

The European Union's Tacis TRACECA programme
for Armenia, Azerbaijan, Bulgaria, Georgia, Kazakhstan, Kyrgyzstan, Moldova,
Romania, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan

EUROPEAID/120569/C/SV/MULTI

**Regulation on the Transport of Dangerous Goods
along the TRACECA Corridor**

Azerbaijan, Georgia, Kazakhstan, Turkmenistan and
Ukraine

Inception Report

March 2006 – May 2006



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A project implemented by
NEA and its partners HPTI,
UMCO and Hoyer Gaslog



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Report cover page

Project Title:	Regulation on the Transport of Dangerous Goods along the TRACECA Corridor (TRACECA)
Project Number:	EUROPEAID/120569/C/SV/MULTI
Country:	Azerbaijan, Georgia, Kazakhstan, Turkmenistan, Ukraine
	Partner Contractor
Name:	Consortium led by NEA Transport Research and Training (The Netherlands)
Address:	NEA Head office in the Netherlands: Sir Winston Churchilllaan 297 2280 DZ Rijswijk
Tel. Number:	+ 31 70 3988 340 (NEA office)
Fax number:	+ 31 70 3988 426 (NEA office)
Telex number:	
Contact persons:	Project Manager: Menno Langeveld
Signatures:	

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Author of report: Menno Langeveld, Project manager/Task Leader Legal and environmental





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1 Project synopsis

Project Title:	Regulation on the Transport of Dangerous Goods along the TRACECA Corridor Azerbaijan, Georgia, Kazakhstan, Turkmenistan and Ukraine (TRACECA)
Project Number:	EUROPEAID/120569/C/SV/MULTI
Country:	Azerbaijan, Georgia, Kazakhstan, Turkmenistan, Ukraine

Overall project objectives: The introduction of an alternative, economic and modern transport scheme of LPG in the TRACECA region, which will minimize existing high transportation costs and improve safety in handling procedures of dangerous goods but not limited to LPG only

Specific project objectives: To deliver a feasibility study which includes the technical, economical, financial, environmental and legal/institutional appraisal for the transport of LPG through the TRACECA corridor.

Planned outputs: Additional to the progress reports (2) and final report for this project, six working papers (WP) will be produced:

- ❖ WP 1 Market Analysis Report (Task 1A)
- ❖ WP 2 Transport Forecast Report (Task 1B)
- ❖ WP 3 Transport Facilities Appraisal Report (Task 2A)
- ❖ WP 4 Safety Conditions Report (Task 2B)
- ❖ WP 5 Legal and Institutional Framework report (Task 3)
- ❖ WP 6 Economic Appraisal Report (Task 1C)

The project will organise three multi-country workshops and combine two of these with short study tours:

- ❖ WP 1 and 2 are planned to be presented and discussed in Istanbul, Turkey, combined with a short study tour, which makes it possible to have discussions with stakeholders from Turkey as described in the Terms of Reference.
- ❖ WP 3 and 4 are planned to be presented in Hamburg, Germany, combined with a short study tour aiming at the technical aspects of transport of dangerous goods.
- ❖ WP 5 and 6 are planned to be presented and discussed in Baku.





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Project activities:

Result 1: Economic analysis of all possible schemes

- Task 1A: Analysis of the market for LPG products
- Task 1B: Development of transport forecasting scenarios for LPG
- Task 1C: Economic appraisal of LPG transport schemes

Result 2: Integrated technical scheme for LPG Transportation

- Task 2A: Appraisal of existing transport facilities of LPG
- Task 2B: Appraisal of the safety conditions for LPG transport

Result 3: Study of the regulatory authorities

- Task 3A: Analysis of agreements and treaties
- Task 3B: Review of dangerous goods legislation
- Task 3C: Analysis of regulatory authorities

Project starting date: 18 March 2006

Start date of activities: 18 March 2006

Project duration: 18 months

Inputs:

