

Advisory Review of the Environmental and
Social Impact Assessment Reports for the
Baku-Tbilisi-Ceyhan Oil Pipeline and
the South Caucasus Gas Pipeline
in Georgia

22 November 2002

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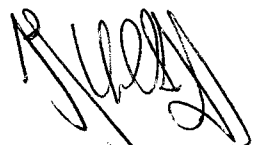
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Advisory review of the Environmental and Social Impact
Assessment Reports for the Baku-Tbilisi-Ceyhan Oil Pipeline and
the South Caucasus Gas Pipeline in Georgia

Advice submitted to the Minister Environment, by a working group of the
Commission for Environmental Impact Assessment in the Netherlands.

the technical secretary



A. J. Kolhoff

the chairman



D. de Zeeuw

Utrecht, 22 November 2002

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1. INTRODUCTION

1.1 General

On request of the Minister of Environment of Georgia, this advice is prepared by the Netherlands Commission for Environmental Impact Assessment (EIA)(hereafter called “the Commission”)¹. Presented in this advice are the review findings of the final Environmental and Social Impact Assessment (hereafter called the ESIA report). The final ESIA report² consists of the following three documents.

- Environmental and Social Impact Assessment report; Baku- Tbilisi – Ceyhan Oil Pipeline: Georgia; draft for disclosure – Report; April 2002;
- Environmental and Social Impact Assessment report; South Caucasus Pipeline: Georgia; draft for disclosure – Report; April 2002;
- Addendum report; Environmental and Social Impact Assessment report Baku – Tbilisi – Ceyhan oil pipeline: Georgia; response to comments (from ESIA disclosure phase); September 2002.

1.2 Setting of the projects

The proponent for the project is a consortium of companies known as the Baku-Tbilisi-Ceyhan Pipeline Company (BTC Co) lead by British Petroleum (BP). The other companies are the State Oil Company of the Azerbaijan Republic (SOCAR), Unocal, Statoil, TPAO, Itochu, Ramco, Delta Hess and ENI. The ESIA report is prepared by BP.

Baku-Tbilisi-Ceyhan Oil pipeline

The Baku-Tbilisi-Ceyhan Main Export oil pipeline project (BTC-project) is intended to become a major system for transporting up to one million barrels per day (50 million tonnes per year) of crude oil from an expanded Sangachel terminal near Baku in Azerbaijan, through Georgia to a new marine terminal at Ceyhan in Turkey on the Mediterranean coast. Tankers will ship the oil to international markets. The total length of the pipeline is 1760 km. The length of pipeline running through Georgia as proposed in the ESIA report is 248 km.

The 42” diameter BTC pipeline in Azerbaijan converts to 46” diameter as it enters Georgia and reverts back to 42” diameter in Turkey. In addition to the 248 km pipeline itself, permanent facilities in Georgia include: two pump stations, a pig launcher/receiver station along with two further pigging facilities

¹ The Netherlands Commission for Environmental Impact Assessment is an independent advisory body, has a legal basis and was established in 1985. For more information see the website: www.eia.nl

² Website ESIA report

integrated within the pump stations; one metering station, a number of valve stations, a cathodic protection system, an optical fibre communication system and a computer-based integrated control and safety system. According to the planning the construction is scheduled to start in the spring of 2003. The pipeline will become operational early 2005.

An Inter-Governmental Agreement (IGA) between Georgia, the Azerbaijan Republic and the Republic of Turkey has been signed in which the transportation of petroleum via the territories of the Azerbaijan republic, Georgia and the Republic of Turkey through the Baku-Tbilisi-Ceyhan (BTC) Main Export pipeline has been agreed upon.

On 28th April 2000 Georgia, Azerbaijan and Turkey initiated the Georgian Host Government Agreement (HGA) on the BTC-project. This Agreement has been ratified by the Parliament of Georgia on May 31, 2000. The HGA defines the environmental standards of this project. It has been stated that environmental standards of the Netherlands and Austria and the EC Directive 85/337/EEC will be applied.

This advice focuses on that part of the BTC-project that crosses the territory of Georgia.

South Caucasus Gas Pipeline

The South Caucasus pipeline project (SC-project) is intended to become a pipeline system to transport up to 7.3 billion cubic metres of gas per year from an expanded Sangachal terminal near Baku in Azerbaijan, through Georgia to the Georgian/Turkish border for onward distribution to Turkish domestic customers via the national gas network. In addition to the pipeline itself, permanent facilities in Georgia include: one pressure reduction and metering station, a number of block valve stations, a natural gas off-take site, a cathodic protection system, an optical fibre communication system and a computer-based integrated control and safety system. The 42" diameter SCP will have a total length of 690 km, 248 km running parallel to the preferred route of the BTC pipeline between the Sangachal Terminal and the Georgian / Turkish border near Akhaltsikhe. The 690 km pipeline is planned to be operational in late 2005.

The SC project is being implemented within the framework of Inter-Government Agreements between the two transit countries. Two Host Government Agreements (HGA) exist between the respective government of each transit country and the SC project owners. The HGA defines the environmental standards of this project. It has been stated that environmental standards of the Netherlands and Austria and the EC Directive 85/337/EEC will be applied.

This advice focuses on that part of the SC project that crosses the territory of Georgia.

1.3 Request for advice

According to the Georgian law an EIA must be executed prior to construction of a pipeline. Based upon an approved ESIA study, the environmental license for both projects will be issued by the Ministry of Environment.

