthermore assessing various other sources it becomes quite clear that the posed criticism of the Schweizer Vogelschutz SVS/BirdLife Schweiz” is to reflect the overall international notion. Respectively, when evaluating the review on the original Environmental Impact Assessment published by WEED, it becomes cognizable that The alternatives to the intended Ilisu dam construction was not including the framework of “Common Approaches” (Setton, Drillitsch, WEED 2006) as well as it also neglected the overall details of potential alternatives, by simultaneously providing data sets, already assessed five decades prior the Environmental Impact Assessment, utilizing dated methods for data acquisition, and thereby falsifying the overall evaluation (Setton, Drillitsch, WEED 2006).It is also heavily opposed, by several independent scientists, that not enough detail was given to the potential design- amendments of the dam to improve the current situation. Hereby, it was clarified that a decrease in height is to directly damp the impacts, saving Hasankeyf, while almost generating the same amount of Energy (Setton, Drillitsch, WEED

2006). Furthermore criticised, is the lack of overall evaluation of the contemporary situation, by the Operational Policy of the Worldbank as well as the recommendations of the Weltstaudammkommission (WCD). Conclusively, all NGO organizations result in the same notion, stating that an adequate Environmental Impact Assessment would have led to sufficient alternatives, leaving the construction of the Ilisu dam substitutable and respectively unfeasible for the ecological price the region has to pay (Setton, Drillitsch, WEED 2006).

### **3.1.3 Cultural Impacts of the Ilisu Dam**

The area along the Tigris is part of important historical settlement areas. The ancient town of Hasankeyf is majorly affected, in turn is to propose one of the most difficult challenges to overcome.

#### **3.1.3.1 Archaeological Impacts and the town of Hasankeyf**



**Figure 9 Ancient City of Hasankeyf (Source Smithsonian Magazine)**

Hasankeyf is a 5.500 person settlement within the bottom of a limestone cliff below the ruins of its medieval predecessor. This is a nationally recognized cultural heritage site since the 1970s. Artefacts include a bridge built in the 12<sup>th</sup> century, a mosque and a royal tomb of the same age. The town of Hasankeyf survived since the middle ages without being destroyed once. It was awarded complete cultural protection by the Turkish department of culture in 1978 (Decision A-1105). It is obvious that the decision of the energy department to flood the ancient city of Hasankeyf violates the given promise to protect and secure the area. Several cultural experts and activists appeal to the national authorities to save the town, by changing the plans for the Ilisu project. It was offered to evacuate the relics before the area is flooded, but this implies that a bulk of the artefacts cannot be saved and are therefore lost. It is calculated that only 15% of the known relics can be safely evacuated, leaving a big bulk unattended. Calculations are not taking into account the still hidden treasures of time. The flooding of this area is also to lead towards deprivation of important historical knowledge and cultural identification of the inhabitants of this area.

It is feared, that with the destruction of the archaeological sites within the region also information for the understanding of the Neanderthal life will be lost. The area around Hasankeyf is, besides the more recent historical impact, the first area in the world where plants and animals had been domesticated by the human populations well as being a frontier zone for empires, including the Roman and Assyrian empires. (Ronanye 2005)

Hasankeyf itself is undoubtedly, a significant cultural and religious site, providing it to be massively important for the Kurdish history. It is evident that the area is affecting more people than only the immediate inhabitants which life in that region. The major impact to the people in the immediate surrounding is the wider network in which the living community operates, implying that bonds between people would be broken up by the resettlement undertakings and respectively result in the cut off of central contacts between marketplaces connecting smaller villages (Ronanye 2005) This to insinuate the project to be an abandonment of the archaeological site as well as a destruction of the quality of life for the remaining settlements within the region. "Hasankeyf is not just artefacts, caves and bones, it is our inheritance and we should have access to it." ( KHRP *et al* 2001)





Figure 10 Broken arches and pylons of Eski Koprusu (Source Smithsonian Magazine)

### ***3.1.3.2 Contentedness of the immediate Community in South Eastern Anatolia***

The region proves to be one of the poorest in the Turkish arrangement. The dam projects are less contributing towards the achievement of enhanced life-standards of the already settled population within the area since the irrigation plans are decreasing the actual surface area for potential and actual agricultural use and replace it with giant water filled catchment basins, causing further distress since the majority of farmers are not landowners themselves but rather renting the available parcels of land. This habit of land leasing is to also contribute towards a decreased well-being as well as an increase in disaffection since reparation payments are, if paid that is, are not distributed towards those in need but rather towards the actual squires. This furthermore leads to an increase in an unequal share of monetary units, thereby again leaving the poor without substitutes for making a future living.

The actual construction site is not to provide enough employment as to compensate the losses of agricultural earnings. The immediate construction itself is to employ only 429 employees which are not installed as disposal of the respective companies. Furthermore, the monetary compensation of the employees is in no coherence of the mean wages paid upcountry. This at one point led to workers protests as a

delegation of workers from inner-country was invited to inspect the construction site, thereby coincidental comparing their wages, resulting in an obvious underpay of the Ilisu dam workers. Even more severe will be the post construction situation, which means for the inhabitants to actively look for employment opportunities presumably set in the bigger urban sprawls, causing families to be ripped apart or calling for an overall resettlement, thereby losing their entitlement, partly but more often fully, for new housing.

Due to the already mentioned circumstances the overall contentedness of the population can be evaluated as concerned until to the degree when it spills over to plain fear of being kicked in an unknown new living situation and consequently, enhanced displeasure against oppression from above.

Majorly concerned hereby are the women, being the primary family carer and supplier. The current over-presence of military forces as well as the permanent reminder of being dismissed as an autonomous cultural nation within a wider arrangement cause further discomfort by similarly, increasing the fear of assaults especially against women (Ronayne 2005).

Contributing hereby is the under-supply of food and drinking water within the region. According to surveys, water tab frequency within households is still to be neglected, leaving easy access to water a matter of luxury. This is to degrade even further, after the construction site has been closed and the Ilisu dam is to be in operation. The women of the region fear that a decrease in water supply as well as a decrease in water quality will furthermore increase the already high rate of illnesses by not being provided with appropriate countermeasures or mitigation actions (Ronayne 2005). Thus, also the provided housing causes socio-economical disruptions since they are not adapted for the inhabitant's needs, thereby settling the livestock directly next to the kitchen, creating an, otherwise very much important, area of non-usability (Gegenströmung 2011, Submission to the UN Committee on Economic, Social and Cultural Rights for its 46th Session, 2 – 20 May 2011, Dam construction in Turkey and its impact on economic, cultural and social rights- Parallel report in response to the Initial Report by the Republic of Turkey on the Implementation of the International Covenant On Economic, Social and Cultural Rights, submitted by CounterCurrent – GegenStrömung 14<sup>th</sup> March 2011) furthermore triggering the fear of consequent homelessness if to object current status quo.

