WHEN DAMS ARE BUILT ON SHAKY GROUNDS

Policy choice and social performance of hydro-project based development in Turkey

With 7 photos and 3 tables

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Zusammenfassung: Dämme auf unsicherem Grund. Politische Strategien und soziale Auswirkungen von Wasserprojekten in der Südost-Türkei

Die vorliegende Studie beschäftigt sich mit den Hintergründen und Auswirkungen einer auf Staudämmen, Wasserkraftwerken und Bewässerungsprojekten basierenden staatlichen Entwicklungsstrategie und der damit zusammenhängenden entwicklungsbedingten Umsiedlung bestimmter Bevölkerungsgruppen in der Südost-Türkei. Die Untersuchung basiert auf einer Analyse von Rechenschaftsberichten und Programmen staatlicher Institutionen, die mit dem Bau von Staudämmen in Verbindung stehen, Expertengesprächen von Entscheidungsträgern und Tiefeninterviews mit Familien, die aus den überfluteten Gebieten umgesiedelt wurden. Aufbauend auf einer Gegenüberstellung der Auswirkungen des Keban-Damms, des ersten großen Stauwerkes in der Türkei und des Südost-Anatolien-Projektes (GAP), bezieht sich die Studie auf die aktuellen Veröffentlichungen der Weltkommission für Dämme und versteht sich als Beitrag zur Diskussion über entwicklungsbedingte Umsiedlung und Vertreibung.

Die Kernthese, die in der Studie dargelegt wird, besagt, dass die Praxis staatlichen Verwaltungshandelns in Bezug auf regionale Entwicklungsprogramme seit etwa vierzig Jahren weitgehend unverändert geblieben ist, obwohl Verfahrensänderungen und ein verstärkter Bezug auf nachhaltige Entwicklungsziele das Gegenteil hätten erwarten lassen. Das Südost-Anatolien-Projekt, ein bereits in den siebziger Jahren entwickeltes technisches Programm bestehend aus 22 Dämmen, Wasserwerken und Bewässerungsprojekten wurde 1989, auf dem Höhepunkt eines kurdischen Aufstandes um ein integriertes regionales Entwicklungsprojekt erweitert, dessen Ziel die Verbesserung der Lebensbedingungen in der Region und die Verringerung der regionalen Entwicklungsdisparitäten war. Heute, etwa dreizehn Jahre nach Projektbeginn kann festgehalten werden, dass das GAP-Projekt keine spürbare Verbesserung der Lebensbedingungen besonders unterer Einkommensschichten eingeleitet hat und Vertreibungs-, Umsiedlungs- und Migrationsprozesse alteingesessener Gemeinden, die in vergleichbarer Form durch den Keban-Damm in den siebziger Jahren ausgelöst worden waren, nicht aufhalten konnte, ja sie zum Teil sogar verstärkt hat. Die nicht nur in der Türkei weitverbreitete Ansicht, dass das GAP-Projekt als Allheilmittel gegen separatistische Tendenzen in der kurdischen Bevölkerung wirken könnte, scheint daher nicht angebracht. Vielmehr ist festzustellen, dass die ausgeprägten Entwicklungsdisparitäten zwischen dem relativ industrialisiertem Westen und der ungleich ärmeren, bis vor kurzem von kriegsähnlichen Zuständen heimgesuchten Südost-Türkei, kaum verringert wurden und zur Formierung eines entrechteten und entwurzelten kurdischen Proletariats an den Rändern der städtischen Zentren in der Region geführt haben, das zu einer weiteren politischen Radikalisierung in der Region beitragen könnte.

Aufgrund dieser umstrittenen Entwicklungspolitik ist das GAP-Projekt einer zunehmenden Kritik seitens europäischer Regierungen ausgesetzt, von deren Exportbürgschaften die Umsetzung des Projektes letztendlich abhängt. Die sich abzeichnende Finanzierungskrise, mit der sich die Entwicklungsbehörde des GAP-Projektes in zunehmendem Maße konfrontiert sieht, kann allerdings auch als Chance begriffen werden, um grundlegende Defizite in der auf großen Wasserprojekten basierenden Entwicklungsstrategie für die Südost-Türkei anzugehen und auf Erwartungen der lokalen Bevölkerung zu reagieren, deren Lebensbedingungen durch das GAP-Projekt schließlich verbessert werden sollen.

Summary: This paper investigates the driving forces behind and the continuities of state policy and social performance of hydro-project based development and, as its consequence, development- induced displacement in Turkey since the late 1950s. The investigation rests upon archival work in state institutions, expert interviews with decision-makers in implementing state agencies and in-depth interviews with people affected by large dam projects. Comparing the case of Turkey's first large dam, Keban, with the recent Southeast Anatolia Project (GAP), it also draws on the recent work of the World Commission of Dams on the social impact of large hydro-projects and aims at contributing to the debate on development-induced displacement.

The paper argues that in Turkey, despite methodological changes in the implementation of large dam projects and the introduction of notions of sustainable development, state policies related to regional development have stayed largely unimproved for the last forty years. The Southeast Anatolia Project, was initiated at the height of a Kurdish separatist insurgence in 1989, as an integrated regional development scheme in addition to the projects of 22 dams, several power stations and irrigation schemes, which had been planned in the 1970s and 1980s. Its aim was to alleviate regional income disparities through increased agricultural cash-crop production on irrigated soils. So far, however, it appears to have failed in kicking off a process of equitable wealth generation and in preventing processes of displacement, migration and dis-empowerment of local peasant communities, suggesting great similarities with the impact of the Keban Dam, which was completed in 1974. The assertion shared by many authors, various central government agencies and political actors in Turkey, that the GAP project might

provide an effective panacea to Kurdish separatism therefore appears to be highly questionable. On the contrary, it might be claimed that rather than alleviating the extreme development disparities between the relatively industrialised Western parts of the country and the poor, disenfranchised and until recently war-ridden Southeastern region, the GAP project has, at most, delayed but not reversed the processes of displacement and massive migration towards regional urban centres.

Due to the continuous experiences of displacement, migration and proletarianisation of predominantly Kurdish rural populations at the fringe of urban centres in the Southeast, this development orthodoxy has come under increasing criticism and pressure from European governments, on whose export credit guarantees the completion of the GAP project ultimately depends. Therefore, it is concluded, the current funding crisis of the project may now provide an opportunity to reflect and reconsider some of the basic shortcomings in Turkey's hydropower-based development model for the Southeast and to respond to the grievances of the people, whose living conditions are to be improved by the GAP project in the first case.