This advice is the result of co-operation between the Government of Georgia and the Government of the Netherlands. The Georgian Minister of Environment has requested assistance from the Dutch Minister of Environment, with the implementation of EIA for the BTC-project and the SC-project. By letter dated 5 September 2000 the Dutch Minister of Environment requested the Netherlands Commission for EIA to advise on the ESIA to be executed for the BTC-project, see Appendix 1 for the request. During the visit to Georgia in May 2001 the Minister of Environment requested the Commission also to advise on the ESIA for the SC-project.

This advice is prepared by a joint Netherlands/Georgian working group of experts of the Netherlands Commission for EIA. The group represents the Commission and comprises expertise in the following disciplines: pipeline engineering, ecology, geo-hydrology, geography, sociology and public participation. For the composition of the working group and the Georgian group of resource persons who provided the working group with site specific information, see Appendix 2. The Dutch experts visited Georgia from 6 November until 14 November 2002 to draft this advice. Two site visits were made to respectively the Borjomi / Bakuriani area (June 2002) and the area crossed by the Central corridor (section from Tskhratskaro pass towards Aspindza town) on 10 November 2002).

1.4 Justification of the approach

The aim of this review is to check whether the ESIA reports contain sufficient information to guarantee the full integration of environmental and social considerations in decision-making. In the event that essential shortcomings are found, the seriousness of this lack of information for decision-making will be assessed and recommendations will be given for gathering supplementary information. An essential shortcoming is a shortcoming in the ESIA that, if not alleviated, will hamper the decision making because it leaves a serious gap in information or it leaves a major uncertainty or unacceptable risk untouched.

For the final review of these ESIA reports the Commission made use of the following guidelines and directives which were mentioned in the respective Host Government Agreements (HGAs) for both projects:

- Environmental standards of the Netherlands and Austria; the Netherlands and Austria are members of the European Union and are obliged to follow the EC directives. Moreover, both countries are bound by the Conventions and Agreements of Ramsar, Bonn and Bern with respect to wildlife and Aarhus with respect to public participation. In addition, for the SC-project is stated that environmental standards with respect to natural gas pipeline projects shall in no event be less than those applicable in the United Kingdom;
- EC directive 85/337/EEC (as amended by EC directive 97/11/EC);
- Guidelines of the World Bank / International Finance Corporation group and the European Bank for Reconstruction and Development;
- Advisory guidelines for environmental impact assessment (first phase) of the Baku-Tbilisi-Ceyhan Main Export oil pipeline project in Georgia pre-

pared by the Netherlands Commission for EIA (8 June 2001) and approved by the Minister of Environment of Georgia (16 May 2002).

In the preparation of the final advisory review the Commission made extensive use of the comments on the draft ESIA reports made by different parties during the disclosure period. Two comments were selected for a comparative study with the BP study because these reports³ did not come to the same conclusions concerning an important issue of the project, the risks of oil spillage and the consequences for the water resources in the Borjomi / Bakuriani area. A comparative analysis was executed by two independent institutes in the Netherlands. The objectives of this study are: (i) to identify the differences and similarities of the conclusions and (ii) to compare the impact analysis in the different conclusions. The reviewers of one of these institutes joined the working group of the Commission for further analysis in Georgia. The conclusions of this comparative study are presented in Appendix 5.

The Commission bases its judgement on the English version of the ESIA reports and Addendum report.

The Commission has also reviewed the draft ESIA reports. These draft ESIA reports were submitted on 28 April 2002 for a disclosure period of 60 days. The Commission visited Georgia from 31 May – 7 June 2002 (including a site visit to Bakuriyani on 1-2 June 2002) and prepared the following advice:

- Advisory review of the draft Environmental and Social Impact Assessment Reports for the Baku – Tbilisi – Ceyhan Oil Pipeline project and the South Caucasus Gas Pipeline in Georgia (19 July 2002).

In this advice the Commission concluded that essential information for well-informed decision making on both projects was missing. To alleviate these shortcomings in the final ESIA report, the Commission made some recommendations to provide more specific information.

1.5 Outline of this advice

In Chapter two, only the main findings and recommendations are listed. In Chapter three of this advice these are elaborated upon and explained in detail.

³ - Lloyd, J.W., 2002, Review of Hydrogeology Pertinent to the River Borjomola Catchments and Gujaretis Tskali Catchments KP175 – KP 192; Report is part of the Addendum report-Appendix 1;
- EMTS and CSD Azur, 2002, Reconnaissance Mission Concerning the Risks of Pollution to the Borjomi Groundwater Sources related to the Construction of the BTC pipeline;
- Scientific Commission of the President of Georgia at Academic Sciences of Georgia, 2002, Assessments and Recommendations in Relation with the Project of Environmental Impact Assessment Documents of TBC Crude Oil Pipeline Project and South Caucasus Pipeline project.

2. MAIN FINDINGS AND RECOMMENDATIONS

2.1 Route selection

In the ESIA report the following four corridors have been assessed: the Eastern corridor, the Central corridor, the Modified Central corridor and the Western corridor. The Modified Central corridor is selected by BP as the preferred corridor. The other corridors have been rejected. This selection is the result of an assessment of main issues on: terrain and geo-hazards; environment; social aspects; security; constructability and reinstatement. The Commission is of the opinion that this assessment is partially incomplete and not transparent. These shortcomings are particularly related to the range of corridors on option and to deficiencies in essential information on security and environmental information.

With respect to the corridors, the Commission concludes that the rejection of the Western corridor and the Eastern corridor is sufficiently justified. However, the Commission concludes that the rejection of the Central corridor crossing the Akhalkalaki district is not sufficiently justified. Furthermore, the Commission concludes that another alternative which is developed by Georgian experts, the Karakia route (which is actually a corridor known as the Karakia route) should have been included in the assessment of the corridors.