Also, the loss of cultural heritage and the with that associated resettlement plans contribute to a socially instable base situation, thereby enhancing the fear of the population of major loss of religious and cultural artefacts, diminishing again the cultural importance of the region and its settlers. The fact that not even 15% of the artefacts within the historian city of Hasankeyf can be retracted/ maintained, leaving the biggest bulk of living history lost for future generations. This is also to handicap and complicate possible traceability for historical equivocality.

The traditional way of living, mainly the nomadic way of living, is also under stack of being more and more repressed until not further feasible and consequently abandoned in benefit of the industrial sector within the bigger urban sprawls. The dependence of the nomadic tribes' herds to the intact river valley and the permanent access to water is inevitable when acting with livestock. The construction of the dam distresses the old habits and routes of the nomadic tribes, additionally to numerous smaller dams and hydro-power plants already in operation within the region (WEED; Setton, Drillisch et al, 2005). It is highly visible that the traditional ways used for decades are to be inaccessible due to construction purposes as well as inundation. The Submission to the UN, submitted by the organization Countercurrent-Gegenströmung unambiguously states that during the past years an increase in losses of traditional nomadic rotes occurred while similarly no alternative to current used trails can be found. The rocky behaviour and structure of the region even worsens the situation by proposing severe difficulties when moving the herds on the higher plateaus to their summer pastures. Contributing thereby is also the problematic of the animals being majorly disrupted in their habits and uses as well as the increased noise pollution of the sites unsettling the herds, thereby hampering their handling causing further stress for the animal and their owners. Until now, due to further restrictions, laid down in the "*Law On Forestry from 2004*", around 2000 nomads based in the region of South Eastern Anatolia were forced to give up their traditional way of living due to loss of water supply options and pastures. The forced settlement, most of the time to the bigger cities within the region, result in public housing sub missioned by the Turkish government, which lack on central infrastructure, and a major increase in the unemployment rate of the region. The need for staff of live as well as the human urge for security mainly personified by an appropriate agent, in this case a stable roof over the head causes indebtedness, furthermore dampening the overall contentedness of the population.

### *3.1.3.3 Contribution of riparian countries towards the regional volition of self-determination*

For the riparian countries, Iraq and Syria, the construction of the Ilisu dam poses a major threat on several levels.

Of main concern as already stated prior, is the actual flow of water which, is to be under solely control by the upstream neighbour Turkey. This is to be documented and proven when considering earlier dam construction and catchment basin plenum. The most prominent example hereby, is the filling of the catchment basin of the Atatürk dam, before it was finished and ready for commissioning. The filling itself caused a permanent stop of water flow to its riparian neighbours, thereby intercepting the flow for around 10 days. It is inevitable to note that both streams pose imminent importance for the downstream agrarian sector as well as play a major key role as drinking water supplier. Importance rose due to the increase in energy demand nationally as well as internationally, thereby leaving Turkey the upper hand in terms of production and consequently also keeping the riparian countries very much dependent on the construction of further energy beneficiary projects in order to supply the increased demand required.

The political explosive potential, the Ilisu dam poses is not only due to the catchment needing the complete plenum but more severely the impacts the stopping causes to the neighbouring country in terms of economical well-being. These former actions of power exploitation increases the fear of Iraq and Syria that Turkey is to block any water flow going downstream and then keeping the status quo for several months leaving the downstream population and economy debilitated. In Iraq the current situation of water availability is already stricken. Over the past decades an intensification of droughts was to be witnessed, already dampening the industrial productivity and agricultural sector, thereby majorly impacting the population. This already led to insurrections on the side of Iraq and Syria criticising the Turkish view on upstream power over water. Hereby, further contributing to the already unstable situation the dam construction poses, is the lack of assessment concerning downstream impacts (Gegenströmung 2011).

The position of Turkey concerning the handling of water very much illuminates the political background and the persistency to keep all water belongings in its hands to primarily widen their scope of potential future trading partners but also to oppress

the Kurdish community in the regions located at borders to Iraq. The scarcity of water as inevitable resource of life is also to become of imminent importance when considering the global need for it. Turkey wants to open up its scope of market and respectively acquire new target audiences. The increased demand in water and the upper hand Turkey's of the Euphrates and the Tigris river flow allow for future undertakings as the distribution of bottled drinking water to business partners far from its usual economical comfort zone and trading partners.

Hence, also the decrease of actual water flow is, due to the construction of the large-scale plant upstream, of major concern to, primarily, Iraq. Hereby, surveys submitted in 2002 computed a decrease of 10% flow after commissioning of the power plant and the respective catchment basin. This 10% decrease in turn is to damp the crop production downstream as well as it is of major contributor to the water quality. Hereby, the salinization, the increased and the run-off of pesticides is to majorly affect the water quality and is to shift its status for the worse (Review of the EIA for the Ilisu Dam and HEPP 2001).

The decrease of the above mentioned 10% of water flow have to be added to the prior decreased overall water flow, since Turkey already cut down the 1987 under mutual understanding agreed on, but never laid down as physical contract of agreement, flow rate by approximately 500 cubic meters of the Euphrates water per second, without preliminary renegotiations (Hyldyard et. Al. 2000), justified by Turkey's position on legal rights of up-stream countries, the occurrence of droughts and the close relation of a low level of the catchment basin to a direct decrease in feasibility of the energy production and subsequently loss of economic benefits.

The second major point of criticism and consequently tool to court the riparian country's resentment was the missing implication of Turkey to include its neighbours into the evaluating and planning phase. Iraq and Syria were not asked for their involvement nor their acceptance and a possible supporting role as facilitator, prior construction start. The until then prevailing customs and practices, mutually accepted, were suspended and repealed, which is to reflect Turkey's relation to its neighbours. The conservation of customary law and the establishing of a co-operation would have led to the display of good will on the part of Turkey as well as it could have been the base for increased future interconnectedness in the sectors trade and import/export, hereby giving both sides the possibility of benefiting of each other's experience and field of expertise as well as reducing the potential conflict

rate, via engaging and mutual understanding. The displayed Turkish attitude resulted in the overall notion of Iraq and Syria when asked, far too late during the process of construction of the respective development, in a depreciative and dismissive position. It was strongly opposed due to the fear of the population within the region is to face severe economic as well as social impacts, due to the already mentioned causes of food security.