1 Introduction: research problem and methods of inquiry

Large infrastructure projects have various and often unprecedented impacts on the spatial and social development of cities and rural areas. Among these projects, the ones related to energy production are the greatest in scale and impact. Brown coal opencast pits for instance have changed the spatial, economic and social networks of central Europe throughout the century (HATER 1999), while the construction of large dams has predominated in Latin America and Asia.

By the end of the 20th century, there were more than 45,000 large dams all over the world (WCD 2000), most of them built in the three decades between 1950 and 1980. They have changed the geography, the culture and the society of whole regions, uprooted indigenous populations and flooded entire cities. On the other hand, dams have also brought important benefits for the countries in which they were constructed. They facilitated flood control, helped to increase agricultural produce through irrigation schemes, and through hydro-electric power plants, they generated cheap energy for national industrialisation and electrification programmes.

In recent years, environmental and human rights activists campaigning against the ecological and social impacts of large dams, launched a 'World Commission on Dams' (WCD) with the involvement of internationally acknowledged specialists under the auspices of the World Bank. The Commission brought together different stakeholders such as environmental NGOs, representatives of the dam construction industry and anti-dam activists to find an interdisciplinary and impartial assessment of the various impacts of large dams. They embarked on reviewing the technical, economic, ecological and social performance of large dams in a global comparative perspective. The Commission elaborated a critical report and highlighted, above all, the enormous social costs which large-scale hydro-projects cause and conventional cost – benefit analyses generally tend to ignore. Large dam projects, however, continue to play prominent roles in ambitious modernisation schemes of the developing world, especially in three countries, where most of the world's current dam projects are under construction; in India, China and Turkey (WCD 2000, 10).

In Turkey, over 200 dams have been completed since the foundation of the Republic in 1923. Most of these projects were relatively small in scale, their economic and social impact was limited (compare DSI 2001). The first large dam, the Keban Dam in Southeast Turkey together with a Hydro-electric Power Plant was completed in 1964. Since then, 150 dam projects have been realised and over 200 are yet to come (WCD 2000, 10). The most recent project is the Ilisu Dam, which is expected to cause the flooding of the ancient city of Hasankeyf and which might lead to the displacement of 18,000 up to 78,000 residents, depending on the source of reference (DSI 2001; ENS 2000; *Guardian* 2000). However, Ilisu is only one of a total of 22 dams and 19 hydro electric power plants, which together form the Southeast Anatolia Project (henceforth, the Turkish acronym GAP for *Güneydogu Anadolu Projesi* will be used), one of the most comprehensive hydro-project and regional development schemes in the world.

This inquiry into policy choice of the central state and the social performance of hydro-project based development in Turkey and the case of the GAP project consists of five chapters. The first chapter outlines the research problem and the methods of inquiry. The second chapter highlights the theoretical issues of development-induced displacement through large-scale infrastructure projects. Chapters three and four discuss the empirical cases of the GAP project and its predecessor, the Keban Dam. The conclusion aims at providing an insight into the internal and external political constraints, by which the future of the GAP project is likely to be determined.

1.1 Research problem and hypotheses: a polarised field of inquiry

The GAP project deserves particular attention since it is, as will be discussed in detail, more than an infra-

structure project. It is an integrated regional development programme, which targets ambitious economic and social development goals for a disadvantaged peripheral region and a politically contested territory. It had been launched by the central government in 1989, at the height of a war between Kurdish separatists and state security forces, and at a moment when the local Kurdish population was alienated to a considerable extent from the central state. Since then, the GAP project has been conceptualised and communicated both within Turkey and to the outside world as the 'panacea' to the economic, social and political marginalisation and exclusion of Southeast Anatolia and its large, yet disenfranchised Kurdish minority.

The project has also been met with substantial and sometimes bitter criticism. A number of analysts have suspected that the central state pursues its agenda of ethnic assimilation through the Southeast Anatolia Project. They asserted that the GAP is used as a pretext for the eviction of Kurdish villagers from their homes and for the exploitation of the natural resources of the Southeast Anatolia region (MICHEL 1999; SAHIN 1999; DIETZIKER 1998; IZADY 1995). Foreign relations experts have repeatedly criticised Turkey's insistence on full sovereignty on the transnational riverbeds of the Euphrates and Tigris and its reluctance to co-operate with the downstream riparian states Iran and Iraq (BISWAS 1994; HILLEL 1994; TOLBA 1994). Archaeologists have highlighted the questionable attitude towards ancient sites such as Zeugma or Hasankeyf, which have been flooded or are under danger of vanishing under the floods of new dams (BASGELEN a. ERGEC 2000; FANUSCU ÖZDEN 2000; IZADY 1995).

While this paper touches briefly on some of the aforementioned issues, its focus is on the 'social performance' of the Southeast Anatolia Project, so to say on the 'end-of-the-pipe' perspective of the experience of displacement. Precisely because of its inflated use by the Turkish government as a 'panacea' for the Kurdish problem at large, the GAP project deserves scrutiny. The question which this paper attempts to answer, therefore, is whether the 'social performance' of the GAP project and its implementing agency, the Regional Development Administration (RDA), has come anywhere near providing a panacea for the economic, social and political problems of the region. Or, whether the project has opened a 'Pandora's Box', unleashing a number of unprecedented, unwanted and uncontrollable side-effects, which might lead to worse social and economic inequalities and more radicalised politics in Turkey's Southeast Anatolian periphery. The second question, which is closely interrelated with the former, is whether the GAP project has introduced a truly innovative and more effective state policy towards the solution of the problems of Turkey's Southeast and its people, or whether this policy has rather been a continuation of earlier policy goals.

Photo 1: Atatürk Dam
Photo: K. ÖKTEM
Atatürk Damm

The empirical evidence, which is presented and discussed in this paper, suggests that the GAP project so far has had an ambiguous impact on the economy and the livelihoods of people in the region. These impacts closely resemble the outcomes of earlier projects such as the Keban Dam, and indeed suggest that, despite the innovative approach of sustainable development in the GAP case, a remarkable continuity of patterns of government intervention have been persisting over the last thirty years of development practice.

On the level of strategic state policy, the domain of the higher leadership and the military command, three fields of policy goals have been relevant. The first is Turkey's ever-increasing energy deficit and the, by all means, rational choice for exploiting the country's

hydro-power potentials in order to reduce foreign currency expenditures in global energy markets. The hydro-power projects have certainly been successful in the provision of cheap energy, and in facilitating the industrialisation and urbanisation processes in Western Turkey. The second is the field of internal/ethnic policies, and the implicit continuation of Ottoman conventions of reasserting state power in peripheral territories by diluting ethnic minorities and limiting their political power through their resettling and dispersal over the country. Finally, the third field of policy is the country's foreign relations and its position vis-à-vis its downstream neighbours Syria and Iraq, which has indeed been strengthened through the dams.