If essential but lacking information on security and environmental information on the Borjomi/Bakuriani area were included and valued in a proper way, according to the Commission, another ranking of corridors would have been the result. International standards urge to alleviate these shortcomings before decision making. However, the Commission learned that there is an urgent need for decision making in the short term. As a consequence there is limited time for further investigation. Furthermore, the Commission has come to the conclusion that ranking of the three corridors can be based on expert judgement, information in the ESIA report and field visits. Therefore, the Commission has decided that additional information is not necessary and a rectification of the ranking will suffice in this particular case. The suggested ranking is:

1. Central corridor (eastern section crossing the Akhalkalaki district) in combination with the western section of the Karakia route (first preference);
2. Karakia route (second preference);
3. Modified central corridor (third preference).

Experts of BP and the Georgian resource persons of the Commission have not been able to come to an agreement on the technical feasibility of crossing the Karakia massif. A feasibility study of this section including all opportunities and constraints should therefore be executed in the not too distant future.

The Commission is of the opinion that, in addition to the information in the ESIA report, the modified ranking in this advice together with the additional information to be provided on the feasibility of the Karakia route, should provide sufficient information for decision making on the routing of the pipelines.

After selection of one of the corridors more detailed information for route refinement should be made available in order to set conditions in the license.

2.2 Route refinement for Lake Tsalka and Ktsia Tabatskuri

The Commission is of the opinion that the justification given for ranking the different route alternatives crossing the sensitive areas of Lake Tsalka and Ktsia Tabatskuri is insufficient. The Commission has made an improved ranking of route alternatives for these two areas based upon expert judgement.

2.3 Environmental Management Plan & Monitoring Plan

The Commission observed that the Environmental and Social Management Plan (EMP) and the Monitoring Plan (EP) are lacking. These plans should be elaborated upon and made available to set conditions in the license. The Commission recommends splitting up the EMP in two parts; one part on environmental management and one part on social management.

3. ASSESSMENT OF THE ESIA'S

3.1 Selection of the 10 km corridor

3.1.1. Assessment of the 10 km corridors⁴

Table 1 summarises the results of a comparative assessment of the four distinguished 10 km corridors, see map – Appendix 7. Based upon this comparison the Modified central corridor is assessed by BP as the preferred corridor. The Western corridor, Central corridor and Eastern corridor are assessed as unacceptable and rejected. The Commission observed that one possible feasible alternative, the Karakia corridor, has not been included in the assessment. Some background information on this corridor is provided in box 1. The Karakia corridor is known as Karakia route and hereafter called “the Karakia route”.

The Commission noticed that the assessment of the four corridors is not clear. Information is lacking on the valueing and weighing of the selected criteria. Information on highly valued and environmentally sensitive areas is not included in this assessment. The security risk evaluation is not clear either. It appears that the (significance of) impacts in case of an oil spill has not been considered in this evaluation. Moreover, it is not clear if the attitude of the people in the Akhalkalaki district towards the pipeline has been considered in

⁴ BP informed the Commission that the Georgian authorities have instructed them that the area south of Borjomi district is a no go area for political reasons. Therefore, the Eastern and the Central corridor were rejected and BP did not invest anymore in a more detailed assessment of the Central corridor. The Modified Central corridor was therefore the starting point for BP to select the preferred 500 meter route.

this evaluation. Shortcomings on environment and security risk are further explained respectively in section 3.1.2 and 3.1.3.

Table 1: Summary of constraints and opportunities for the corridor options
(Source: adapted table 3.9 from page 3-21 of the Addendum)

Description	Western Corridor	Central Corridor	Modified Central Corridor	Eastern Corridor	Karakia route **
Total length (km)	279	253	250	213	250-260
Terrain, geo-hazards	X	O	O	PO	O
Environmental *	X	O	O	O	O
Social	X	O	O	O	O
Security *	O	X	O	X	O
Constructibility, rein-statement and long term integrity	X	O	O	PO	?
Overall assessment	X	X	O	X	?

Notes:

PO = Preferred option (where one acceptable option is assessed to be significantly better than other acceptable options)

O = Acceptable option

X = Unacceptable option

* The Commission noticed shortcomings in the assessment of the acceptability of the environmental issues and the security risk for the Modified Central corridor. This observation is explained in section 3.1.2 and 3.1.3.

** The Karakia route was added to this table by the Commission. An explanation is provided in this section.

In table 1 only two options are being presented as a result of the assessment: an option is 'acceptable' or 'unacceptable'⁵. This is rather a black and white presentation of the results and according to the Commission it does not reflect the underlying results of the assessment ranging from significant negative impacts or high risks towards significantly positive impacts or low risks. This subtler distinction between the results should have been provided.

As a consequence of these shortcomings, the selection of the Modified Central corridor as the preferred route and the rejection of the Central corridor have not been justified by BP. If the information on the valuable and sensitive Borjomi/Bakuriani area, the significance of the risks of (man induced) oil spills and the attitude of the population of Akhalkalaki had been seriously considered, the Modified Central corridor could have been rejected as an un-

⁵ An acceptable option is assessed as a preferred option where one acceptable option is significant better than another acceptable option.

acceptable corridor option and the Central corridor could have been assessed as an acceptable corridor option.

The Commission concludes that the rejection of the Eastern corridor and the Western corridor are sufficiently justified for security reasons respectively the crossing of a National Park.

An adequate comparative assessment of the three potential corridors (Central corridor, Modified Central corridor and Karakia route) should be executed and the results should be presented in an Addendum to the ESIA report. This is the procedure that should be followed according to international standards. However, the Commission observed that as a result of the strict planning in the Host Governmental Agreement a decision on the routing should be taken in the short term.