The food security issue hereby, is directly related to the impacts on the actual biosphere and respectively the impacts on downstream flora and fauna, causing major disruptions within the sensitive biodiversity of the region. For these impacts no study or survey was actually commissioned nor arranged. Nevertheless, it can be assumed, due to prior evaluations of similar undertakings, the loss of nutrients, caused by the catchment basin, as well as the loss of mud as part of the natural fertilization cycle and the decrease in fish stock and fishing resource are majorly impacting the water status for the worse. This in return is to impact the downstream ability of agricultural production causing a decrease in competitiveness of an already economical strapped region. The Turkish attempt to create a large area in the South, as key player in the food production, supply and consequently export, would lead to Iraq increasing their import rate of its food, which prior the Gulf war was at around 80%, simultaneously implying a large increase in dependence on imports due to salinization and lower water quality compared to upstream conditions, causing industrial disruptions. (Dahlmann 2002)

#### **3.1.4 Impact Balance**

When evaluating the actual impacts posed by the dam plans, it is of imminent importance to connect, outweigh and inter-relate the positive and negative aspects of the large scale construction.

It is highly visible that the environmental negative impacts prevail for the intended benefits of the region. The GAP foresaw several measures to enhance the economic status of the region of South Eastern Anatolia, by neglecting the effects on the direct and indirect biosphere and consequently flora and fauna. At the current status quo of the construction plan, it is assumed, due to prior experiences, that the increase in flooded land is also to increase the threat of health harming diseases, as for example the Leishmaniosis, an affection causing affects to the skin and mucous membranes thereby tempering with the overall immune system of the human body.

Experiences, as for example the commissioning of the Atatürk dam, illustrate the affection of the area to severe malaria problems and raise assumption of similar occurrence to the area surrounding the Ilisu dam (KHPR Briefing paper 2007). In order to master the issue of increased sand fly appearance and respectively harm to the human health, mitigation measures to ensure health and safety are important to be applied. Hereby, the immediate prevention tool is to secure the sleeping area by installing fine mesh netting as well as sealing the windows and wearing of protective clothing. The by far more challenging assignment is to control the sand-fly population. This is to be partly achieved by insecticide spraying of the housing as well as providing educational training and materials and detect and contain epidemics at an early stage by simultaneously accelerate early diagnosis (WHO 2012). Besides, the immediate threat proposed by the sand-fly bites, also the decrease of variety of fish and birds, located within the region, cause major disruptions to the ecosystem but even more severely to the community, which is to rely on fishing and the accumulation of animals (KHPR Briefing paper 2007). The impact on the fish as well as the effects on the birds in the region is proposing a major challenge, since the area of the proposed Ilisu dam, is the last Anatolian stream course untouched of anthropogenic activity (KHPR Briefing paper 2007). The only possibility hereby would have been an amelioration of the height of the dam, thereby decreasing the overall holding capacity of the catchment basin, resulting in better living conditions for the fish , while simultaneously prevent excessive loss of animal habitat. The loss of biodiversity within the region causes for social disruptions, since a decrease in livestock, thereby including fish- and birdlife, causes lack of income and thus not contributes towards economic improvement for the directly involved community. This environmental degradation and the interference of the dam construction are highly disrupting the current, traditional way of living of the resident community. This causes disturbance not only the paved settlements but furthermore, the nomadic trails, which are in severe danger of final, irrevocable loss (Harris 2002). The proposed resettlement plans, hereby, neither contribute towards improvement of the current status quo but is to increase contentedness of the regional inhabitants. According to Amnesty International, the resettlement plans had to be amended including international standards which have to be executed “as a *sustainable development program*” (Amnesty International 2006), by installing a twin project structure, distinguishing between technical and civil actions and resettlement and reconstruction. To ensure smooth operation, also monitoring facilities and tools are of imminent importance as well as it is already part of the international standards

and obligations on fulfilling human rights (Amnesty International 2006). The occurring challenge is at providing independent internal and external monitoring, which is vital when communicating the results to the respective sponsors and agencies (Amnesty International 2006). The resettlement plans are accompanied by a renunciatory notion of the directly affected residents and the fear of even worse living standards than contemporary occurring. The fears are mainly driven by the female share in the population, due to the women being the primary livelihood provider. The main obstacle to overcome is the assumption of a decrease of water quality, leaving the immediate surroundings with un-safe drinking water and contributing towards an increase of disease spreading by deficient health facilities. At no point did the GAP get involved clarifying the future situation of water- usage and health security (Ronayne 2006). Hereby, de-escalating the explosiveness of the political situation would have been an easy task, by promising and supplying safe drinking water and disperse concerns via elucidation, thereby including solitudes towards cultural loss and traditions. The ancient city of Hasankeyf proofs to be of imminent importance for the regional history, but also plays an important global role, since providing the possibility to evaluate the emergence of the human way of living (Ronayne 2005). As for only 15% which are to be securable, the biggest bulk of ancient artefacts are to be destroyed beyond retrieval. Until so far, no adequate mitigation measures are to be installed, since the only realistic possibility of saving Hasankeyf is to stop the overall construction and shift for a different alternative, either moving to another location or subsidise via the utilization of renewable energies.

The balancing of the various problem sets highly illustrates that the overall benefit for the regional residents does not outweigh the negative impacts, but is to deteriorate the region even more, by splitting up families and destroying the environmental habitat, due to the proposed employment opportunities, mainly located far of the rural area, causing partial rural depopulation, by the men moving into the cities for appropriate income facilities. This leads to the assumption that the region will not be inhabited permanently, deserting the traditional way of living and subsequently loose cultural heritage.



## 4 Political evaluation

### 4.1.1 Historical overview over the territory and inhabitants of South Eastern Anatolia

Following the integration of Kurdistan into the Ottoman Empire, the area was split into three provinces, Diyarbakir, Raqqa and Mosul. Hereby, the, within those separated territories domiciled, “*remote chieftaincies were given almost total independence*”- personified as Kurdish governments- (Dahlmann 2002) implying thereby, that there were no tax or military obligations if only ultimate Ottoman sovereignty was to be recognized and generally accepted. The territory of South Eastern Anatolia was organized comparable to the European system of the 19th century. Nevertheless, the Ottoman feudal system differed in some details from its European counterpart by being more centralized, nonetheless providing enough space for emergence of difficulties such as the collection of tax and service obligations from the remote chieftains of the Kurdish communities. This inevitably led to local chiefs casually revolting, thereby, refusing to comply with the inflicted obligations as well as questioning/threatening the territory inviolacy of the eastern boundaries. Subsequently, it impacted the governmental structure internally as well as it contributed to external challenges within the Empire’s territorial borders. This additionally also provided base for the Ottoman administration being more and more concerned about the steady authority increase of the Kurdish tribal chieftains far beyond governmental scope. (Jwaideh, 1960, p. 320; Van Bruinessen, 1992)

The situation did not amend for the better after the involvement of missionaries, hereby, polarizing existing conflicts between Kurdish and other tribes with different cultural and religious background and finally led to a massacre, thereby giving Istanbul the long desired justification to break down the, until then predominant system of, emirates within the region in question. The subsequent dismantling of the prevailing system and the failure of installing a formal tribal leadership resulted in difficulties to control the Ottoman Kurdistan, since networks were formed dispersing the idea of self-dependence and self-governance- “*the Kurdish nation is a people apart we want our affairs to be in our hands*” (Olson, 1989).