A high degree of continuity can also be shown for the level of implementation policies, the domain of the technocratic elites and institutions. Faulty expropriation processes and inefficient legal regulations have resulted in the exclusion of landless peasants from compensation and in the destruction of economic livelihoods in the flooded areas. This process of 'livelihood displacement' has, for a majority of those affected, enforced a massive migratory move to already congested urban centres in the region, and led to an impoverished and deprived Kurdish proletariat at the informal peripheries of regional urban centres. Large-landowners and local feudal leaders benefited from compensation to a disproportionate extent, and invested their money in industries and services in Western Turkey, rather than in the region. The overall benefit of the project to the economic development of the region has been, after thirteen years of implementation, rather limited.

1.2 Methods of inquiry: the dilemma of limited field access

Only very few accounts of the GAP project in the academic debate rely on primary data or include locally produced knowledges and experiences (esp. DIETZIKER 1998; SAHIN 1999). Most publications, which will be discussed in the second chapter, draw on data supplied by the GAP administration or on highly aggregated statistics of government agencies. This lack of valid and disaggregated data can be explained through a variety of reasons. Until 1999, Southeast Anatolia was ravaged by a war between Kurdish Separatists, the illegal Kurdistan Worker's Party (*Partîya Kârkeren Kurdistan – PKK*) and the Turkish military, which has left more than 30,000 people dead in less than two decades. The region was effectively under military rule since the Military intervention of 1980, until the capture of the leader of the PKK, Abdullah Öcalan in 1999. While the political situation has improved considerably since then and a return to regular rule in all Southeast provinces but two was re-established recently, field-access is still severely limited and large-scale inquiries by independent researchers based on quantitative methods remain far from feasible. This leaves the engaged researcher with a smaller-scale inquiry, predominantly based on expert interviews, on qualitative methods of data generation and on long-term and recurrent observation of social and political changes in the region.

The empirical data discussed in this paper therefore draws on three sources, which are also used for a cross-checking and triangulation of the empirical material. First, all relevant reports and publications, published by the GAP Regional Development Administration since 1990 and by involved government agencies, such as the State Hydraulic Works Agency (DSI) and the State Planning Organisation (DPT), have been analysed. Secondly, twenty expert interviews with leading decision makers of the GAP RDA in Ankara and the region, as well as with representatives of Non-Governmental Organisations and the Municipality of Sanliurfa, were carried out during four field visits between autumn 1999 and Spring 2002.[1)] Finally, more than twenty in-depth interviews were conducted with people being affected by resettlement and eviction induced by the GAP project. The research participants were reached through 'gate-keepers' and 'key-persons', persons of influence in the local communities, with whom the researcher established relations of mutual trust and who facilitated the initial meetings. Soon after these initial meetings however, a 'snow-ball' effect facilitated the researcher to reach out to many more members of the displaced communities.

In order to place the GAP project in its historical context, the history of its predecessor, the Keban Dam, was revisited in search of continuities and differences in the content and aim of government intervention in cases of development-induced displacement. The Keban case was reconstructed, based on government reports, USAID documents and a comprehensive analysis of two newspapers, published between 1965 and 1974.

[1)] In the first three field visits, the author went to the study area alone, while, in the last field-visit in March 2002, he was accompanied by a larger group of students and professors of the Technical University of Hamburg-Harburg. These field-visits aimed at establishing contacts for an extended fieldwork in Winter 2002/2003, which will provide the core of the author's doctoral thesis at the University of Oxford, School of Geography and the Environment.

2 *Development-induced displacement and social performance of large infrastructure projects*

The question of development-induced displacement has been discussed widely, both in development circles and in the geographical debate (esp. CERNEA 1999; CERNEA a. MCDOWELL 2000). A major criticism of this debate has been the economic methodology used in World Bank-funded projects to analyse costs, compensations and expenditures for displacement, the conventional cost-benefits analysis. As CERNEA and MCDOWELL (2000) contend, displacement of local communities through large-scale development projects in most cases leads to the impoverishment and dis-empowerment of displaced people, despite sophisticated development objectives and participatory resettlement projects.

The members of the independent World Commission on Dams agree with this more critical stance towards development-induced displacement and apply it to a critical assessment of the world's large dams.[2] The Commission's proposal for a comprehensive impact assessment, unlike the conventional cost benefits analysis, provides a highly sophisticated policy tool, which is concerned with five 'fields of performance'. Apart from the social performance, which is the focus of this paper, these are the technical, financial and economic performance; the environmental performance; the use of water and energy resources; and the decision-making and planning process (WCD 2000, xi–xiii). The Commission report cites several categories of impacts, which are related to the social performance of large dam projects. The socio-economic impacts of the project on a national and local scale and the displacement of people and livelihoods are the two central categories. These are followed by the impacts on indigenous people and ethnic minorities, gender relations, downstream livelihoods, cultural heritage and health (WCD 2000, 97–134).

A positive socio-economic impact for the national economy certainly stems from the increase in available energy due to hydro-electric power plants. However, above all "new energy services provided by dams have benefited urban populations" and not the affected rural communities (WCD 2000,101). The report also contends that local communities can benefit from the projects through the employment of unskilled workers and new enterprises allowed by the provision of water and electricity. These benefits, however, tend to be "transient due to the short-lived, pulse impact of the construction economy on dam construction sites" (WCD 2000, 99).

According to the Commission, policies concerning the displacement of people and their livelihoods are at the core of the social performance of a dam project. Displacement is understood as 'physical displacement' and as the much more complex 'livelihood displacement', which "deprives people of their means of production and dislocates them from their existing socio-cultural milieu" (WCD 2000, 103). While displacement seems to be inevitable in most dam projects, in all of the 125 cases analysed by the WCD, assessments failed to estimate the number of affected people. Furthermore, the report shows a common policy in most of the cases, be it implicit or explicit, to exclude certain groups such as landless people, downstream communities, indigenous people and ethnic minorities from assessment and compensation. Compensation usually goes to those in possession of titles, leaving out a large number – often the poorest, while cash compensation as a principal vehicle for delivering resettlement benefits "has often been delayed and, even, when paid on time, has usually failed to replace lost livelihoods" (WCD 2000, 107).