In order to facilitate the decision making process the Commission has made a ranking of the three corridors. This ranking is the result of expert judgement by the Commission and is based on: the information available in the ESIA report, comments of Georgian experts and the Academy of Science, expert meetings and field visits to the Borjomi / Bakuriani area and Akhalkalaki district and Aspindza district (the area crossed by the Central corridor and the Karakia route (see map – Appendix 8).

The proposed ranking of the alternative corridors is:

1. Central corridor (east section – crossing the Akhalkalaki district) in combination with the Karakia route (west section).
2. Karakia route (east section) in combination with the Central corridor (west section). It must be stated that it is assumed that the crossing of the Karakia massif is technically feasible;
3. Modified Central corridor.

Supplemented with the necessary specific technical information on the Karakia route, a selection of one of these corridors can be made. If the Central corridor, the Karakia route or a combination of these routes will be selected, additional information will be necessary for route refinement.

The Commission recommends:

- *An assessment of the constructability of the route crossing the Karakia massif should get the highest priority. All consequences / impacts of crossing this massif should be presented. A specified time frame should be made in case the application of special techniques such as tunneling is necessary. If the crossing of this massif is not constructable; it should be clearly justified.*
- *If the Central corridor or the Karakia route will be selected, additional information on route refinement needs to be gathered and assessed. This information can be made available as part of the license.*

Box 1: Information on the Karakia route

Georgian experts, co-ordinated by the US AID Contractor PA Consulting have developed an alternative route, the Karakia route (see map Appendix 8). This route has been briefly described and assessed in the ESIA report. This route avoids the following two sensitive areas:

- The Borjomi / Bakuriani area is almost completely avoided because this corridor follows a route south of the Modified Central corridor.
- The Akhalkalaki district is avoided because this corridor follows a route north of this district.

The Karakia route does not cross areas, which are highly valued from an environmental perspective. There are no areas to be crossed that are protected by Georgian law. The Tetrobi Managed Reserve as well as the proposed National Park of Erusheti will not be crossed. A preliminary technical assessment of this route showed that there is one section of the route which is undoubtedly difficult to cross. This is a section north of the Akhalkalaki district, the massif of Karakia. This is a so-called category V section ("no go") limited to 7-8 km, because of (i) the complicated relief (ii) reinstatement constraints and (iii) safety of the labourers during construction. To cross this section there are two options:

- A tunnel (length approximately 3.5 km) through the southern slope of Trialeti range or;
- A detour to the north (Route along the northern slope of Trialeti range – from the Eastern ridge of mountain Karakai to the western slope of mountain Sanislo).

After this section the route proceeds to the village of Ota located in Aspindza district, passes Aspindza town, crosses the river Mtkvari and goes through the relatively simple area, from a technical point of view, until the boarder of Turkey. In the route from Ota towards the Turkish border two more category V sections have to be crossed: (i) the landslide complex located west of the river Mtkvari and (ii) the potential landslide complex located south of Akhaltsikhe. However, these problems can be solved technically. The Karakia route can be divided into two sections, a section east of Aspindza town and a section west of this town.

Based upon expert judgement the Karakia route has been assessed. The findings of this assessment are presented in table 1.

3.1.2 Environment - The Borjomi / Bakuriani area

The Commission concludes that the assessment and the acceptability of the environmental impacts⁶ are insufficiently justified for the Modified Central corridor, however they are sufficient for the other corridors (see table 1). The Commission is of the opinion that the value of flora and fauna, the landscape and the value and legal protection of (ground) water resources in the Borjomi / Bakuriani area are not adequately considered in the Modified Central corridor assessment. It is not clear how these values have been translated into the assessment of the four distinguished environmental criteria. Consequently, the evaluation of the acceptability of the Modified Central corridor is unclear. The value and the legal protection of the environmental issues and the consequences for the ranking of the corridors will be explained in the following sections.

Ecology and landscape

The ecological and landscape value of this area is assessed as high and sensitive to the impacts of pipeline construction. The area has a protected status according to Georgian law but no IUCN equivalent categorisation (see Appendix 3). The Borjomi / Bakuriani area is part of the Support zone of the Borjomi Kharagauli National Park and located in the southern part of the Borjomi district. In particular the following areas would be crossed: Tskhratskaro Pass, Tsikhisjvari and Kodiana Pass. Moreover, the nature and landscape is highly valued by people and tourists who visit the area in the summer and winter and therefore this is an important source of income for the population of this area.

Geohydrology and water resources

The area is well known through exploitation of groundwater resources by the Georgian Glass and Mineral Water Company (GGMW). The water they exploit and export is internationally known as Borjomi mineral spring water. These ground water resources are protected by law, see box 2 and Appendix 3. The Commission has made a review of the oil spill pollution risk of the water resources in this area and concluded that:

- The following resources are vulnerable to oil spill pollution: surface water rivers; groundwater in the river valley alluvium; groundwater in Volcano-clastic formation;
- Potential risk exists on the pollution of groundwater springs discharged from Quaternary lava. The hydrogeological information is not sufficient to make a proper assessment of the risks;
- The risk of pollution of Borjomi mineral groundwater could be avoided by maintaining the present production method of artesian flowing.

For a more detailed assessment of the vulnerability of the water resources to oil spill pollution see Appendix 5.

⁶ The following four main criteria were distinguished to enable assessment of environmental impacts: nature conservation, hydrogeology, landscape and geomorphology.