Within the period of the late 19<sup>th</sup> and the early 20<sup>th</sup> century the area of conflicts shifted towards involvement of British and Russian imperial rivalries, leaving almost

no space for Ottoman presence, but boosting self-esteem and self-consciousness of the Kurdish community.

After World War I the territory was not split accordingly to the 1916 Sykes-Picot Agreement, but into Russian, French and British districts with further agreements, driven by Wilson, to establish certain statehood for Kurds living in the respective part of former Ottoman Empire. This was finally laid down in 1920 as the (Treaty of Peace between the Allied and Associated Powers and Turkey (Treaty of Sèvres; Signed: Sèvres August 10, 1920) thereby, focusing on the Kurdish situation in Articles 62 and 64. This arrangement proved to be highly beneficiary for the Allied forces but not for the Kurdish minority of the territory, since the occupant was to enhance its imperial ambitions by integrating respective passages into an agreeable legal framework. Particularly the British were very much satisfied with the concluded arrangement, since it was, for that region, sought for a decrease of Turkish and Russian influence but to provide substance for an increase of their own military presence thereby, consequently securing its economic interest and commence participation in the oil market (Dahlmann 2002). This very much highlights the treaty of Peace between the Allied Forces and Turkey as a creator for buffer-states but not a tool for providing self-determination and self-dependency of the Kurdish minority.

This furthermore, proved to be the base for the abolishment of the system of sultanates and gave way for the system of secular republicanism.

The territorial specifications laid down in the Treaty of Sèvres still courted population's resentments and led, in 1923, to its revocation via replacement by the Treaty of Lausanne. The within the signed agreement stated terms did not provide details or legal framework on the creation of a Kurdish state but defined the, until today valid, borders of Eastern Anatolia (Dahlmann 2002).

The monarchical Iraq and Syria as part of the French mandate defined the territorial limits of the "*rule of four*" (Dahlmann 2002) divisor states over Kurdistan. Giving space for political entanglement by all involved parties -mainly Iraq, Iran and Syria – and still causing for disruptions until today.

#### 4.1.2 Characterisation of South Eastern Anatolia

Due to its orographic peculiarities, the territory of South Eastern Anatolia is characterized by the split of the Karacadağ -Mountains into two distinguished areas- the Middle Euphrates and the Tigris. The main fact of interest is, in terms of geology, the alternate pattern of the structural highs and lows, which correspond with the topographic highs and lows predominating, this, highly rugged scenery. Furthermore, the area is connected to the longitudinal mountain chains which are located in the north and flatten down going South ways, thereby revealing several lowland plains and plateaus. (Altinli ????)

The hydro morphological characterisations of the area are also of interest to understand the impacts a large scale undertaking is to cause to this sensitive bioregion. The headstone for the current picture was confirmed with the late Tertiary, when the early drainage gave way for complex changes shifting to the current appearance, also modifying the mountain range trends. The rivers are characterized by steep profiles while simultaneously being prompt, boisterous but clear in appearance. The river basins and the respective streams are mainly supplied by melted snow and wells. The flow and the fluctuation vary with season. The physical appearance of the streams and basins differ depending on altitude. It is obvious that in the highlands the stream course resides within narrow basins, while moving south the basins widen providing more space for the flow of water. Within the meanders, sometimes bending at right angles, are inclined planes providing space for wind currents influencing the region climate- and wind- wise. The stream's arborisation causes the soil to degrade and subsequently leads to depletion of essential nutrients by shifting to a more basic level, thereby, changing the water quality, but also allowing for riverbed alterations.

Noticeable, when talking about the water flow and the meander appearance, is the fact that the lakes within the region are not of natural occurrence but due to the GAP regional amendment plans and earlier undertakings to shift the rural area to a more urbanized, modern world of influence. The, what is commonly understood as, lakes are in fact the various dam reservoirs which bestrides the overall course of river. As already mentioned, the hydro morphological influence is contributing to the prevailing climate. The north, more accurate the highlands in the North, is strongly

predominated by strong continental and subtropical mountain climate, nevertheless leaving enough space for the impacts of local conditions on local climates. The lowlands, located in the region's south, provide for a more subtropical, almost Mediterranean regime, which is highly visible when evaluating the precipitation rate and level. The amount precipitation going down is seasonal depending and has the inverse effect of the lower the altitude the less precipitation in form of snow or rain is to deposit. It is abundantly clear that the minimum rate of precipitation can be measured; this nevertheless does not imply an indefinite orographic precipitation but rather the opposite. The overall annual mean temperature within the region amounts for around 25°C, with fewer extremes in the south (Sensoy, S. et al, 2008). The warm temperatures and the high amount of sunny days contribute to a wide variation on vegetation, nonetheless, differing depending on geographical location and position. The vegetation changes in orderly development from highlands to lowlands, starting with alpine type vegetation in the north and resulting in Mediterranean plants in the south.

Since the region of South Eastern Anatolia is mainly mountainous, the rough country makes a hard livelihood for the settlers. The climate of the mountains determined the process of formation of settlements alongside the streams. The urban areas are very small and the tradition of nomadism decreased, resulting in major shifts towards the big urban sprawls as for example Istanbul.

#### 4.1.2.1 Demographic characterisation of South Eastern Anatolia

The orography of the area is to reflect the inhabitants, a rural community emerging from nomadic tribes. The diversity of the surrounding as well as the distribution of the regional population is an image of the demographic condition of the region.

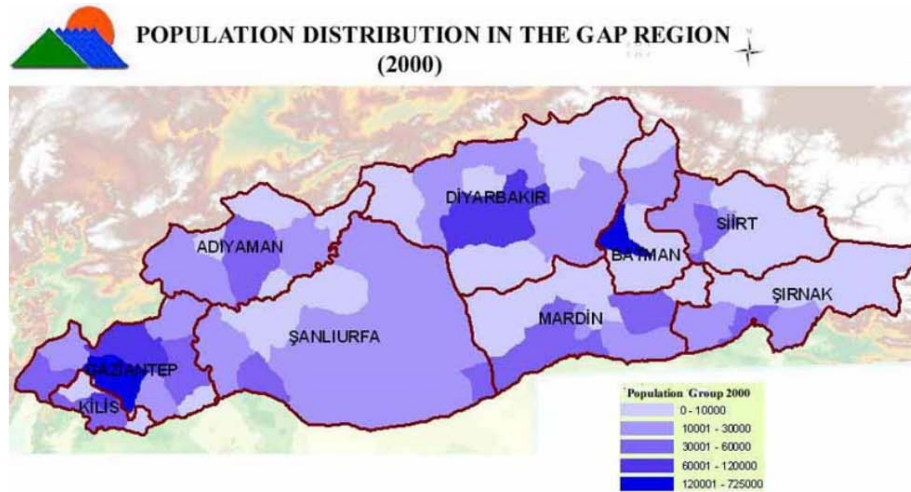


Figure 11: Population and Distribution in the GAP region (2000) (Source:GAP 2011)

The area still comprises of several different tribes and nomadic families, but is mainly subdued, by the Kurdish community mainly in rural settlements alongside the river streams of the region.