Members of downstream communities have to bear serious consequences such as decreasing water quality, minimised water flows and destruction of local fisheries, which come to the fore only after the completion of the dam. Finally, most dam projects analysed by the WCD had detrimental effects on the cultural heritage and on human health issues through water-borne diseases. In concluding, the commissioners emphasise that the social costs are borne by "rural dwellers, subsistence farmers, indigenous peoples, ethnic minorities, and women", while the beneficiaries are predominantly "urban dwellers, commercial farmers, and industrialists" (WCD 2000, 125).

3 *Blue-print for the Southeast Anatolia Project?: the decade of the Keban Dam*

Despite its role as the prototype for the Southeast Anatolia Project, the Keban Dam and its history has so far received little academic interest.[3] Yet, when the Keban Dam was inaugurated belatedly in 1974 after almost ten years of construction, it was the largest single project ever undertaken in the Turkish Republic and the first with wide-scale displacement effects on local communities.

[2] The Commission carried out in-depth case studies of eight dams, a comprehensive global survey of 125 dams and examined another 1,000 dams in order to establish a knowledge base on the performance of large dams in the world (WCD 2000, viii).

Plans for a dam and power plant on the upper Euphrates go back to the 1930s. Yet, it was not before the late 1950s, when Turkey had become a beneficiary of the Marshall Aid Program and a close ally of the United States that the American consultant Ebasco Services Inc. started with the final feasibility study. This study was financed by the US Agency for International Development (TÜRKIYE CUMHURIYETI 1966; USAID 1962, 26). A Euphrates Planning Authority was established in 1961, which oversaw the building of the Keban Dam and which remained in charge of developing the hydro-potentials of the Euphrates valley.

Once funding by the German, Italian and French governments had been secured, an international consortium (SCI – Impregilo) commenced construction on the Keban Dam and the Hydro-Electric Power Plant in 1966 (TÜRKIYE CUMHURIYETI 1971, 47). It might be worthwhile to note that already at that time, the World Bank refused to fund the project, because of Turkey's failure to reach a legal settlement with Syria over the allocation of annual water shares (KOLLARS a. MITCHELL 1991).

The Keban scheme aimed at increasing the production of locally produced and therefore 'cheap' hydro-energy, and at regulating the Euphrates River in order to allow for the construction of downstream projects. A third target, was the economic development goal.

> There are two ways of development: Industrialisation and modern agriculture. With the new constructions on the Euphrates, the mineral resources of the surrounding mountains will be exploited. The Euphrates region will turn into Germany's Ruhr Valley or America's Niagara (*Cumhuriyet* 1966).

However, this vision of Turkey's president Celal Bayar, did not materialise, due to a mixture of incoherent government policy, co-ordination deficits and corruption in the steps of implementation as well as due to the lack of local social capital, which could have empowered the displaced to deal with the challenges of displacement.

The development objectives of the early 1970s as defined in the Second Five Year Development Plan (TÜRKIYE CUMHURIYETI 1966), urbanisation and industrialisation, precluded a comprehensive relocation of the affected communities to agricultural lands. A member of the Keban Dam commission and the State Planning Organisation, which was in charge of social policies for the Keban project, stated that

> It would collide with two main principles of the second five year plan, fast industrialisation and the promotion of urbanisation and it would be too costly, to reintegrate the population … into new agricultural settlements (ERSOY 1970, 31).

Hence, the policy was to relocate as little as possible and to compensate the land – owning villagers in cash, while landless peasants, though a relatively small group[4] were not compensated at all. Expropriation payments exceeded by far the originally estimated 55 million US$, and reached over 220 million US$) (*Cumhuriyet* 1974).

The original plans of the State Planning Organisation estimated the number of inhabitants to be displaced in the Keban area at approximately 18,000 (OTYAM 1965), in 1970 figures were revised to 23,000 (ERSOY 1970, 23). The final number of evicted people varies, according to the source, between 30,000 and 40,000 in 94 settlements (MORVARIDI 2000; *Cumhuriyet* 1974). It should be mentioned that Turkish census statistics do not disclose data concerning ethnic affiliation. All data referring to the ethnic composition of Turkish provinces are therefore preliminary estimates. According to a survey carried out by the Ministry of Construction in the 1960s, 25% of the population in Elazig were native Kurdish speakers. ERSOY (1970, 24) remarks, however, that during the survey "most of the household heads concealed their identity, due to a number of reasons" and he suggests "that the share of Kurds might well have been close to a majority" in the area.

Most of the money allocated for compensation was either distributed to large landowners or retained by lawyers, middlemen and estimators who profited from irregularities in the expropriation process (report of the Finance Ministry, cited by *Cumhuriyet* 1974). Little opposition was voiced since large landowners, among which local party leaders both of the ruling party and

[3] The lack of a comprehensive analysis on the Keban Dam and its social and economic consequences is even more surprising if compared to the extensive literature on the Aswan Dam, which has been produced by geographers, anthropologists and political scientists (WATERBURY 1979; FAHIM 1981). The impacts on affected communities were roughly comparable: Both in Turkey and in Egypt, approximately 40,000 members of a minority – Nubians in Upper Egypt, Kurds in Southeast Anatolia – had been relocated or evicted.

[4] Data referring to the share of landless peasants in Elazig in contemporary sources are not available. Yet, a historical consideration suggests that their share was relatively low. Until the mid-1930s, large landed property prevailed with local strongmen and feudal leaders (*agas*), who exploited landless peasants. After a Kurdish insurgence in 1920 and 30s, the *agas* were forced to sell their land. It appears that great numbers of landless peasants got the chance to buy small pieces of land (YURT ANSIKLOPEDISI 1982, 2525, 2536). When expropriation began in the mid-1960s, large land-ownership had been only partially restored.

the opposition were recruited, benefited from the compensations and discouraged local critics from political action. Small landowners generally obtained less money than they would have needed to buy new land and houses and sustain their living in an urban environment, while share-croppers were not eligible for compensation at all (*Cumhuriyet* 1974).

Especially these small landowners and share-croppers seem to have spent most of their compensation payments and credits on buying real estate in the provincial capital Elazig, and on consumer goods. Since most of them lacked qualifications for the urban job market, they soon confronted unemployment and joined the jobless crowds in Elazig. The bars of Elazig in the late 1960s became symbols for poor peasants, who spent their small compensation payments on short-term consumption and entertainment and too easily lost all they had just received. While small landowners and landless peasants evicted from the Keban area were transformed into an unskilled and deprived group of urban poor, large landowners migrated to Western Turkey and invested in industries and commerce (YURT ANSIKLOPEDISI 1982, 2536). Only a small part of the capital remained in Elazig, which retained its status as one of least developed provinces in Turkey until the late 1990s. While the energy production of the Keban Dam released Turkey at least temporarily from spending hard currency in international energy markets (*Cumhuriyet* 1974), the energy produced in Keban went, as most local observers had feared, to Istanbul and Ankara (HILLEL 1994, 105). The electrification of villages in the Keban area did not start before the 1980s.