The Commission is of the opinion that the pre-cautionary principle should be applied to the Borjomi / Bakuriani area because: (i) these resources do have a considerable ecological as well as economic value; (ii) the ground water resources are protected; (iii) the surface water rivers, groundwater in the river valley alluvium, groundwater in Volcano-clastic formation are most vulnerable to oil spill pollution and (iii) for the ground water springs there is a potential risk of oil spill pollution.

Application of the precautionary principle means that the following procedure should be followed⁷:

- first step: Feasible route alternatives should be elaborated to avoid the threat of pollution of these sensitive environmental resources;
- second step: If there are feasible route alternatives, the route alternative potentially affecting the sensitive environmental resources should be rejected. If there are no feasible route alternatives, this should be justified. Then a study should be executed towards effective mitigating measures.
- third step: It should become clear what mitigating measures will be applied. Application of these measures should be translated into the license.

The Commission applied the first step of the precautionary principle and made a comparative assessment and ranking of the Central corridor, the Karakia corridor and the Modified Central corridor. Based upon the above mentioned values the Commission gave the Modified Central corridor the third preference.

Box 2: Protection of the ground water resources

The ground water resources are protected under "the Law on sanitary protection zones of resorts and resort areas". This legislation forms the basic framework. It states clearly that any activity is prohibited if the available mineral resources will be endangered. However, in cases of overriding interest, the government of Georgia is the dispensing authority, but only if the Government is fully compensated. In the case of the Borjomi groundwater resources, this means compensation of the total value of the resources and loss of income. This law is effectuated by way of amendments, in this case the "Law regarding zones and resorts". The Borjomi area is protected under this law by a declaration entitled "Resort Borjomi sanitary protection zones: project. Volume III; graphical annex (Tbilisi, 2000). The protection zones are indicated on a map, but the motivation is unclear. According to this declaration, the pipeline transect crosses Protection area 3 and the northern part of the 10 km zone also crosses the even more stringent Protection area 2. Following the law, activities can only be permitted if damage to the mineral resource can be excluded (chapter 5, paragraph 38). In case no viable alternatives exist, dispensation is required from government under the conditions of a financial deposit in the order of the value of the resource and if an impact can be excluded (paragraph 39a-b).

⁷ This is the Dutch procedure, in case the precautionary principle is applied.

3.1.3 Security risk

In table 1 the results of the security risk assessment for the corridors is presented. In the Addendum it is concluded by BP that:

- the Western corridor and the Modified Central corridor are acceptable;
- the Central corridor and the Eastern corridor are unacceptable.

In order to come to this conclusion the following methodology has been applied. The security risk is evaluated for each of the administrative districts crossed by the four corridors. Eight criteria were put in place to assess the potential threats⁸. These threats were assessed in terms of impact, probability, risk and manageability. This resulted in a security risk index for each of the four main corridors. On the basis of this index the Eastern and the Central corridor were rejected.

The Commission would like to make the following comments with respect to the security risk:

- The evaluation of the potential threats is not clear because important information is lacking. Therefore the security risk can not be reviewed by the Commission. Moreover, it is not clear how the security risk for the different districts has been translated to an overall security risk index for each corridor. The Commission applies the international agreed definition of risk: "frequency multiplied by impact". As far as can be assessed the security risk index is related to the frequency and not to the impacts.
- Each threat is different, depending on the period, the type and the significance of the impacts. Risks of kidnapping and criminality are more probable during the phase of construction than during the phase of operation. Some of the threats, such as civil unrest and separatism, might have an impact on the (political / economic) control of the pipeline. Whilst sabotage and terrorism might cause oil spills. The Commission is not in the position to assess all potential threats. She focusses on the potential impacts related to oil spills.
- The Commission is aware that the (withdrawal of the) Russian Federation military bases, located in Akhalkalaki district, is considered a risk factor for a limited period of time. The Commission is not in the position and does not have the knowledge to judge this risk factor, neither related direct and indirect threats such as military riots, external influences or separatism and its consequences. This applies also to the risks and consequences of terrorism.
- The Commission is in the position to assess the significance of the impacts of oil spills caused by some of the potential threats. In general, oil spills are caused by: technical defecits, geo-hazards or men induced causes such as sabotage and terrorism. Concerning the men induced causes of

⁸ Potential threats: terrorism, sabotage, military riot, seperatism, civil unrest, external influence, kidnapping, criminality.

oil spills it is known that sabotage (theft of oil by people along the pipeline) is the most important cause of oil spills in the world. The primary remedy is to raise ownership of the people along the pipeline by adequate compensation measures and development projects. The Commission raises the question if the significance of the impacts of oil spills due to sabotage or terrorism is determined for the different districts as part of the evaluation of the security risk. The significance of the effects of oil spills should be linked to the sensitivity of the area⁹.

- If the above mentioned information on oil spills was taken into consideration in the assessment of the security risk, the security index for the Modified Central corridor would most likely be assessed higher than the present index (figure 5.1 in the ESIA) because there is a severe risk of pollution of the (ground) water resources of the Borjomi / Bakuriani area. The security index for the Central corridor will most likely not change because the area is less sensitive to the impacts of oil spills in comparison with the area crossed by the Modified Central corridor. For the Karakia route no security index figure has been presented in the ESIA report. However the Commission assessed the security risk of the Karakia lower than the risk of the Modified Central corridor and more or less equal to the risk of the Central corridor.