The per capita income is at around 42% of the mean per capita income nationwide and is only to achieve 10% of the average income of the wealthiest city in the west of Turkey (Setton, Drillitsch, WEED 2006). The unemployment rate within the urban settlements lies at a staggering 50%, pressuring the subsistence of the residents within the region. Contrary to the rest of Turkey, the key role in production is unambiguously the agricultural sector, which is to employ/absorb almost 80% of the population. It is further obvious that there is almost no large-scale agrarian production but rather small tract of lands cultivated by family farms as subsistence agriculture, relying on the traditional way of crop planting (Setton, Drillitsch, WEED 2006).

The land tenure is quite unequally distributed, 70 % of the areal allotment is governmental property, while 25% belong to great land owners. The remaining 5% are split up into a multiplicity of small land parcels possessed by crofters. Furthermore, 38% of the farmers do not own themselves but lease their lot of land (Ronayne 2005a).

Due to that diverse arrangement, and the politically very unstable background of the region, arranged for a major migration wave towards the cities, mainly Istanbul which is now to accommodate more than a million Kurds, thereby being the largest urban diaspora for the Kurdish community. (Dahlmann 2002)

#### 4.1.3 Current political and social situation of the South-Eastern Anatolia

The current and on-going construction works and the fact that the surrounding inhabitants were not involved during the planning phase let alone informed or asked prior the construction, questioning if a project of that scale is really wanted/ needed in that area. Therefore, the overall negative perception towards the dam is a consequence of the non-involvement of the inhabitants of the region as well as the unquestioned resettlement of a whole community. A survey concerning the situation of the inhabitants compiled by *the National University of Ireland, Galway* and *the Kurdish Human Rights Project* (Ronanye 2005) verified the general and public notion that the inhabitants neither asked nor integrated prior the construction, nor wanting an undertaking that scale, being created in their respective territory. Hereby, to make things worse the cultural and social loss of a community's heritage was never issue to prior discussions. Also the resettlement plans and the therefore consequently created dismemberment of a whole community, which did not foresee compensation, do contribute towards an increased tense political situation.

The resettlement concludes in an even worse living situation for those resettled. Torn out of their natural habitat and pushed into a living situation unknown, without further perspectives the general society's mood is to be at bottom low. With their livelihood looted, the way of surviving within the new surroundings, but keeping old habits of money making, the granted survival, which was obvious at their known surrounding, is now deeply questionable (Ronanye 2005). Even the cities the people were moved to have major problems in keeping the infrastructure working.

*"In sum, the cities of the region cannot cope with the impacts of the Ilisu dam and especially the arrival of yet more displaced people. In particular, what can be construed as an attempt to hide the levels of hunger and malnutrition already in those cities is indicative not only of the State's failures with regard to its internally displaced population but of the lack of care among the dam builders for the life threatening human impacts of this project."* (Ronanye 2005)

Generally, exceptional circumstances, as for example the construction of a dam and power-plant, always causes disruption within a region and community. A project that scale increases the potential problems within the respective living environment, independent of its political essential base situation. However, the addition of a construction to an already tormented/ buffeted region, as for example the region of South-Eastern Anatolia, causes the precarious situation to be treated and evaluated by taking into account that an increased potential of becoming an international hot spot/ trouble spot is easily to occur. This should have been included when the site was in its initial planning phase. Consequently, the misconduct causes the current tenuous situation the region and its inhabitants are currently confronted with. The historical and afresh mistrust towards the Turkish government increases and therefore, hence leaves space for enhanced activity in the Kurdish struggle for freedom.

#### **4.1.4 The GAP – a strategic agent to suppress regional uprising?**

The problematic the region offers politically are not only due to economic impacts but even more severe are the impacts within domestic-, foreign and security policies of Turkey.

Until now the political elite Turkey's is unwilling to achieve a constructive solution in respect of democratic rule of game and international law. Therefore, the public notion rather foresees/favours oppressive implementation concepts, contrary the Kurdish interests (Günes 2009/2010). Since the founding of the Turkish state, the political image is affected by military actions and interdictions against the Kurdish population, going as far as to constrict basic laws in order to defend the central organ- the state. Hereby, the GAP plays an imminent role within the Turkish economy but moreover, is a major issue to the political explosive situation within the region of South-Eastern Anatolia, since the construction of the irrigation projects should contribute to a political solution after Turkish volition. The intended GAP irrigation projects have been classified, by some, to be an attempt to absorb the Kurdish territory, as a further action Turkey's to repudiate Kurdish self-determination. This notion consequently led to threats concerning the destruction of dams and irrigation activities and was justified by the belief that the unasked use of water within the region of South Eastern Anatolia is misappropriation of Kurdish

goods (Hillel 1994). This in turn led to increased security presence of Turkish military in the area in question to achieve and stabilize territorial security (Beckoner 1992).

Turkey, tries to assert Turkish security via increased military threat and assimilation of the Kurdish population (Güneş 2009/2010). Furthermore, the large-scale economical project is also constructed to improve the socio-economical situation of the regions in order to assure that through the amelioration of living standard the political base for the Partiya Karkäre Kurdistan (PKK) is decreased, leaving no space for action. Additionally, the flooding of the large areas as well as the creation of infrastructure is to debilitate the PKK militarily, by downsizing the area and disrupt used passages and trails (Güneş 2009/2010), by simultaneously increasing the strategically, military strength of the Turkish military to battle the Kurdish army (Güneş 2009/2010). By that the GAP additionally serves towards the goal of securing the borders with their riparian countries Syria and Iraq, via strict monitoring of the borders not allowing seceders to subduct to small villages or cross the border (Harris 2002) This inevitably conveys the connection between the large-scale undertaking of the GAP and the security concerns of the region and visualizes the reason for the riparian countries to challenge Turkish state control by supporting Kurdish seperatists (Kinzer 1999a; 1999b). The current situation is often described as *“the intersection of water resource concerns with issues related to the Kurds as a primary source of tension between Syria and Turkey”* (Harris 2002). This leads to the conclusion that Syria’s alleged support of the PKK and Turkey’s view on water distribution and orthographic advantage, due to being the upstream key player, is majorly interlinked diplomatically. This assumption appears to be affirmed by the behaviour of Turkey, not willing to discuss water issues concerning the Euphrates water flow until Syria abandons their involvement with Kurdish separatists (Olson 1997; Scheumann 1998). The situation with Iraq seems to be of different nature, since the relationship between those two riparian countries is merely based on cooperation, nevertheless, accusations concerning Iraq being heavily engaged in actions against Turkey, as part of retribution for the utilisation of the Euphrates and the Tigris were verbalized/pronounced. It is obvious that the involvement of the riparian countries in actions against Turkey plays an imminent role on several levels. Since Turkey, Iraq and Syria rely on the water flow of the two river basins also the potential environmental/ecological and social impacts are a shared burden at best, but realistically are posing more of a problem towards the downstream countries