The impacts on the provincial capital Elazig were grave. The population more than doubled during the construction of the dam from 80,000 in 1960 to over 180,000 in the late 1970s. A shortage of housing and a rapid increase in informal and sub-standard housing was the consequence (ISIK 1973, 5) and further added to the poor living conditions in the city.

In summarising the case of Keban, it can be argued that both 'physical displacement' and 'livelihood displacement' occurred, which deprived the local communities of their means of production and dislocated them from their former socio-cultural milieu. While compensation was paid, it hardly reached the ones most in need. Capital flight to Western Turkey was rampant; while compensation payments in Elazig were mainly exhausted in consumer and unproductive expenditures, sustainable investments in industries and services rather fuelled the economies of Istanbul or Ankara. While a majority of the displaced were of Kurdish origin, this very fact caused no additional tensions, since the question of Kurdish ethnicity was not relevant to the political discourse of Turkey in the 1960s and 1970s.

Photo 2: Informal settlement at the urban periphery of Sanliurfa
Photo: K. ÖKTEM
Informelle Wohnsiedlung am Stadtrand von Sanliurfa

4 The Southeast Anatolia Project: panacea for Kurdish separatism or Pandora's box?

The history of the South East Anatolia Project goes back to the establishment of the Euphrates Planning Authority in 1961, the same agency, which, as its first project, built the Keban Dam. In 1977, thirteen hydroprojects in the Euphrates and Tigris River basins were integrated under the umbrella project, which then began to be called the Southeast Anatolia Project for the development of water and energy resources (GAP 2001b).

The most significant turning point in the history of this project, however, was the year 1989. This year was the pinnacle of the Kurdish insurgence, led by Abdul-

lah Öcalan, then Chairman of the illegal Kurdistan Worker's Party. Large segments of the population of the Southeast had long felt alienated by the central government and its reluctance to respond to the "general atmosphere of economic deprivation, social injustice and physical displacement" (JUNG a. PICCOLI 2001, 125) other than by means of oppression and force. The region of Southeast Anatolia has been the poorest and least developed of Turkey, with less than 50% of the average national GDP per capita (GAP 1996, 19). A fully-fledged nationalist upheaval against Ankara and a serious threat to Turkey's national security and territorial integrity seemed a serious possibility. It is at this particular historical moment that the GAP Regional Development Administration (RDA) was established, in order to co-ordinate the planning and implementation of the dam projects and incorporate them into an 'integrated regional development' scheme. It should therefore be no surprise that the nine provinces, in which the GAP project has been implemented, were all under emergency and military rule in 1989.[5)]

With the GAP project and a committed regional development agency as the central government's panacea for the Kurdish question, the vast development differences between Turkey's developed West and poor East, would finally be eradicated, in a way resembling the aspirations for the Keban Dam in the 1960s (GAP 1999, 4). The GAP RDA was not, however, assigned any substantial powers, and the implementation (and financing) of projects stayed in the domain of other state agencies. The implementation and controlling of the dam projects and irrigation schemes for instance remained under the responsibility of the State Hydraulic Works (DSI), while the construction of resettlement areas was predominantly organised by provincial governments or the State Village Works (KHGM).

Following the goal of a regional 'take-off', the GAP Regional Development Administration elaborated a comprehensive development programme based on a Master Plan (NIPPON KOEI 1990; for an authoritative introduction to the original project goals and a comprehensive map, see TOEPFER 1989, as well as HÜTTEROTH a. HÖHFELD 2002, 220–228). The plan defined the overall development objective "to raise the income levels in the GAP region by improving the economic structure in order to narrow the income disparity between the region and other regions" (GAP 1990, 3). Economic improvement would come with the emerging agro-industries, fed by increased agricultural cash crops such as cotton from the areas under irrigation.

Later in the mid-1990s, the administration opted for an integrated development strategy based on 'integrated regional development' and 'sustainable planning' with participatory elements and the goal of an 'open' society' (GAP 1999, 19). Over the last five years, the administration accumulated competence and tasks, such as the capacity of spatial or infrastructure planning or social services which, in Turkey are normally executed by municipalities or local councils. A number of important infrastructure projects in the GAP cities were facilitated by the RDA, such as the construction of drinking and waste water networks, waste treatment plants and streets (GAP 1999, 131–135). Intercity transport infrastructure projects and airports were also included into the framework of the Master Plan. Nevertheless, as with these projects, the engineering projects, which are by far the most important investments in the region, were also implemented by other state agencies.

4.1 The engineering projects: dams, power plants and irrigation schemes

The GAP project contains 22 dams, of which fourteen are located in the Euphrates River basin and eight in the Tigris River basin in Southeast Turkey (GAP 1999).[6)] Three of these dams are momentous in scale and have integrated hydro-electric power plants and established capacities of more than 1,000 MW each: The Atatürk, Karakaya and Ilisu Dams.

The nineteen power plants are designed to reach an established capacity of 7,640 Mega Watt (MW) and an annual electric energy output of 26–27 billion kWh. This is almost five times the capacity of the Keban Dam, which produced up to 6 billion kWh (and more than three times the capacity of the Aswan Dam, which reached 8 to 10 billion kWh (DSI 2001; WATERBURY

[5)] Adiyaman, Batman, Diyarbakir, Gaziantep, Kilis, Mardin, Sanliurfa, Siirt, Sirnak. They account for roughly ten percent of the country's population and territory (GAP 1999, 17).

[6)] The data referring to the projects included in the GAP and their specifications vary between different publications of the GAP administration, and differ from those of other state agencies. Therefore, I have chosen to use the data provided in the Annual Reports of 1998 and 2000 (GAP 1999; GAP 2001a) and the Status Report 1999 (GAP 2000), which are the most recent sources. I have also counter-checked the data with the Final Master Plan report (GAP 1990), the GAP Action Plan (GAP 1995) and a report of 1996 (GAP 1996). According to these sources, the initial project in 1990 foresaw the construction of 21, instead of 22 dams, with seventeen Hydro-electric plants instead of 19, while the targeted energy output and level of irrigation remained roughly the same.

