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

15 October 2003

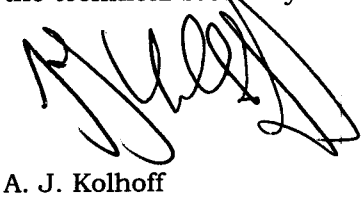
1120-639

ISBN 90-421-1237-9
Utrecht, Commissie voor de milieueffectrapportage

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

Advice submitted to the Minister of Environment of Georgia, 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, 15 October 2003

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1. INTRODUCTION

1.1 Request for advice

This advice has been prepared by the Netherlands Commission for Environmental Impact Assessment (hereafter called 'the Commission')[1] at the request of the Georgian environment minister. It presents the findings of our review of the supplementary information to the final Environmental and Social Impact Assessment (the ESIA report) of the Baku–Tbilisi–Ceyhan oil pipeline project (BTC project) and the South Caucasus gas pipeline project (SC project). The supplementary information to the final ESIA report[2] which has been reviewed by the Commission is known as the Supplementary Information Lenders Pack (SLIP) Baku-Tbilisi-Ceyhan oil pipeline project, April 2003. This information pack contains a number of reports.

The proponent of the BTC project is a consortium known as the Baku-Tbilisi-Ceyhan Pipeline Company (BTC Co.), which is led 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 was prepared by BP.

The proponent of the SC project are the following companies: BP, Statoil, TPAO, Luk-Agip NV, TotalFinaElf, OIEC and the State Oil company of the Azerbaijan Republic (SOCAR). BP is leading the SC project design phase.

Georgian law requires that proposals for the construction of a pipeline are first subjected to an Environmental Impact Assessment (EIA). An approved ESIA study will form the basis for the environmental licence for the BTC project and the South Caucasus gas pipeline project (SC project), to be issued by the Ministry of Environment.

This advice is the result of cooperation between the Government of Georgia and the Government of the Netherlands. The Georgian environment minister asked the Dutch environment minister for assistance with conducting an EIA for the BTC project and the SC project. In a letter dated 5 September 2000 the Dutch environment minister asked the Netherlands Commission for EIA to provide advice on the ESIA for the BTC project (see Appendix 1). During the visit to Georgia in May 2001 the Georgian environment minister requested the Commission to provide advice on the ESIA for the SC project as well. Appendix 2 contains a brief description of the BTC project and the SC project.

This advice has been prepared by a joint Netherlands/Georgian group of experts appointed by the Commission, see Appendix 2 for further information. For the preparation of this advice no additional field visits were made.

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[1] The Netherlands Commission for Environmental Impact Assessment is an independent advisory body. It has a statutory basis and was established in 1985. For more information see our website: www.eia.nl

[2] The BTC project and SC project documentation, including the ESIA reports, the Addendum Report and the Supplementary Lenders Information Pack can be found at: www.caspiandevelopmentandexport.com

1.2 Justification of the approach

This is the fourth advisory report prepared by the Commission on the BTC project and the SC project.[3] In its advice of 22 November 2002 the Commission concluded that information essential for coming to a well-informed decision on both projects was missing. To rectify these shortcomings the Commission recommended that more specific supplementary information be provided. The main recommendations of the advisory review dated 22 November 2002 are:

- *An assessment of the feasibility of constructing the route across the Karakia massif should be given the highest priority and all the consequences and impacts of crossing this massif should be presented. A time frame should be specified for the use of special techniques, such as tunnelling, if these prove necessary. If it is not possible to build the pipeline across the Karakia massif, this should be clearly justified.*
- *If either the central corridor or the Karakia route is selected, additional information on route refinement needs to be gathered and assessed. This information can be made available as part of the licence.*
- *A route south of the Tsalka reservoir should be assessed and information provided on the opportunities for crossing of the Khrami River and any constraints involved.*
- *The environmental and social management plan and the monitoring plan should be elaborated and made available for use when drawing up conditions to be included in the licence.*

On 2 December 2002 the Georgian environment minister signed the environmental licence for the pipeline projects and the document 'Continuing activities under the environmental permit for the BTC ESIA'. This latter document lists 13 conditions which have to be fulfilled by BTC Co. In its review, the Commission focuses on those conditions and issues that have been identified and addressed in the advisory review dated 22 November 2002. The aim of this review is to check whether the SLIP and the ESIA reports contain sufficient information to meet those conditions. The reference framework used for the review is set out in Appendix 3.