In addition, the Commission gives an explanation of the potential threats and opportunities of the pipeline for one particular area, because it seems to play an important role in decision making on the routing; the Akhalkalaki district. It was stated by some Government officials that the inhabitants of the Akhalkalaki district are against the pipeline and therefore cause an additional threat to the security of the pipeline (oral communication). Other Government officials and Georgian experts stated the opposite; the pipeline could offer an opportunity to decrease the isolation and offer opportunities for development of the district (oral communication). To verify these statements the Commission has visited this district and interviewed men, women and youngsters in the following villages: Ura, Gado, Thurtskhi, Kotelia. All interviewed people were informed about the pipeline and stated that they would like to benefit from the pipeline as much as possible. They were aware of the fact that labour opportunities will only be temporary. The interviewed people did not express their opposition against the construction of the pipeline through Georgia in general or through the Akhalkalaki district in particular. Neither the attitude of the people in this district towards the pipeline nor the opportunities for development of the area have been taken into consideration in the ESIA report.

3.2 Route alternatives for Ktsia Tabatskuri and Lake Tsalka

In this section the Commission will focus on an assessment of those route alternatives crossing two sensitive areas along the Modified central corridor

⁹ The Borjomi district is for example much more sensitive to oil spills than the Akhalkalaki district and moreover it is a national symbol of Georgia.

(the preferred route in the ESIA report): Ktsia Tabatskuri area and Lake Tsalka.

3.2.1 Ktsia Tabatskuri area

Ktsia Tabatskuri's sensitive area consists of the Tabatskuri Lake and its surroundings, the Narianis Veli Wetland and the Ktsia River Valley north of the lake. The area is highly valued for the presence of protected and endangered (migratory) birds. The area is protected as a Managed Reserve (equivalent to IUCN category IV).

In the ESIA report a total of six route alternatives have been described which cross and / or avoid the sensitive areas of Ktsia Tabatskuri. Four route alternatives option A, B, C and D cross the Ktsia Tabatskuri Managed reserve (see map –Appendix 9). These are described, assessed, valued and ranked in section 3.5.7. Two other alternative routes which pass to the north of the Ktsia Tabatskuri Managed Reserve have been described and assessed briefly in section 3.5.8 but were rejected (these routes are not shown on the map in Appendix 9). The Commission is of the opinion that the rejection is justified sufficiently (it crosses an existing ground water feeding zone).

Due to the values and the legal status of the Ktsia Tabatskuri area the Commission is of the opinion that the precautionary principle should be applied (see section 3.1.2 for an explanation). This means that a route south of the Ktsia Tabatskuri Managed Reserve should be assessed in order to avoid this sensitive area. It should be justified if this route is not feasible. It is stated in the ESIA report that this route has not been considered, because a significant part of this route passes through the Akhalkalaki district and was rejected for security reasons (route is not shown on the map).

Out of the four options (A, B, C and D) option D is considered the preferred route. With regard to these four options the Commission agrees with the justification of the western part of option D (the section of option D which runs from the northern tip of the Lake Tabatskuri to the south west side of the lake). Concerning the eastern part of option D, this crosses an area free of infrastructure and it passes the edge of the wetland. An alternative option, the eastern part of option A runs parallel to an existing (dirt)road and does not cross the wetland. The eastern section of option D causes more negative ecological impacts than the eastern section of option A. Therefore the eastern section of A is preferred above the eastern section of D.

Ranking of alternatives by the Commission from an ecological point of view:

1. A route south of the Ktsia Tabatskuri Managed Reserve because it does not cross highly valued areas. This route has not been selected and assessed in the ESIA report (first preference). This preference is made on basis of expert judgement.
2. A combination of option A's eastern part until the northern tip of the lake – followed by option D from the northern tip of the lake the south-west of the lake (second preference).
3. Option D is preferred by BP and is considered as the third preferred alternative from an ecological point of view.

3.2.2 Tsalka reservoir

Lake Tsalka is a man made reservoir. The water is of high quality and used for different purposes. From an ecological point of view the reservoir is mainly valued because it is used by migratory water birds, as stated in the ESIA report. The area north of the lake is an infiltration area and large amounts of ground water are stored in natural aquifers which occur relatively close to the surface. This ground water is assessed by the resource persons of the Commission as a valuable resource for future use¹⁰. The reservoir and the groundwater resources in the areas to the north are protected by the Law on sanitary protection zones, see Appendix 3.

In the ESIA report (section 3.5.6) three options A, B and C have been described and assessed (see map Appendix 10). The value and the legal protection of the ground water resources around the Tsalka reservoir have not been considered in the assessment of the constraints for these three options. This is an essential shortcoming.

Other routes more to the north of the reservoir (not shown on the map) were rejected because of a number of river gorge crossings, the increased severity of rocky terrain and multiple crossings of streams feeding the Tsalka reservoir. The Commission is of the opinion that the rejection of routes crossing this sensitive area is sufficiently justified.

A route south of the lake avoids the sensitive ground water resources. However, it is stated in the ESIA report that this route is discounted because of a very severe gorge crossing of the Khrami river and the increased social impact, routing the pipeline in close proximity to the inhabited area (route not shown on the map).

Due to the value and the legal status of the (ground) water resources of the reservoir and its surrounding area the Commission is of the opinion that the precautionary principle should be applied (see section 3.1.2 for an explanation). This means that a route south of the Tsalka reservoir should be assessed. If this route is not feasible, the reason why should be justified. The Commission does not see an unacceptable constraint in the pipeline crossing close to the settlements along the lake. The technical feasibility of crossing the Khrami river has not been assessed by the Commission.

Recommendation:

A route south of the Tsalka reservoir should be assessed and information should be provided with regard to the opportunities and constraints of the crossing of the Khrami River.

¹⁰ Use was made of hydrogeology maps prepared by GIOC.