International expertise:
 216 man-days Team Leader/Transport Economist
 144 man-days Task Leader Engineering and Operations
 144 man-days Task Leader Legal and Environmental Matters
 140 man-days Other Experts

Local expertise:
 315 man-days Project Manager Kazakhstan
 315 man-days Project Manager Azerbaijan
 315 man-days Project Manager Georgia
 110 man-days Short-term local senior experts
 Organisation of local support point in the beneficiary countries

Project implemented by: NEA Transport Research and Training (The Netherlands) and its partners in the consortium:
 HPTI Hamburg Port Training Institute (Germany)
 UMCO (Germany)
 Hoyer Gaslog (Germany)





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2 Analysis of project/ Start situation

2.1 Relevant project context

In May 1993 the European Commission organised a conference in Brussels with the newly independent states of Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan. From this conference the TRACECA (Transport Corridor Europe Caucasus Central Asia) programme was created as a component of the Tacis Interstate Programme of the EU. The main objectives are:

- To stimulate co-operation among the participating states in all matters pertaining to the development and improvement of trade and transport within the region
- To promote the Central Asian - Trans-Caucasian - Europe transport corridor
- To identify problems and deficiencies in the regional trade and transport systems and promote solutions
- To launch a Technical Assistance Programme to be financed by the EU

On 7-8 September 1998, delegations of 32 countries and 13 international organisations gathered in Baku (Azerbaijan) for the International TRACECA Conference. During this conference the Multi-Lateral Agreement on International Transport in the transport corridor Europe-Caucasus-Central Asia (MLA¹) and four supplementary technical documents on customs, road, maritime and rail transport were signed.

The objectives of the MLA and its Technical Annexes are as follows:

- Assisting in the development of economic relations, trade and transport communications in Europe, black Sea region and Asia
- Ensuring access to the world market of road, rail transport and commercial navigation
- Ensuring traffic security, cargo safety and environmental protection
- Harmonisation of transport policy and legal structure in the field of transport
- Creation of equal conditions of competition for transport operations

This project on the transport of dangerous goods (mainly LPG) along the TRACECA Corridor fits very well in the Strategy of the Intergovernmental Commission (IGC) TRACECA for development of the TRACECA Corridor for the period up to 2015, as presented at the 5th Annual Meeting of the IGC TRACECA, Sofia, May 2006.

In the past side products for oil and gas production in producing countries Kazakhstan and Turkmenistan were mostly flared. To transform it into LPG was not done on a large scale as transport of LPG was economically not viable due to high transport costs. However, set against the background of rising oil prices, the market of LPG becomes more and more attractive to develop. This project specifically looks whether transport of LPG via the TRACECA corridor can be feasible, especially in comparison with other corridors. This will be done with the broader scope of transport of dangerous goods as far as this concerns safety, regulation, environmental and institutional issues.

As the Terms of Reference for this project were already made up in 2003 or earlier, the contents of it may have become different than the present situation in 2006. This Inception Report will therefore firstly present, in the next Section 2.2 a number of initial findings during the inception phase. Based on these initial findings, section 2.3 will discuss the analytical framework that will be used to implement this project during the next 16 months. Special emphasis will be given to Task 1C, as this contains the economical feasibility of the transport of LPG along the TRACECA corridor and





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therefore, in our view, is the major criterion for the overall feasibility of LPG transport along the TRACECA corridor. Other aspects, transport infrastructure, safety, environmental, legal and institutional are important as well and will also play a strong role in this project in order to determine the overall feasibility of LPG transport along the TRACECA corridor.