Iraq and Syria. This is due to the water losing environmental-sustaining nutrients and consequently massively corroding the river basin as well as the small islands within the river beds. Nevertheless, the sustainable and politically stable future of the region does rely on the shared interest and future cooperation between the three neighbouring countries (Harris 2002). The inaccurate handling and censoring of the conflict in South Eastern Anatolia furthermore contributes towards a worsening of the political already sensitive situation thereby, also causing an increase in military spending and respectively military presence. The increased presence is affecting the freedom of opinion, since it implies that opinions contrary the development plan are to conclude in threats or actions against those opposing. Even in small villages the increase of police stations is to be caused by the Turkish will to suppress the Kurdish self-determination by showing a massive legislative force in operation. It is not, as proposed by the Turkish government, a medium of service to the villagers but rather a threat (Ronayne 2006).

This is also highly visible when evaluating the armed conflicts which occurred after the PKK ended its cease-fire in 2004. Since then bomb blasts were causing a serious number of deaths of civilians of both sides. These blasts were blamed on the PKK, although it was, at least at one instance, proven that plain-clothed security officials fled the scene after the respective bombing. This was furthermore causing more tension and also led to a demonstration which was crushed down heavily armed, thereby, detaining women, children and men. Even governmental officials, when investigating the involvement of military personnel in the bombing incident were made redundant. Until then, the military actions within the area caused an increased number of deaths on either side, the governmental military as well as the guerrilla fighter's side. Hereby further accusations against the Turkish military were pronounced stating that chemical weapons are used to prevent/prohibit further actions on the part of the guerrilla fighters (Ronayne 2006). Ronayne furthermore, criticises that the original, as well as the revised, EIA was not explaining the history of conflicts within the area as well as the current situation detailed enough. The suppression techniques used to muzzle the inhabitants were at no point matter of issue but were rather cased as impacts due to self-dependent actions by the Kurdish inhabitants.

Additionally, a further major issue, contributing towards the already unstable political situation is the fact that, although very highly promised, safe drinking water is not fully available for the inhabitants of the area surrounding the Ilisu dam. The findings

of Maggie Ronayne in 2005 proved that clean water is still a luxury to most families within the region. Water taps per se are a rare exception, causing the families to obtain water from dwells often causing illnesses which are not easily treatable since the infrastructure of the area is non-lined (Ronayne 2006). This contributes massively to the already high resentments of the Kurdish inhabitants causing further uproar as well as the assumption that after the Ilisu hydro-power plant starts operation the biggest bulk of energy generated will not supply households in the respective area but will be transported to the bigger cities based upcountry, again leaving the area and its inhabitants at a stage where one cannot speak of adequate amendments to infrastructure thereby, increasing the highly propagated well-being of the region (Ronayne 2006).

Besides the issue of water distribution and water distribution rights, as well as the issue of forced security also the problematic of cutting off nomadic and semi-nomadic tribes from their customary roads and tracks is majorly affecting the politically, already unstable, situation of the region. The region of south eastern Anatolia is characterized by various nomadic tribes using the same routes for generations and being in lively interactions with the non-nomadic settlers and their surrounding/environment. The Cutting-off of the travelling tribes would conclude in a shift from regional traditional way of lifestyle to what is perceived the modern way of living, by static housing. This is also likely to have undetermined/uncertain effect for sustainability concerns by simultaneously reducing furthermore the handing down of traditional ways of living as well as subsequently the loss of cultural ken, which in turn is to produce a generation of youths not knowing their past as well as losing their cultural connection and grasp. (Harris 2002) This, inevitable leads to the conclusion that the transformation of the means of existence is also a tool for consolidation of state control by simultaneously increasing the dependence of the inhabitants on state provisions and subsidies and hereby again contributing to increased activity opposing the Turkish position. Hereby, it is highly obvious that also the shift in crops planted is to affect the rural community of South Eastern Anatolia, hereby again being highly dependent on governmental support which is therefore again impacting the nutrition amongst the population and the rights to individual crop choice and water use. (Harris 2002) This forced dependence hereby, contributes to further retaliation against governmental oppression.

## 5 Possible alternatives to the Ilisu Dam

During the environmental impact assessment process, which was assigned by Sulzer and ABB, no alternatives, neither on the supply- nor the demand-side was considered, within the scope of the created feasibility study. Studies, commissioned by various organizations, as for example Corner House Research, Berne Declaration, World Economy, Ecology and Development (WEED) and others, clearly state that the Ilisu dam construction could be substituted by a combination of renewable energies and contemporary use of fossil fuels. As stated in the *Review of the EIAR for the Ilisu Dam and HEPP* submitted by Corner House Research, Ilisu Dam Campaign, Friends of the Earth, Kurdish Human Rights Project, Berne Declaration, Campaign an Eye on SACE, Pacific Environment, World Economy and the Ecology and Development (WEED) in 2000, various fuel mixes and combinations would achieve the same or better outcome, while decreasing the impact for the environment. The report indicates that the EIAR only outlines the benefits of hydropower development in Turkey, while not illuminating the problems caused by large-scale hydropower generation plans, in general but especially concerning the Ilisu dam, and consequently constructions. Section 2.2.3 of the EIA only provides a fragmental, imperfect estimation of feasible alternatives to waterpower, by only addressing the downside of alternative energy sources but not their vantages. In accordance with the published report, an integrated Resource Planning should have been applied by the EIAR, to compare hydropower production with alternative energy production sources. (Review of the EIAR 2001). It is deplored that the assessment of the alternatives is not taking into account the recommendations provided by the OECD, which states that a direct comparison of the environmental impacts of the alternatives is needed.