Table 1: Realisation of dam projects
Realisierungsgrad der Staudammprojekte

Goals for the Target Year 2010	In operation by 2001	Reservoir area	Under construction	Planning/Survey
	Atatürk	817.00 km²	Kayacik	Büyükçay
	Karakaya	268.00 km²	Kemlin	Çataltepe
	Kralkizi	57.50 km²		Cizre
	Birecik	56.25 km²		Garzan
	Batman	49.25 km²		Gömikan
	Karkamis	28.40 km²		Ilisu
	Dicle	24.00 km²		Kahta
	Hancagiz	7.50 km²		Kayser
	Çamgazi	5.55 km²		Koçali
				Silvan
				Sirimtas
22 dams	9	1,313.45 km²	2	11

1979). In addition to the dam construction, thirteen irrigation projects also aim at cultivating 1,7 million ha of arid land (GAP 1999, 31).

According to the most recent figures of the GAP Regional Development Administration, nine dams and seven power plants were in operation by 2001 (compare Tables 1–3). Of the three large dams, Atatürk and Karakaya were in operation, together with the adjacent hydro-electric power plants. The Ilisu Dam was in the process of planning. While the realisation rate of the energy projects exceeds 60%, irrigation facilities reached only a rate of 12%, with projects coming up to another 10% (GAP 2000, 23–24; GAP 2000, 8–9). The target date for the completion of all investments has recently been raised from 2005 to 2010 in order to accommodate the delayed completion of irrigation schemes, and in order to provide some time for revision of the Master Plan.

Photo 3: Sanliurfa's North-end: formal neighbourhoods
Photo: K. ÖKTEM
Neuentstehende geplante Wohnviertel am nördlichen Stadtrand

4.2 The predicament of dams?: displacement, disenfranchisement and migration

The building of dams, above all, requires the flooding of vast river basin areas and hence, large-scale eviction and re-location. Indirect estimates of the numbers of people already displaced by the GAP project vary, according to source and methodology, between 197.732 (MORVARIDI 2000) and 181.2000 (SOCIOLOGY ASSOCIATION 1994, 2).[7] Even if we accept the conservative estimate of 180.000, we might argue that the migrants who have moved to one of the nearby urban centres must have by far exceeded the threshold of 100.000. The growth rates of e.g. Sanliurfa, which is close to the Atatürk Dam, suggest even higher figures.

As in the case of the Keban Dam, it is next to impossible to present a reliable figure on the share of Kurds among the displaced, other than a crude estimate. Their share in the population of Southeast Anatolia varies considerably between at least 5% in Gaziantep to 65% in Mardin and Siirt, with significant Arab minorities in Sanliurfa, Siirt and Mardin (compare TOEPFER

[7] MORVARIDI (2000) includes the population displacement caused by the Keban Dam, while the SOCIOLOGY ASSOCIATION OF TURKEY (1994) includes Ilisu, but not Keban.

Table 2: Realisation of Hydro-electric Power Plants (HEPP)
Realisierungsgrad der Energieprojekte (Wasserkraftwerke)

Goals for the Target Year 2010	In operation by 2001	Capacity 2001	Under construction	Planning/Sur vey
	Atatürk	2,400 MW	Sanliurfa	Büyükçay
	Karakaya	1,800 MW		Cizre
	Birecik	672 MW		Erkenek
	Batman	198 MW		Fatopasa
	Karkamis	189 MW		Garzan
	Dicle	110 MW		Ilisu
	Kralkizi	90 MW		Kahta
				Kayser
				Koçali
				Silvan
				Sirimtas
7,640 MW in 19 HEPPs	7	5,459 MW	1	11

1989, 295). A majority of the displaced therefore appear to belong to ethnic minorities, while the largest single group is of Kurdish origin.

The inhabitants of the river basins, independent of their ethnic background, were to be compensated. The predominant, though not exclusive, instrument for compensating expropriated lands in the GAP region has been monetary compensation. According to human rights groups, compensation only reached approximately 50% of those affected (Interview with a human rights group representative in Sanliurfa). This figure might appear exaggerated. Yet, if it is taken into account that in the GAP region, large landowners hold between 40–60% of land, it might be inferred that the share of families in the region who do not possess any land title is relatively high (STRUCK 1994, 121). Therefore, they are indeed not eligible for compensation. Yet, the GAP Regional Development Administration, unlike the planners of the Keban Project, tried to provide resettlement opportunities within the region. A number of comprehensive resettlement projects were undertaken, in which the RDA aimed at including the affected people in the planning of resettlement areas and assisted them to find new employment opportunities

Photo 4: The ancient town of Hasankeyf. The whole site will be flooded up to the tip of the minaret, if the Ilisu Dam project is carried out without alterations
Photo: H. HARMS

Das antike Hasankeyf. Sollte der Ilisu-Staudamm ohne Änderungen gebaut werden, wird der gesamte Ort bis zur Spitze des Minaretts überschwemmt werden

Photo 5: The town of Halfeti on the boards of the Euphrates. Forty percent of the town has been flooded after the completion of the Birecik Dam
Photo: H. HARMS

Die Stadt Halfeti am Ufer des Euphrat. Vierzig Prozent der Stadt wurde nach der Inbetriebnahme des Birecik-Damms überschwemmt.

after the relocation (GAP 1998). The showcase of this innovative approach was the Halfeti region, which was flooded by the Birecik Dam.

However, as recent fieldwork in the partially flooded architectural heritage site of old Halfeti, the new resettlement area of Karaotlak and the resettled village of Gözeli (all in the province of Sanliurfa) reveal, even these showcase projects proved to be highly ambiguous, if not totally flawed in their effects. Interviewed local government representatives and inhabitants of these settlements referred to the low quality of the houses, with which they were provided, the problematic compensation and financing process and the deteriorating economic situation after resettlement.

The settlement of New Halfeti (Karaotlak), for instance, consists of 220 standard houses, which indeed have an appallingly low building quality, despite their very recent completion in 2000. The settlement has next to none green spaces or parks, and is, unlike the former town at the banks of the Euphrates, landlocked and located in an unfertile mountainous plain. Yet, the most serious grievances, which local community leaders expressed, were the compensation, financing and resettlement process and the lack of co-ordination between them and their implementing agencies. In the case of the resettlement of Gözeli between 1998 and 2001, the villagers had to deal with three different government agencies, and the co-ordinating agency of the GAP RDA, which they describe as supportive but of limited power. While being paid substantial compensation, most villagers of Gözeli had to face unexpectedly high expenses for the purchase of water for the construction of their houses, because the implementing agencies were late in connecting the water pipes of the

Table 3: Land to come under irrigation

Realisierungsgrad der Bewässerungsprojekte

Goals for the Target Year 2010	Irrigated area in 2001	Irrigated area in 2001	Under construc tion	Planning/Survey
1.7 million ha	12%	183,080 ha	178,140 ha	1.338,780 ha

Sources: Based on the Master Plan (NIPPON KOEI a. YÜKSEL PROJE 1990) and the annual reports (GAP 1999; GAP 2001a), corrected and updated with data from the State Hydraulic Works Agency, DSI (DSI, 2001) and interviews with GAP decision makers. The data of the DSI publications differ considerably from the GAP figures, especially for the level of implementation. In case of doubt, the DSI figures have been preferred, since it is in charge of the construction and technical co-ordination of the projects and therefore closer to the implementation process.