2.2 Initial Findings during the Inception Phase

During the Inception Phase as many as possible stakeholders of the LPG market in the beneficiary countries have been met to develop a clear understanding of the present project background and the project objectives. In this chapter we will make a clear division between the different Results and respective Tasks of the project to present the initial findings of the inception phase, and based on these initial findings, our proposal to implement the project:

Result 1: Economic analysis of all possible schemes

- Task 1A: Analysis of the market for LPG products
- Task 1B: Development of transport forecasting scenarios for LPG
- Task 1C: Economic appraisal of LPG transport schemes

Result 2: Integrated technical scheme for LPG Transportation

- Task 2A: Appraisal of existing transport facilities of LPG
- Task 2B: Appraisal of the safety conditions for LPG transport

Result 3: Study of the regulatory authorities

- Task 3A: Analysis of agreements and treaties
- Task 3B: Review of dangerous goods legislation
- Task 3C: Analysis of regulatory authorities

2.2.1 Activities during the Inception Phase

During the inception phase the following activities took place:

- ❖ Conference on export of LPG from CIS Countries in Moscow
- ❖ Consortium meetings
- ❖ Country Visits
- ❖ Visit to INOGATE in Ukraine
- ❖ Desk research

2.2.1.1 Conference on export of LPG from CIS Countries in Moscow

The start of this project coincided with the organisation of a large conference on LPG exports from the CIS Countries, held in Moscow from 6-7 April 2006. With the objective to analyse the LPG Market (Task 1A) team leader Von Oertzen participated in this conference. By doing so the Consultant was given the opportunity to meet many stakeholders in the LPG market (see Annex 6 Overview of participants LPG Conference Moscow) and to retrieve lots of information in documents concerning production and consumption in the CIS area, including the beneficiary countries of this project.

2.2.1.2 Consortium meetings

During the inception phase 3 consortium meetings took place in Hamburg, Germany, in order to discuss the approach and findings of the project.

2.2.1.3 Country Visits

With the exception of Turkmenistan, due to extensive visa procedures, all beneficiary countries have been visited during the inception phase with the aim to retrieve specific information considering the results and tasks of this project.





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Mission Azerbaijan (Tasks 3A,B,C), Visit TRACECA Permanent Secretariat in Baku, Azerbaijan, April 11-14, 2006

The Task Leader Legal and Environmental Matters of the Project. Discussions were held with the Secretary-General of the TRACECA Intergovernmental Commission, Mrs Lyudmilla Trenkova and the TRACECA National Secretary of Azerbaijan, Mr Akif Mustafayev. The project will be located in the facilities of the TRACECA Permanent Secretariat. All showed interest in the project and committed themselves for full co-operation. Information was collected about the legal and institutional framework for the transport of dangerous goods in Azerbaijan.



Picture 2.1 LPG Conference Moscow April 2006

Mission Azerbaijan and Georgia (Tasks 1A, 2A)

In this mission emphasis was laid on Task 1A and 2A. Major issue of importance was the identification of a new LPG terminal in Batumi, Georgia, as can be seen on the pictures 2.2 and 2.3. Via this terminal LPG stemming from Turkmenistan and Azerbaijan is shipped to Black Sea/Mediterranean customers, but on a comparatively small scale up to now.

LPG Production in Azerbaijan is apparently so far of minor importance as production and transport of current volumes are relatively small. The product is mainly sold to the local market, minor exports take place to Georgia. The transport in Azerbaijan and Georgia on their closely linked railway network (joint operation of RTC's/exchange of locomotives etc.) is mainly effected in privately owned LPG cisterns – build to the prevailing GOST/SNG standards and carrying some 23-30 tons of LPG product. There is no seaborne LPG terminal at the Caspian Sea which can receive cargo from Kasachstan and Turkmenistan. The port installation of Sangechal has made provisions for an installation of such a terminal once the throughput volumes do allow and the Port of Baku may consider the handling of LPG tank containers. Future development perspectives of other terminals such as Dubendi shall be investigated. In respect to transport of LPG across the Caspian Sea a range of investments must be envisaged in order to move sizeable volumes, due to:

- Lack of appropriate terminal facilities at the Caspian Sea
- Necessity for enlargement of the existing LPG terminal at Batumi and installation of new ('Greenfield') facilities north of Poti, Georgia
- No presence and availability of LPG Tankers in the Caspian Sea
- Limited capacity of the ferry boats from Caspian Shipping to carry LPG, however newly build Russian Flag Ferry boats would be technically equipped to carry LPG in RTC's across the Caspian Sea





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- Lack in quantity of appropriate RTC's/Tankcontainers
- Track Conditions of the trans-Caucasus railway network
- Limited availability of locomotives (esp. Georgian Railways)

This situation will be further investigated and also the option of a pipeline solution will be considered.