The review on the EIA submitted by the above mentioned institutions provides information on the downside of waterpower, possible fuel mix and therefore, energy production mix, which would not need for the Ilisu dam construction. The report proposes that *“clean-coal” projects would generate sufficient energy to cover Turkey’s needs* (Review of the EIAR 2001), while oil would not be accomplishable. It has been computed that, if comparing the Ankara Gas Power Project with a capacity of 720 MW to the Ilisu Plant with a capacity of 1,200MW, the, by the gas plant produced KWh would only cost around US\$380/kW whereas the same amount created by the Ilisu dam would triple the cost of what the Ankara Gas Power Project

would charge-remaining at a staggering U\$1270/kW. Even, taking additional costs into account as for example maintenance and operating costs, the Gas fired energy production project would still be cheaper and consequently economically more feasible (Review of the EIAR 2001). The utilisation of photovoltaic cells is highly recommended, although the high pricing of photovoltaic units. The explicit advantage of the utilisation of solar cells would clearly be the various possibilities of place- and arrangement options. Additionally, the connection to grids would assure storage during the production phase (day) and release of energy during night time. Although energy production by solar panels is still of very expensive nature, a survey established by the KPMG proved that a solar factory with the capacity of 500MW/year could decrease the prices by presumably 75% (Review of the EIAR 2001). This undertaking would also imply that further area clearances, as for example deforestation, would not be required since the panels could be individually attached to walls and rooftops. Turkey's orthographic position allows for approximately 2,640 hours of sun annually, assuming around 7.2 hours of sun daily (Deutsche Energie Agentur 2010). With these approximate numbers in mind it is highly visible that the utilisation of PV cells could lead Turkey towards achieving their goal of increased energy demand by mainly relying on these solar applications. Additionally to the feasibility and the low maintenance needed to ensure energy production, PV cells also contribute towards a sustain handling with environment and immediate surroundings, since even large-scale solar parks cause minimal social or environmental distractions. Compared to large-scale hydropower constructions, as the Ilisu dam the potential impacts caused by Solar panels are negligible.

The original EIA report did not directly include the benefits of wind parks within the Turkish arrangement, but rather dismissed the idea of using wind power as an alternative to the intended large scale- hydropower constructions Section 2.2.3 argues that the energy produced via wind would only "*contribute to cover the demand increase of one year*" (EIAR 2001). This does only translate to the wind turbines, which are currently planned or under construction but does not reflect the *wind potential* within Turkey's territory. Furthermore, the OECD evaluated Turkey's potential to be at around 166TWh annually (Wijk 1993). Several studies concluded that wind energy production is a feasible and an endless source which is, if the full wind potential is achieved, to supply twice as much of the existing total energy consumption (Review of the EIAR 2001). It is estimated that over-time there is to be a major decrease in the currently high pricing of wind generated energy supply and

therefore would in a long-term scenario become economically more feasible than energy produced by hydropower installations. Within this arrangement of alternatives to water power, the EIA did, at no point, mention the opportunities provided by neither bio-mass power production nor geothermal energy generation. This leads to the conclusion that the EIA was not prepared for providing detailed information concerning alternative approaches/ applications to hydropower generation. It is highly visible that potential of alternative sources was only partly tapped. Had the report been accurate by providing all information necessary for an overall estimation, the mix/combination of various electricity generation appliances and production possibilities would have diminished the need for an additional large scale dam project as the Ilisu dam.

These above mentioned alternatives would have been of influence to the plans and the actual construction if the EIA was made prior planning. Since the area of primary planning was prior the EIA entry to force, no environmental or other survey concerning impacts were created. Therefore, the, at the given point of state, only possibility to decrease the effects would have been to bring down the altitude code from 515m to 495m. This would in addition bring down the capacity from 1200MW to 600MW but would only mean a decrease in the energy production of around 1,3TWh- from 3,6TWh to 2,3TWh. None the less, this also implies that a possible increase in productivity of around 11% -from 37%-to 48% (Öngür 2006). - can be achieved furthermore implying a higher energy generation by using lower capacity (Öngür 2006). This option was only briefly mentioned in the EIA and almost not discussed. The EIA also missed to inform that the option of downsizing subsequently, also reduce the building expenses as well as the cost of energy unit.

The modification of the dam would, including the energy production of the Hasankeyf dam, the Botan dam and the Garzan dam, result in a reduction of the overall holding capacity. This denotes for only 64% of the area currently intended for the construction and capacity holding would have been occupied. The adaption and inclusion of the dams mentioned, furthermore, yield for a 20% reduction of the natural expanses by only diminishing the energy production by around 13% (Öngür 2006). At current stage the Ilisu dam is the "*power plant with the minimum surplus factor*" so that the calculated investment factor per unit of power "*will be the highest one*" (Öngür 2006), consequently leading to unfeasibility of the dam and the plant itself. This is to establish the rampant opinion that the project is defective (Öngür 2006), also due to the fact that the flooding currently causes 6000 hectare of land,

classified as 1<sup>st</sup> and 2<sup>nd</sup> Degree Agricultural Field to disappear than the dam is initially to irrigate.

## **6 Possible Solutions for future undertakings the scale of the Ilisu dam**

The current predominant situation is directly related to the actual construction site. At this point in time no satisfactory amendment could be included to return to pre-construction conditions, by similarly increasing the economic value of the region. Nevertheless, amendments could have been included at an earlier stage, including the compliance to the amendments and changes according to the Environmental Impact assessment on the part of Turkey. The original as well as the revised EIA, although missing out on information necessary for a full evaluation of the present conditions, suggested, beneath other options, the possibility to decrease the height of the actual catchment basin, thereby similarly also decreasing the impacts to the region and the inhabitants of South Eastern Anatolia. This, nonetheless, although legally confirmed and requested, was never taken into account by Turkey, as it was/is more concerned over the energy production and additional the instalment of the respective construction within the GAP arrangement to suppress uprising of the region's population.

The current status quo and the precarious situation could have been changed for the better, but only if certain amendments of the original Environmental Impact assessment would have been assumed of prior, the commence of the construction. An amendment of the resettlement plans and an increase and equal distribution of the instalment payments as well as showing more effort saving cultural heritage would have shifted the overall contentedness of the disseized population, while contributing to an overall calmer, regional political condition. This is not foreseen at present, since the resettlement plans are already arranged for and partly executed, thereby keeping the original determination, of little or no payments.

The above mentioned illuminates that, in order to construct any undertaking the scale of the Ilisu dam, it inevitably needs for prior evaluation of the region, not only geographical/demographical, but even more importantly, politically. This was not included in detail within the Ilisu dam evaluation and the published EIA, and therefore, caused international uproar. Furthermore, future amendments and legal

framework are of very much importance since this determines the future of the respective area and inhabitants.

In detail, this would imply, that the Environmental Impact Assessment, for the Ilisu Site established far too late since it was not legally embedded to comply to a prior evaluated EIA, needs for changes concerning alternatives, thereby majorly criticized was the lack of detailed explanations, and the involvement of even more experts, offering deeper understanding and ken of the respective region, by similarly being capable of offering insight and possible solutions. Respectively, to ease political precarious situations, as for the respective one in discussion, the involvement of all affected parties, in this special case, Iraq and Syria, but even more severely the immediate population would need for an inclusion when decision making. This leads to the assumption that a legal framework on Transparency and the involvement of the impacted communities within the respective area in question needs to be established. Hereby, a legal declaration would presumably also hint towards an increase on compliance by the abidance of the amendments, which thereby, probably, if stated so explicitly, results in punishment fees, furthermore distorting the actual construction and resulting in a delay and even higher construction and commissioning costs, lowering the economic feasibility, as it is the case.