3.3 Environmental Management (Plan)

3.3.1 Project design

The project design document represents the conceptual design and forms a good basis for Front End Engineering and Design (FEED). This design should consist of two sections: mechanical engineering design and civil engineering design. The latter section is missing and therefore the project design document is incomplete. This is an important lack of information because civil engineering design of the works together with mitigating measures determine for example how roads should be improved and the landscape restored.

Recommendations:

Civil engineering design of works and mitigating measures should be provided and translated in the license.

3.3.2 Road plan

In the ESIA report is stated that construction roads will be removed after reinstatement. However, during the visit of the Commission to Georgia in November 2002 the following new, but contradictory information was provided by oral communication. BP stated that they will consider to maintain a number of the construction roads in the Borjomi area, because these roads offer good opportunities for quick response in case of an oil spill. The National security council stated that permanent roads will be necessary along the pipeline in order to facilitate effective security control. These statements are in conflict with the information provided by the ESIA report.

New roads might cause direct and indirect negative impacts such as: increase of illegal logging, poaching, fragmentation of habitats, soil- and water erosion. On the other hand new roads might have positive impacts as well. Information on these proposed roads is important because it will definitely have consequences for the route selection. Starting point for the main part of the pipeline is that the land will be reinstated as before construction. When the reinstatement will be executed properly, the consequences of the construction will not be visible anymore, all that will remain are the roads.

Recommendation:

A road plan should be made available and become part of the Environmental Management Plan (EMP). In case of maintenance of newly constructed roads during the post-construction phase (not yet mentioned in the ESIA report) it should be justified whether a new evaluation and ranking of the assessed route alternatives is necessary or not.

3.3.3 Reinstatement plan

The reinstatement plan is incomplete; it only covers the mechanical design and engineering¹¹. A civil engineering plan with concrete measures is missing. As a consequence it is not clear which measures will be applied to avoid or mitigate negative environmental impacts during construction and operation. It is also unclear how it will be monitored.

Recommendation:

The reinstatement plan should contain concrete measures and should be part of the EMP. A section on civil engineering measures to mitigate the negative environmental impacts should be part of this plan.

3.3.4 Environmental requirements

A number of key decisions and responsibilities have not been clearly addressed in the ESIA's and are shifted towards the execution phase and put in the hand of the regulating authorities or left to the responsibility of contractors and subcontractors. For instance, reinstatement and maintenance of the right of way (ROW) by two contractors for the SCP and BTC may result in conflicts, to be solved by BP.

To the opinion of the Commission, the EMP should contain essential information for constructors and authorities to base their environmental requirements on and therefore should also include all the constructional environmental documentation produced by BP or its (sub)contractors as stated in the tender documentation. In this way the BP corporate policies become clear and give regulators a solid and agreed basis for permit conditions.

¹¹ Examples of issues to be addressed in a reinstatement plan. Topsoil removal and storage are common practice in Europe. In areas with natural and valuable vegetation, also the sedge is removed and replaced in order to facilitate re-growth of the natural vegetation. Also in agriculture land, it is important that the soil profile is restored. Tilling and seeding is needed where the corridor is crossing the public roads and places that are sensitive to erosion. It is mandatory that erosion prone transects are monitored until the vegetation is completely restored. It is common practice in Europe that the recovery of less common natural vegetation is monitored, especially where rare and endangered plant species are concerned. A monitoring plan for the recovery of vegetation (and fauna) is lacking in the ESIA report. In agricultural fields, it is common practice to resume cropping and harvesting. It is remarked, however, that occasional crop damage is observed due to the higher temperature of the soil on top and around the pipeline (drought damage). This phenomenon has not been described in the ESIA report, nor the way this damage is assessed and will be compensated. The ESIA report does not describe how areas of natural importance will be restored. To the understanding of the Commission, activities will be planned for the summer season. This will leave only a limited period between the end of work and the winter. As a consequence, a band of highly erosive soils will be left uncovered during winter and spring. It is also not indicated how long it is expected that re-vegetation will take.

Recommendation:

In the opinion of the Commission it is essential that all key decisions will be addressed in the EMP. This includes a clear description of the responsibilities and sound environmental conditions for civil engineering. The conceptual technical engineering report from BP can be taken as an example of a clear and well-defined measurable scope.

3.4 Social Management Plan

The Commission is of the opinion that adequate communication and compensation of the people living along the pipelines is of the utmost importance to raise ownership¹². This is the best guarantee to minimise threats for the pipeline, such as sabotage. Small scale sabotage is world wide the most important risk for oil spillage of on-shore pipelines. Guarantees for raising ownership are: maximum use of Georgian resources, adequate compensation for affected individuals and communities, and timely and proper communication with all affected people and organisations in the country.

3.4.1 Georgian resources

The pipelines offer different kinds of opportunities for Georgia. Many people are looking forward to employment. However, the Commission warns for over-expectation. Constructing a pipeline is a temporary and specialised activity. It will require heavy equipment and skilled workers. With respect to Georgian personnel it is stated that in the BTC-project ESIA: (i) BTC Co is committed to maximize employment opportunities for local communities; (ii) it is estimated that in total 2,500 people will be employed during the peak construction period which will last approximately 12 months. Of this labour force 50 – 80 % will be Georgian nationals. In the SC-project the same range of 50 - 80% is mentioned.

The estimated number of 2,500 employed people during construction is in accordance with experiences of the Commission with other pipeline projects. However, the Commission is of the opinion that it would be realistic and feasible that during construction of the oil and gas pipeline 80% of the total labour will be provided by Georgian nationals. It will be possible to train people for a range of activities and limit the use of expatriates as specialist staff. Therefore, training programmes should be formulated and timely conducted in order to enhance the necessary skills. The process of labour recruitment should be monitored.