Picture 2.2 LPG terminal Batumi



Picture 2.3 LPG terminal Batumi





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Mission Kazakhstan (Tasks 1A, 2A, 3A,B,C)

During this mission it became clear that the importance of LPG for all producers rapidly increases as since beginning of this year a new law is in force prohibiting the excess-gas flaring at the oil field. Hence, production companies are obliged to invest in equipment using the byproduct gas (liquid and natural) as an additional energy source. The large producers are Tengizchevroil, other crude oil producers, the refineries Pavlodar, Atyrau, Cimkent and in future possibly significant volumes from the major KIO Karachakanak (Gascondensate in Northwest Kasachstan) and OKIOC (Agip KCO) Kachagan (off shore North Caspian Sea Crude) fields will follow. It is still not clear what the strategy of the majority of the producers will look like as in most cases infrastructure for the commercial use resp. sale of this energy is not existing. Nearest possibility is the production of electricity but also central heating seems viable as far as consumers are around. South Oil, for example, as a medium sized producer in Kazakhstan still did not decide which way to follow up and currently analyse the different solutions from the technical as well from economical point of view.

Kazakhstan is interested and able to develop the production and transport of LPG, however is still missing appropriate terminal facilities at the Caspian Sea. Also the age of railway network and locomotives should be considered. Concerning LPG production facilities in Eastern Kazakhstan chances are high that large LPG amounts will be directed to China as indicated in the strategic takeover of Petrokazakhstan by Chinese interests.

Mission Ukraine (Task 2A) May 2006

During this mission to Ukraine special emphasis was laid on the transport infrastructure for LPG in the Ukraine. The country is about to develop and modernize its infrastructure to handle growing volumes of LPG but high investments are necessary. The existing facilities are rather underdeveloped or insufficient respectively. So far there are only two existing storages and transshipment possibilities at the whole Black Sea coast: an old one in Illychevsk, built in Soviet times and meanwhile bought and controlled - as many other energy relevant installation - by a Russian company, and a brand new one in the Port of Odessa. Next to this two facilities able to serve bigger LPG tank ships there is a smaller storage with 1.200 mton capacity in the Danube port of Reni inaugurated a few years ago but not ready to serve big vessels as loading pier is still insufficient. In this context it must be taken into account that there is only one LPG vessel (capacity approx. 1.000 mon) serving the whole lower part of the Danube and sailing under Bulgarian flag. Beside of that, an EBRD-supported/financed project to create a new modern LPG transfer facility at the Ukrainian sea fishing port of Kerch (Eastern Krim at the Strait between Azov and Black Sea) is on the way. From the shipping side there is no Ukrainian owned sea or river tank ship transport of LPG.

However, due to the disputes with Russia regarding the price and conditions of energy supply, Ukraine is in generally interested in increasing the deliveries of natural gas, crude oil and oil products (Gasoil, Gasoline, LPG) from Central Asia. Ukrainian companies already conduct negotiations regarding the purchase of oil fields and logistic facilities especially in Kazakhstan. Next to that a number of supply contracts for crude oil and oil products came into force.

2.2.1.4 Visit to INOGATE in Ukraine

The Consultant made a visit to the technical secretariat of INOGATE in Kiev. The INOGATE (Interstate Oil and Gas Transport to Europe) Programme is funded by TACIS and has the objective to improve the security of Europe's energy supply. INOGATE showed much interest in our project and promised its cooperation during the implementation of the project.