The main issue, in this respective case, but also for future sites, is the increased conflict potential water poses. The establishment of a legal framework, concerning the adequate handling of water, the equal distribution and the respectful, sustainable use of ever-scarcer resources would decrease the conflict potential; by similarly increase the overall transparency, thereby also preventing disputes to emerge. A legal framework hereby, would mean for future undertakings to have set boundaries, providing enough space to operate while, at the same time ensuring the protection of humans, health and the respective environment.

The framework is to establish an approach of equal rights for the handling with water, thereby also creating a legal foundation for an overall agreement on water flow related issues. One of the major tasks hereby, is the establishment of the water quality changes upstream-downstream as well as the determination on how to proceed with potential violations by similarly establish a water flow scheme suitable and appropriate for all involved parties. In the respective case of the Ilisu dam, lowering the dispute potential with the riparian countries would call for Turkey's will to engage with its neighbours and step off of its position concerning distribution

power related to location, in this case implying that more rights are given to the upstream countries in question.

As for now, it is not foreseen to install a legal framework establishing the rightful handling with ever-scarce resources by coevally providing for a sustainable future, economically environmentally and socially.

## **7 Summary, Conclusion and final thoughts**

The GAP, at the moment, is one of the biggest economical undertakings compared on a global scale, but by far the biggest irrigation undertaking on Turkish territory. Within the arrangement of the GAP, which is comprised within the territorial boundaries of 9 provinces in the south east of Turkey, to the verge on Iraqi and Syrian borders, particular attention was given to the power generation projects, since the increased energy Turkish demand could not be fully supplied by the currently existing energy producing appliances. The GAP foresaw an overall economical enhancement of the region, by simultaneously increasing the industrial production, and providing health- services, education and employment opportunities. A major sub-project is the construction of the Ilisu dam as part of a hydro-power generating installation providing the nationwide needed energy consumption. Besides the advantages of the Ilisu dam, it is also to provide several problem sets on several levels, comprising mainly of environmental and socio-cultural impacts.

When evaluating the overall impacts of the dam construction, it is highly visible that the benefits, initially intended, were adumbrated by the emergence of the negative implications of large scale constructions. The Ilisu dam case is one of the most prominent examples for a large scale undertaking "*gone wrong*" and a primary example for the importance of international accord in order to be capable of achieving economical improvement by simultaneously ensure sustainable handling of livelihood and resources at common, mutual understanding.

The timeline and the respective change of involved parties, as well as the evaluation of the political situation stated the Ilisu dam as an obvious risk to the environment but even more severely to the community by, threatening the security of cultural heritage and livelihoods. It was clearly cognizable that the threat of the



environmental changes, due to the dam and hydro power-plant construction, causes major disruptions within the immediate surroundings, thereby crossing borders and consequently including extra-territorial areas. The environmental degradation, not only the degradation of the biodiversity, including flora and fauna, concluding in the dispersion of the community but more affecting the water quality proofed to be cause of increased conflict potential. The direct relation between the diverse layers of impact resulted in the difficulty to install single- level mitigation measures. Nevertheless, the lack of compliance on the part of Turkey as well as the missing details within the Environmental Impact Assessment leads to an incomplete evaluation of the region in South Eastern Anatolia.

This consequently, is to affect the overall contentedness of the regional community and insinuates the GAP as a strategic tool to suppress the inhabitants of the region, via increased military presence. The background ken on the history hereby, is to propose a glance at the regional disparities and the past conflicts as well as it helps, predicting future regional conflicts and potentially proposes a tool for mastering the politically volatile state of affairs.

The alternatives to the Ilisu dam construction, mainly increasing the utilization of renewable energies as well as taking direct edificial measures, could have decreased the explosiveness of the regional, political condition. This nevertheless, was at no point foreseen, leaving the current status quo at a high level of conflict risk. The solutions hereby, are not contributing towards the current problematic the Ilisu dam poses but can be treated as a guideline or aid of orientation for future undertakings of similar scale to the Ilisu power generation appliances.

During the research and evaluation of the supplied data it became highly visible that hydropower generation plants of the immense scale as the Ilisu dam offers, impact on a far broader spatial scale than expected. Broadening the territorial limits and including farer off surrounding, by also crossing geographical borders was to achieve a better insight as well as provide for an adequate overall estimation of current events. The resulting impacts of the giant irrigation undertaking inevitably interconnects several layers of essential environmental, economical and cultural sets of complex problems, by similarly also interrelate the historical background of the region and the predominant political situation to the construction of an energy-demand, supplying large scale appliance, namely the Ilisu dam.

Noticeable hereby, was the direct relation between the construction, the impacts and the involvement of the riparian countries Iraq and Syria towards contributions and support of the regional will of the inhabitants for self-determination. Not only the inordinate, unregulated handling of the ever-scarcer resource water and the unequal distribution of power over the actual amount of flow redounds towards the increase of the conflict potential of the region, but furthermore the application of an irrigation undertaking as means of regression, therefore suggesting an ulterior motive does its share at contributing towards an already political explosive situation. This finding furthermore, implies and calls for amendments of current action plans to achieve a situation. The main task is to increase awareness of the importance of prior evaluations of the surrounding, including detailed estimations of the contemporary political situation, while also evaluating the intentions of the respective constructor.

This nevertheless, furthermore implies for an increase in transparency, thereby highly demanding the involvement of all parties affected prior or during planning phase and respectively calls for a legally binding, mutual agreement, stating a legal framework for the implementation of the respective construction. As for the Ilisu dam this would have required the involvement and the mutual agreement on water related issues concerning water flow and quality as well as accordance on the issue of water power distribution and respectively sustainable handling between the population of the immediate surroundings, the Turkish government, the suppliers as well as the riparian neighbours Iraq and Syria. This agreement could also have established a trendsetting cooperative economical beneficiary trade understanding while simultaneously damping existing reservations, thereby again decreasing the overall political precarious current circumstances. Besides the instalments of legal framework, the current state of affairs nevertheless, could also have been avoided when, prior construction start, an adequate, detailed evaluation of the overall circumstances and potential political impacts by simultaneously providing for a more explicit estimation on potential alternatives, thereby including amendments on the actual construction in order to decrease the impact potential would have been developed and prepared. The lack of compliance and the unwillingness to amend and reflect on the established planning as well as the retention towards minor construction changes furthermore lead to an increase in contentedness and was therefore contributing toward enhanced opposition. Hereby it becomes even more obvious that for establishing an adequate, territory according and highly detailed evaluation needs to be established. This is to guarantee, overall involvement of al

parties affected as well as it establishes a tool for a collective and sustainable common future, by simultaneously enhancing the engagement of the global community, preparing for a conscious handling of the ever-scarce resources.

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