Photo 6: The old mosque of Halfeti, which is now partly flooded
Photo: H. HARMS
Die alte Moschee von Halfeti, die jetzt teilweise überflutet ist

new settlement. Fifteen houses, which were not flooded, but became unreachable after the flooding, were not compensated at all, due to a particular regulation in Turkish expropriation law.

Photo 7: The resettled village of Gözeli
Photo: H. HARMS
Das umgesiedelte Dorf Gözeli

The already highly depressed economic situation has been further exacerbated by the loss of the former economic basis of the village. Before the resettlement, according to the mayor, more than 60% of the villagers were dependent on local fisheries. Now that the village is resettled on a barren hilltop with the banks of the Euphrates hardly accessible, few villagers of the formerly well-off village have a regular income. It is therefore hardly surprising that the village, which before the flooding had about 1,000 inhabitants, has already lost more than 30% of its population, mainly young men and couples. Representatives of the local government confirm that most families consider moving to nearby urban centres and that the main impediment to migration is the economic hardship the resettled people suffer from. As one of the research participants put it: "We should have left for the city before being resettled. We have believed them (the state, the agencies) that we would have a much better life. Now, we have exhausted our financial means and we do not know to whom to turn. But, whenever there is a chance, we will leave this place, there is nothing left here, which holds us back".

4.3 Social and spatial polarisation in receiving cities and the making of new informal life-worlds: the case of Sanliurfa

Taking into consideration that the Halfeti resettlement project was one of the more successful projects of GAP, it is easy to imagine how, on a much larger scale, the process of initial displacement ultimately results in migration to nearby urban centres. As is the case in

most urban centres in the region, this migratory move lead to an enormous informal urbanisation, with thousands of one or two-storey houses with poor building quality and limited infrastructure, built on the hills around the city centres. Sanliurfa, located in the geographical centre of the region and seat of the regional office of the GAP Administration, is one of the most impressive examples in this respect. According to municipal sources, Sanliurfa's population rose from 200,000 in 1980 to almost 600,000 in 2000. The 1997 census population for Sanliurfa city is 410,762 (DIE 2002). If we assume that a considerable number of people in the city's informal settlements, who are employed in seasonal agriculture jobs, have not been counted, the estimate of the municipality does not appear to be too exaggerated.

This immense increase in the number of residents has had a number of severe impacts on the city of Sanliurfa. Large-landowners' demand for spacious apartments led to the emergence of a speculative formal housing market and to a massive expansion of the city's rich northern quarters. Prices for a four-room flat reached up to 100,000 US$ in 2000, a price that according to local realtors is almost three times as high as the price level before the implementation of the GAP project started. While the northern quarters developed into formally planned, well-maintained neighbourhoods, the south of Sanliurfa became the target of the evicted and displaced. Probably more than 50,000 people affected by the dam projects settled on the hilltops around Sanliurfa in less than ten years. Since then, the municipality has been running short of funds and personnel to respond to this massive population increase. As a result, the city has fallen into two parts, which almost ironically mirror the global economic structure: the rich north and the poor south. In the poor southern quarters, most households have more than seven members and are "scarcely above the poverty level, although they are definitely above famine level" (METU 1994, 8). The great majority of these migrants, over 70%, are not content with their new settlements and suffer from impoverishment (SOCIOLOGY ASSOCIATION 1994, 13–16).

Worse than the exclusion from the formal infrastructure, however, seems to be the exclusion of migrants from the urban labour market due to the lack of required qualifications (METU 1994, 6). According to social workers in one of the most populous informal quarters, Yakubiye, almost the entire population earns its living through seasonal agricultural labour on the cotton fields of the Çukurova region around Adana, 350 km west of Sanliurfa (this trend is also confirmed by METU 1994). This labour arrangement seriously obstructs the integration of migrants into the urban economy and results in the exclusion of children from regular school attendance for at least one or two months a year.

5 Conclusion

In comparing the Keban Dam and the GAP project, a great deal of continuity might be inferred in Turkey's energy policy and its implicit policy of dispersal of Kurdish villagers. It would be fair to claim that the energy policy was the driving force behind the projects from Keban to the GAP projects, while the internal and external policies seem to have coincided with the new opportunities, the projects have offered for the central state. The foreign policy aspect, while already highlighted e.g. by the World Bank in the 1960s through its refusal to fund projects in international river basins in Turkey, was probably not as central in the Keban case. The GAP project surely provided a political windfall for successive governments during the mid-1980s and its more pro-active foreign policy against Syria and Iraq. However, it is highly unlikely that, as some authors contend, aspirations for political and military hegemony in the Middle East have been the driving force behind the projects.

The outcome of the implementation policies might be described in terms of processes of disempowerment, marginalisation and proletarianisation of a fair portion of the people displaced by the dam projects. This process starts with the dam building and resettlement projects, and, through ineffective co-operation between implementing agencies, problematic compensation procedures and the destruction of economic livelihoods, leads to unstoppable migratory moves towards the informal fringes of urban centres in the region. In the recipient cities, the highly polarised urban space hardly conceals the growing presence of a predominantly Kurdish underclass, which lacks professional skills for the urban labour market and therefore remains excluded from the urban economy. While the poorly or non-compensated villagers end up at the urban fringes in regional centres, capital acquired through compensation of large holdings flows, as evidence shows, into the economy of western Turkey, rather than contributing to an industrial development based on the increased agricultural produce of the region. The same appears to be true for the energy produced in the region, which is largely transferred to the urban and industrial centres of western Turkey.

Despite a far more elaborate institutional and policy framework in the case of the Southeast Anatolia Pro-

ject, processes of displacement, exclusion and deprivation, have been, at best, delayed for some time, but not reversed. The ultimate 'last stations' of the displaced communities in any hydro-project in Southeastern Turkey seem to be the already poorly funded and staffed cities of Sanliurfa, Gaziantep or Diyarbakir. Nor has there been an effective change in government policies since the Keban Dam experience, in the fields of compensation procedures, resettlement planning and citizen's participation. The social performance of the GAP project strongly supports the claims of the World Committee on Dams and CERNEA (1999) discussed earlier that large dam projects, despite their benefits for national economies, do not help to ameliorate the living conditions of the affected people and almost inevitably lead to further impoverishment.