1.3 Outline of this advice

Chapter 2 lists the main findings and recommendations. The reasoning behind these is set out in Chapter 3.

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[3] The following three advisory reports have already been submitted:
- Advisory guidelines for the environmental impact assessment (first phase) of the Baku–Tbilisi–Ceyhan Main Export oil pipeline project in Georgia, prepared by the Netherlands Commission for EIA (8 June 2001) and approved by the Georgian environment minister (16 May 2002).
- 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).
- 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).

2. MAIN CONCLUSIONS AND RECOMMENDATIONS

2.1 Route selection

The environment minister has requested BP to study alternative routes, including a tunnel[4]. BP has provided additional information on those routes in a Routing Report, which is part of the SLIP. Based upon this information and expert judgement the Commission has assessed these routes.

Alternative routes for Tskhratskaro and Kodiana pass section

The Commission concludes that:

- it is technically feasible to construct the proposed two pipelines along the following two routes: (i) the Karakia ridge route and (ii) the Karakai route on the southern flanks of the Karakia massif, see map 1;

- it is technically feasible to construct the Karakia tunnel avoiding overland crossing of the Karakia massif.[5] The total time required to construct this tunnel is approximately two and half years. Given this time frame, the construction of a tunnel still fits into the overall planning of the project.

The additional information states that for reasons of political security it is undesirable that the pipeline crosses the Akhalkalaki district. The Commission is not in a position to assess the geopolitical security of the two Karakia routes, the Central corridor and the Karakia tunnel that crosses this district.

Alternative route for the Lake Tsalka area

The Commission concludes that a route south of Lake Tsalka has not been assessed in the Routing Report.[6]

2.2 Environmental and social management and monitoring

The Commission concludes that:

- all essential information required for adequate management of the environmental and social aspects and for the monitoring of the BTC project and SC project during the construction phase is available and meets international standards;

- no government authority is responsible for monitoring the social issues;

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[4] The environment minister of Georgia requested to study alternative routes in the following document:: "'Continuing activities under the environmental permit for the BTC ESIA, 2 December 2003".

[5] A tunnelling feasibility study has been carried out and the findings are presented in the Routing Report, reproduced in Appendix A2.

[6] The Commission's advice dated 22 November 2003 recommends assessing an alternative route south of the Tsalka reservoir, which crosses the Akhalkalakhi district.

- the Community Investment Plan (CIP) is well designed. However, the implementation of the plan is limited to the construction phase.

The Commission recommends:

- *that a government minister be given political responsibility for monitoring the social issues for the two pipeline projects, for implementing the related compensatory measures and for the CIP;*

- *that the information on monitoring, presently available in ESIA, SLIP and Contractor control plans, be presented in a more structured and accessible report, one for the environment minister and the other for a government authority responsible for social issues, to assist them with implementing their monitoring tasks;*

- *to ensure the support of the people living along the pipeline, that the CIP be continued throughout the operational phase and that sufficient funding is secured for implementation;*

- *local government has to become involved in the CIP to ensure the durability of the objectives of the programme.*

3. EXPLANATION TO THE REVIEW FINDINGS

3.1 Route selection

3.1.1 Introduction

The newly prepared Routing Report[7] provides a complete overview of all the route alternatives studied at the three identified levels of route selection; a 10 km corridor, a 500 metre corridor and a 100 metre corridor.

In addition to the ESIA report (Draft Report 2002 and Addendum Report 2002) the following new information has been provided:

- Additional information on security in the Central corridor
- Descriptions and assessments of two new route alternatives and a tunnel as an option for a section of these alternatives:
  - the Karakia ridge route;
  - the Karakia southern flank route;
  - the Karakia tunnel; For one section of the two new Karakia route alternatives the option of a tunnel is assessed. This is an alternative option for the overland crossing of the Karakia massif which is located in the Akhalkalaki district.
- Descriptions and assessments of new route alternatives for crossing the Lake Tsalka area.

An explanation to the conclusions presented in chapter 2 is presented here.

3.1.2 Alternative routes for the Tskhratskaro and Kodiana pass section

The Commission notes that a transparent comparative assessment of all potential environmental risks associated with both the new and the previously assessed alternative corridors through the Tskhratskaro and Kodiana pass section has not been provided. This comparison is needed for a transparent justification of the preferred route.

Central corridor

The Commission agrees with the following conclusion in the Routing Report, which is in line with the ranking of alternatives made by the Commission in its advice submitted in November 2002:

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[7] This Pipeline Routing Report (Georgia, April 2003) is part of the Supplementary Lenders Information Pack.