2.2.1.5 Desk Research

The Moscow Conference resulted in a larger amount of documents concerning LPG production and consumption in the region. Additionally, documents from the World LP Gas Association and INOGATE have been analysed.





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2.2.2 Initial Findings Result 1 Economic Analysis of all possible Schemes

After discussions with stakeholders and carefully studying of available documents and reports, the consultant is in the opinion that for this project three production areas are of main importance:

1. Kazakhstan from Aktau
2. Turkmenistan from Turkmenbashi
3. Azerbaijan from Baku.

Other production areas in Kazakhstan face too much competition from mainly the Chinese consumption market to make transport via TRACECA corridor economically justifiable.

The consultant does not regard the export from Kazakhstan to Central and Northern Europe via the TRACECA corridor viable against the present and much cheaper transport routes via Russia.

Major consumption areas from above 3 production areas are therefore (in order of importance), Turkey, Eastern Balkans (Greece, Bulgaria, Romania) and to a lesser account Central Europe.

2.2.3 Initial Findings Result 2 Integrated Technical Scheme for LPG Transportation

Based on above findings the consultant has identified the base case and project cases as transport corridors from production locations to consumption locations. The base case/project case corridors will be used to compare transport costs between the TRACECA corridors from the 3 different production sites to consumption areas (project cases) with alternative corridors from the same production areas to consumption areas (base cases). We will further elaborate this in section 2.3.1.2.

LPG can be transported by using different transport modes and using other infrastructure like terminals in ports (see figure 2.1), and as have been distinguished in the port of Batumi, Georgia, see pictures 2.2 and 2.3 during our mission to Georgia.

For as far as the consultant can already judge now, but based on our discussions with stakeholders and desk research, the best way to transport LPG on the TRACECA corridor will be by railways (in combination with maritime ro/ro links on the Caspian and Black Sea.).

As LPG can be transported by pipeline as well, the consultant will also keep this option in mind, especially on the Caucasian land bridge (Azerbaijan-Georgia).

2.2.4 Initial Findings Result 3 Study of the Regulatory Authorities

Although not all countries for Result 3, Tasks A, B, and C have been visited, it looks like that the institutional responsibilities for the transport of dangerous goods are unclear and/or scattered among different institutions like Ministries and transport companies. However central coordination seems lacking. For Task 3C the consultant will look closely into this and recommend best practices, especially in order to improve the safety conditions of transport of dangerous goods.

A first observation of the adherence to international agreements on transport of dangerous goods (Task 3A) can be found in table 2.1 below:

Country	Convention on Transport of Dangerous Goods by Road (ADR)
Azerbaijan	Party State
Georgia	No Party State
Kazakhstan	Party State
Turkmenistan	No Party State
Ukraine	Party State

Table 2.1 Adherence to ADR convention, status as of 20 April 2006





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Concerning Task 2 B, review of national legislation, an important finding was that of new legislation in Kazakhstan forbidding flaring of side products at gas and oil production sides, thereby giving an extra stimulus for production of LPG.

2.3 The Analytical Framework for Implementation of the Project

2.3.1 Economic Feasibility of LPG Transport

2.3.1.1 Critical Assumptions

1. Concerning transport of LPG to Central Europe (Hungary, Poland, Germany), the consortium assumes that transport of LPG from Kazakhstan through the TRACECA corridor can not compete with transport of LPG from Aktau by Russian rail due to the high number of transshipment points and changes of transport modes. This option is therefore not included in our study.
2. LPG will be mainly transported by rail and maritime transport modes as this is at present the common way to transport LPG. As LPG can be as well transported by pipeline, the project will keep this option open, depending on e.g. required production volumes etc .
3. Kazakhstan, Turkmenistan and Azerbaijan are the main producers of LPG for this project. Production in the other countries will be neglected as this will mainly purpose local consumption.
4. As Turkey is a growing consumer market for LPG and closest to the TRACECA corridor, this country will be an important destination of LPG from the production countries as mentioned under point 3. In addition the Eastern Balkans and Central Europe are also included as consumer markets of LPG.
5. Major source for production and consumption figures will be the Statistical Review of Global LP Gas 2005 of the World LP Gas Association, in combination with figures given by the industry and other stakeholders in the LPG market.
6. In case estimated production figures will see a strong growth in the coming years, the option of pipeline will become more important to include in our scope of study.
7. The project expects to see prices for major energy sources as oil and natural gas to continue to rise, thereby making LPG an interesting additional source of energy.