Evidence therefore suggests that rather than providing a 'panacea' for Kurdish unrest, the GAP project stayed within strategic state policies formulated during the Keban project or even earlier and has unintentionally opened a Pandora's box. The forces unleashed might ultimately prove to be detrimental to the aspirations of an eradication of development disparities between West and Southeast Turkey. The growing number of disenfranchised Kurds on the fringes of local urban centres and on the fringes of Turkey's economy will impede rather than contribute to an 'open society' or an equitable and long-lasting solution to Kurdish grievances, and might further radicalise the political atmosphere in the region. Nor will it help in reducing long-term threats to Turkey's national security and territorial integrity or facilitate the country's already troubled aspirations for a timely EU-accession.

On the international front, the dam projects of Southeastern Anatolia are met with as serious challenges: a change of perspective of European governments on the social impacts of the dam projects might seriously obstruct their completion. The Turkish government has already come under increasing external pressure to avert the displacement of further tens of thousands of people or the flooding of architectural heritage sites. A case in point is the Ilisu Dam. The Ilisu project is confronted with increasing difficulties in obtaining external funding and expertise after human rights activists in Europe highlighted the expected displacement of up to 80,000 people and the flooding of the ancient city of Hasankeyf, as well as the possibility of a recurrence of inappropriate compensation processes. This is all the more important, since the World Bank does not fund dam projects located in contested international river basins and Turkey's financial resources are severely limited due to recurring financial crises and tight IMF austerity programmes. It might therefore be claimed that the GAP project, with slightly more than half of the dam projects and less than a quarter of the irrigation schemes completed, has arrived at a serious turning point, facing a threatening funding crisis.

This relatively deflating picture of the GAP project raises the question of what do to next, how to proceed towards a better practice. For this purpose, I shall propose some short-term solutions, and a substantial re-consideration of entrenched development practices as well as areas for future research.

First, short-term policy changes should be initiated by the implementing agencies of the GAP project to accommodate local grievances and to prioritise local development over national energy policies, at least in the case of the Ilisu Dam. Since there is overwhelming evidence that an increasing majority of the inhabitants of the Ilisu – catchment area in particular and of the region in general strongly opposes this project (DIETZIKER 1998), it needs to be reconsidered. Critical environmental and social impact assessments on the lines of the World Commission of Dams, as well as further research on options of re-sizing the dam, are crucial, not only for local acceptance but also for further international funding of the project. The recent review of the Master Plan of 1990 might provide an opportunity for the GAP Administration to react to this substantiated criticism, and to further regionalise its development objectives. Whether such a modification of development goals is feasible under the current constraints of Turkey's political landscape is, however, dubious.

Further research into the project should address the question, which emerges from the data discussed in this paper. How has a particular development orthodoxy based on hydro-projects, which has been causing the same devastating impacts on local communities for more than thirty years, become so entrenched that a change of government policy and outlook on the issue seems to be all but possible? Different government agencies, construction companies and political interest groups have remained extremely reluctant to modify a developmentalist notion, which has so far benefited all of the actors involved except the already marginalised local populations of Southeast Anatolia. A regional development perspective, which aims at effectively integrating the dominantly Kurdish population of the Southeast into the social, economic and political mainstream of Turkey might have to consider reviewing some of the strategic state policies, which have been discussed in this paper. Taking local aspirations and models for development seriously might become as important as solutions to the country's pressing need for cheap energy.

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BERICHTE UND MITTEILUNGEN

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SABINE RICHTER und HANS BÖHM

Vorbemerkung

In der Zeit von August 2000 bis Mai 2002 wurde der dienstliche und wissenschaftliche Nachlass von Carl Troll (1899–1975) unter Förderung der Deutschen Forschungsgemeinschaft (DFG) erschlossen. In dieser Zeit konnte der rd. 16 Regalmeter umfassende Bestand, der bis dahin nur in einer groben Systematik gegliedert und mittels einer Aktentitelliste erfasst war, geordnet, neu systematisiert, mit Hilfe des Archivierungsprogramms AUGIAS-Archiv katalogisiert und archivgerecht endgelagert werden. Der Nachlass besteht aus 607 Akteneinheiten mit rd. 93.900 Blättern, 1.360 Fotos, 500 Heften, 50 Karten sowie sonstigen Trägerarten.

Durch die Erschließung werden die Dokumente des Nachlasses mit ihren Informationen überhaupt erst für die breite Forschung nutzbar. Die Gliederung sowie das kombinierte Personen- und Institutionenregister bieten erste Sucheinstiege im Findbuch; eine Online-Version wurde unter der Adresse http://www.giub.uni-bonn.de/archiv abgelegt. Darüber hinaus kann in der AUGIAS-Datenbank zum Troll-Nachlass sowohl im Geographischen Institut als auch im Universitätsarchiv Bonn nach Sachbegriffen recherchiert werden.

Das geographische Wirken von Carl Troll im Lichte seines Nachlasses[1)]

Trolls Studium in München war naturwissenschaftlich weit ausgerichtet (u. a. bei Erich von Drygalski, Theodor Herzog, Karl von Goebel); er wurde 1921 in Botanik promoviert und habilitierte 1925 in Geographie. Bereits während seiner Münchener Assistenzzeit hatte Troll die Gelegenheit, nordische Länder kennen zu lernen, Bolivien, Südperu und Nordchile (1926–1927) zu bereisen sowie an der Andenexpedition 1928 des Deutschen und Österreichischen Alpenvereins teilzunehmen. Anschließend arbeitete er ein Jahr als Gutachter für die durch Peter Paul von Bauer gegründete „Sociedad Colombo-Alemana de Transportes Aéreos". So konnte er seine geographischen und botanischen

[1)] Für detailliertere Ausführungen wird auf folgende Würdigungen verwiesen: LAUTENSACH, H. (1959): Carl Troll – ein Forscherleben. In: Erdkunde 13, 245–258; LAUER, W. (1970): Carl Troll zum 70. Geburtstag. In: LAUER, W. (Hrsg.): Argumenta Geographica. Colloquium Geographicum 12. Bonn, 11–26; LAUER, W. (1976): Carl Troll – Naturforscher und Geograph. In: Erdkunde 30, 1–9.