'Of the three routes assessed in this report, the Central corridor would be the preferred route for construction of two large diameter pipelines'.

However, the Central corridor is considered unfeasible because of (geopolitical) security issues. The BTC Co. refers to a letter from the president of Georgia to the presidents of the World Bank and the EBRD (Appendix 3 of the Routing Report, April 2003), in which he states:

'We are also unwavering in our commitment to the selected route. Based on the advice of the Georgian government and its international experts, the pipeline was not routed through the Akhalkalaki District due to security risks imposed by the presence of the Russian military base'.

The Commission is not in a position to assess geopolitical security.

The Karakia ridge route and Karakia southern flank route

The two new alternative routes described and assessed in the Routing Report focus on the section of the route which is known as the Tskhratskaro–Kodiana pass section: the Karakia ridge route and the Karakia southern flank route.

The report contains an extensive description and assessment of these two alternatives, together with photomontages of the situation before construction, during construction and after construction. BTC Co. concluded that neither of these two routes is feasible. The two primary routing constraints in this region are related to terrain and geopolitical security.

Box 1 contains additional information on pipeline construction in mountainous terrain. This information, which is not available in the ESIA and the Routing Report, is provided by the Commission because it is needed to understand the justification of the Commission's conclusions regarding route selection.

Geopolitical security

The report states that the new alternative routes will cross the Akhalkalaki district over a length of 4 km (Karakia southern flank route) and 1.5 km (Karakia ridge route) and that these routes are therefore undesirable for reasons of geopolitical security. As stated above, the Commission is not able to assess geopolitical security. However, the Commission notes that a transparent comparative assessment of risks for these two alternative routes and the other alternatives considered has not been provided.

Terrain

The Commission agrees with the assessment findings in the report, which states that severe terrain constraints have to be solved to cross the Karakia ridge or the southern flanks of the Karakia mountain range. However, the Commission does not agree with the following conclusion in the Routing Report:

'Construction of two large diameter pipelines across this terrain would be virtually impossible.'

The Commission notes that the text and photographs in the Routing Report that form the justification for this conclusion are incorrect and incomplete.

Some examples in support of this observation:

- The assessment gives considerable weight to the difficulties involved in reinstating the area. But reinstatement in mountainous areas with bare rock is always difficult or nearly impossible, and so these constraints are not unique to this section in Georgia. A more balanced assessment of these constraints would have been more realistic.

- It is stated that blasting and ridge widening may cause safety-related risks and that these risks are unacceptable. There is no mention of a feasible alternative technique for large-scale blasting: fragmentation blasting. This technique is applied all over the world and it significantly reduces safety risks.

- The photographs presented in the Routing Report do not provide a realistic image of the post-construction situation. Construction of the pipeline will alter the geomorphology and landscape of the area to be crossed, but the impacts shown on these photomontages are exaggerated.

Karakia tunnel option

A desktop assessment was carried out to identify a possible tunnel alignment that would facilitate the construction of the two pipelines through the section of severe mountainous terrain, see map 1. This is also the section where both alternative Karakia routes cross the Akhalkalaki district. The entrances to the tunnel would be located outside the Akhalkalaki district but the tunnel itself would run under this district for a distance of approximately 1 to 2 km. The study concluded that tunnelling through the Karakia mountain range (with a total tunnel length of about 10 km) would probably not be feasible given the current project constraints. The following constraints are mentioned in Appendix 2 (Tunnelling Feasibility Study) of the Routing Report:

- *Time constraints: it is stated that the time required for further study (12 months) and construction (2 to 3 years) would be 3 to 4 years.*
- *The total time required could more than double, depending on the findings of the pre-construction phase and any unforeseen and unavoidable difficult geological conditions encountered during construction.*
- *Tunnelling is considered to be extremely risky and plans for projects of this type generally require additional time and cost provisions to cover contingencies.*

The Commission is of the opinion that the stated time required for further study and construction is too long. A tunnel of this size can be constructed in approximately two and a half years, including the required detailled design study. Therefore it is necessary that two, or even more, boring machines should be used at the same time. The Commission is also aware that more time may be required for construction due to unforeseen geological conditions. But in that case one should think of a couple of months. However, as stated in the Routing Report, an increase in construction time by over 100%, resulting in a maximum time requirement of 4 to 6 years would not be a realistic scenario. Finally, it is a well known fact that construction of a

tunnel is a risky undertaking and adequate contingency provisions are required, but this is not a constraining factor for this project.