2.3.1.2 Corridors

Based on the assumptions above, the project will focus its attention to the following LPG transport corridors as described in the table 2.1 below. Distinction is made between a base case corridor (present LPG transport against a certain figure in EUR/USD and the TRACECA project corridors.

From Kazakhstan we propose to evaluate the TRACECA corridor against the existing rail connection from Aktau via Russian and Ukrainian railways (Odessa) towards Turkey and Eastern Balkans.

From Turkmenistan we propose to evaluate the TRACECA corridor against the maritime and rail connection from Turkmenbashi via Iran towards Turkey, Eastern Balkans. and the possible extension via Odessa towards Central Europe





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From Azerbaijan we propose to evaluate the TRACECA corridor against the existing rail connection from Baku towards Turkey, Eastern Balkans and the possible extension via Odessa towards Central Europe.

Production	Corridor	Consumption
Kazakhstan	<p>Base case: Aktau rail-Russian rail-Black Sea</p> <p>Project case: Aktau Caspian-TRACECA rail-Black Sea See Map 2.1</p>	Turkey Eastern Balkans
Turkmenistan	<p>Base case: Turkmenbashi Caspian-Iran rail-Turkey</p> <p>Project case: Turkmenbashi Caspian-TRACECA rail-Black Sea See Map 2.2</p>	Turkey Eastern Balkans Central Europe via Ukraine (Ilyichevsk)
Azerbaijan	<p>Base case = Project case: Baku-TRACECA rail-Black Sea</p> <p>Modernisation of existing corridor See Map 2.3</p>	Turkey Eastern Balkans Central Europe via Ukraine (Ilyichevsk)

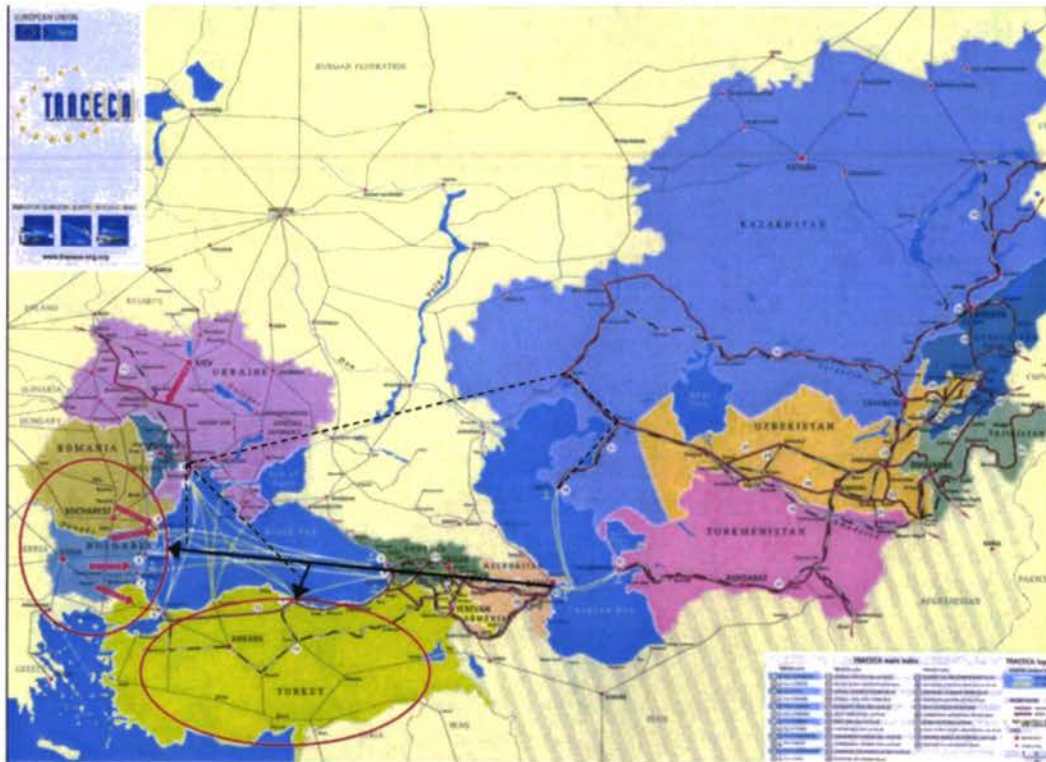
Table 2.1 Base case corridors and project case corridors from LPG production countries to LPG consumption countries