The Commission also observed that most of the available local transport and road construction equipment can not be used because it does not meet the standards mentioned in the ESIA (such as the 45 dBA noise restrictions for transport vehicles) or seems not to be available.

¹² Raising of ownership in this context means to increase the responsibility for the pipeline of the people living along the pipeline. As a consequence the chance for sabotage by these people is expected to decrease.

Recommendations:

- *The Commission recommends that the policy statement of BP to make maximum use of local labour is elaborated and guaranteed for a contribution of 80% of the total labour force provided by Georgian nationals. Objectives and criteria for workers and equipment should be described and it should be explained in the villages along the pipeline how local people can benefit from the project. BP should play an important role in recruiting workers.*
- *BP and the Georgian government could jointly investigate the possibility to stimulate local investment in suitable equipment with the potential it could be used for future road maintenance and as part of the emergency response plan.*

3.4.2 Individual and land compensation

In the ESIA report it is stated that fair and transparent procedures for valuation and compensation for temporary use and permanent expropriation of land will be developed. The completed land parcel identification surveys will be of great help to identify the registered land owners and all registered land users.

Owners or tenants have to be compensated for: loss of lands; crops and crop damages by extensive trench drainage; crop depression after construction; access on their lands by the construction crew; construction damages outside the regular ROW; road and fence repair; cut of lands by the construction activities; drinking water for cattle when construction activities cut off the source of water. Third parties have to be compensated when adjacent structures are impaired by lowering of the ground water table caused by the construction works¹³.

Recommendation:

The Commission is of the opinion that the procedure for valuation and compensation of individuals and land should be available as part of the Social Management Plan (SMP)

3.4.3 Community investment programme

BP has provided an adequate and well designed community investment programme (CIP). One question remains: How does BP implement and achieve the (long term) objectives including a calendar time framework?

¹³ In the Netherlands, compensation for land owners is regulated in the Mining Law (article 33 and 34). The land lease is determined in this law as 2 times the net result of the (agricultural) production. This rule applies to drilling and production locations, but not to pipelines. It is common practice to refund about 2,5 times the net income. Where pipelines are concerned, the energy production or transportation company becomes (co-)owner for a percentage of the land. Additionally, the original owner is compensated for the temporary loss of production (see the above rule) and land use is resumed by the farmer. In that case the farmer also will monitor the pipeline for leakage, since it is in his best interest.

The Community Investment Programme offers good opportunities to meet needs of the communities. However, financial guarantees and sufficient information for long term projects do not yet exist (operation time of the pipeline is estimated to be about 40 years). This information however, should have been included in the ESIA report.

Recommendation:

Information on long term projects as part of the community investment programme and funding should be included in the SMP.

3.4.4 Additional compensation and budget

Apart from individual and community compensation it is common practice that for example a (non-budgetary) environmental fund could be established. It would not be necessary to link activities paid by this fund directly to the project area. It is stated by BP that a Regional programme will be provided for the three host countries containing activities for this type of compensation¹⁴.

Instead of a fixed budget for individual compensation and for the CIP a flexible fund should be available according to the needs, respectively requirements of individuals and communities.

Recommendations:

- *An overview should be presented of compensatory measures and activities for communities along the pipeline and beneficiaries at regional and national level. The reports which were mentioned previously, including the CIP, should become part of the SMP.*
- *Information on individual and community compensation and the CIP needs to actively get explained in detail to the local population. Especially what is meant by the term community.*

3.5 Monitoring Plan

3.5.1 Operation and maintenance

With respect to the operational phase BP has to initiate a formal training programme for maintenance and operation personnel. Necessary foreign specialist staff shall have Georgian counterparts who will take over their duties in the course of time. Subcontractors for regular overhaul and repair work should be employed and trained.

¹⁴ An example of community compensation; In Nigeria Shell provides free electricity to the local population in order to avoid sabotage by sharing resources.

3.5.2 Monitoring

Permit conditions include specific monitoring demands to be fulfilled by the permit owner. Apart from these specific measurements, the authorities may make use of general monitoring results from national and local programmes. In this way the authority assures itself of the proper additional data to evaluate the predictions, made in the ESIA. It is common practice that an EIS contains a monitoring plan with clear objectives in order to facilitate the process. It also contains a paragraph in which the gaps in knowledge are addressed. Both are helpful to the authorities to set realistic targets and permit conditions. For some projects, an independent steering committee is appointed in order to direct the monitoring, qualify the results and guarantee independence. In several occasions the results were presented in the form of a national symposium.

In order to ensure data becoming available, the regulating authority acts as follows:

- strict technical permit conditions and control by State supervision of the Mines (Ministry of Economic Affairs) and the State inspection Environmental Hygiene (Ministry of Environment);
- qualification according to international standards (for instance ISO14001) in combination with a directional permit;
- specific permit conditions for environmental monitoring (for instance recovery of flora; breeding success prior to and after construction).

A general observation is that all studies have the nature of an inventory and contain extensive lists of potential hazards. BP invested heavily in scientific discipline. It is the experience of the Commission however, that most scientific disciplines have no knowledge of pipeline construction systems and operations and are therefore not capable in defining effective mitigation measures. The Commission therefore supports BP in investing in interdisciplinary capacity building in Georgia. In this way existing local scientific and social information can be directed to find the proper civil engineering solutions.

Recommendation:

A monitoring plan should be prepared shortly in order to set conditions in the license. The opportunity to utilize the local population in co-operation with non-governmental organisations in the monitoring phase should be described.