Box 1: Pipeline construction in mountainous terrain

In general pipeline route selection follows existing routes. By doing this, maximum use is made of existing roads, railroads, power and water supply and lodgings. This is why most existing pipelines go through the valleys, crossing the most valuable land and hindering future developments.
In engineering terms, pipelines can be built across every mountainous terrain, the only constraint being the cost. The table below gives an overview of methods that can be used and the costs involved.

Methods	**Indicative average costs per metre in US$**
Normal pipeline laying.	250
Blasting the right-of-way and construction by special crew. This sometimes involves installing the pipeline joint for joint in the trench.	750
Horizontal directional drilling up to 1500 m.	700 – 1000
Téléphérique: a special cable transport system, like a cable ski lift, used to transport the pipes for welding in the trench on very steep hillsides. Special tripod backhoes can be used to dig the trench on steep hill sides. This technique has been used in Austria and Yugoslavia for large diameter pipelines.	1500 – 2000
Tunnelling up to 10 km.	3000 – 5000

Clearly, all these techniques are costly, but it cannot be argued that laying pipelines in difficult terrain is virtually impossible. Furthermore, on a total pipeline construction budget of around US$ 2.5 billion for the BTC project an additional cost of about US$ 50 million per 20 km of pipeline should be budgeted for to cover contingencies. Considering the fact that the pipeline will be operational for more than 45 years and transport oil with a total value of US$ 400 billion, these additional construction costs are relatively small.

3.1.3 Alternative route Lake Tsalka area

The Lake Tsalka area contains large groundwater reserves. These resources make the area sensitive to oil spills. For this reason, alternative routes in the area north of the lake have been studied and described in the Routing Report. It was concluded that the alternative routes do not avoid these groundwater resources or reduce the risk of pollution in the event of an oil spill. According to the SLIP, additional mitigating measures will be applied to reduce the risk of a spill and the impacts of pollution. A route south of the lake would most likely avoid these groundwater resources and was recommended for consideration by the Commission.[8] However, this route would cross the Akhalkalaki district, which is considered unfeasible for reasons of geopolitical security. The Commission assumes that this is the reason why this recommended route has not been assessed in the Routing Report.

3.2 Environmental and social management and monitoring

3.2.1 Monitoring

The Commission notes that all the information essential for adequately managing the environmental and social aspects and for monitoring the BTC and SC projects during the construction phase is available and meets international standards. However, this information is not well structured and guidance is lacking. This might hamper the work of the licensing authority – the Ministry of Environment – which has little experience of monitoring projects of this type. Presentation of the available information in a more user friendly manner would be helpful.

The environment minister is responsible for issuing the environmental licence and for environmental monitoring. The Presidential Commission expects Georgia International Oil Corporation to ensure that all other government bodies carry out their legal obligations. The environment minister has stated that no minister is responsible for monitoring the social issues of the projects. In order to secure that social issues are adequately monitored a minster should become responsible.

3.2.2 Community Investment Plan

The Community Investment Plan (CIP) is a comprehensive document, with an emphasis on long-term capacity and institution building within the wider social, economic and environment programmes. The plan takes a cautious approach, stressing programme building rather than specific projects, and underscores the importance of managing expectations. This is reflected in the clear outline of the geographical extent of the CIP. The CIP is important to BTC Co. for establishing itself as a good neighbour in the long-term stakeholder consultation process. The involvement of experienced NGOs, such as CARE, provides a good guarantee for the execution of the CIP. The

[8] Advice from the Commission dated 22 November 2002.

local government is presently not involved, but their involvement is necessary to achieve the long-term objectives of the CIP. The funds allocated by the proponent (US$ 8 million) are adequate to start the implementation of the CIP.

The CIP covers the ground well. It states the objectives, discusses the establishment of a Project Advisory Council, outlines the project development process and covers the internal and external monitoring, both qualitative and quantitative, and the evaluation.

At present, implementation of the CIP by BP is limited to the construction phase. The Commission is of the opinion that a period of two to three years is too limited to achieve the objectives of the CIP; implementation should continue during the operational phase. The Commission notes that BP is considering continuing the community investment programme, but that no commitments have been made.

The EBRD representative in Georgia has stated that if the EBRD decides to support the project, they will, in close collaboration with BP, take the lead in Georgia (as well as in Azerbaijan) to continue the implementation of the Community Investment Plan during the operational phase of the pipeline projects.