On the maps 3.1, 3.2 and 3.3 on the next two pages the three project cases and base cases are presented by using black lines for the project cases and dotted black lines for the base cases.

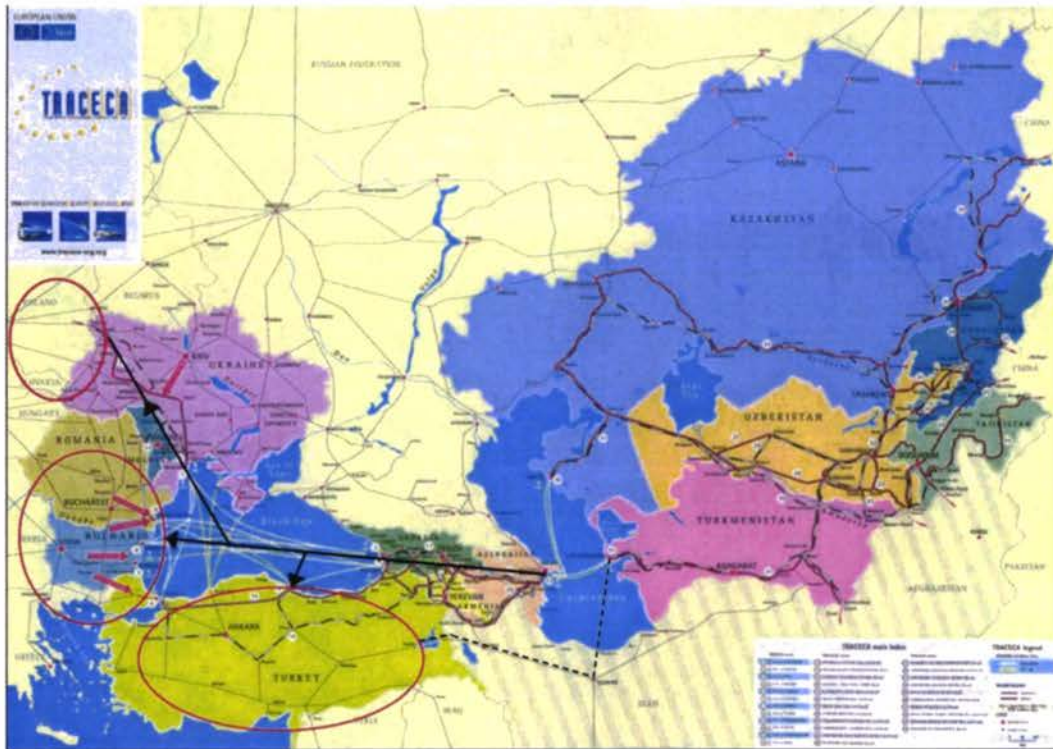




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Map 3.1 Base case (dotted line) and project case (black line) corridors from Kazakhstan to consumption markets (red ovals)

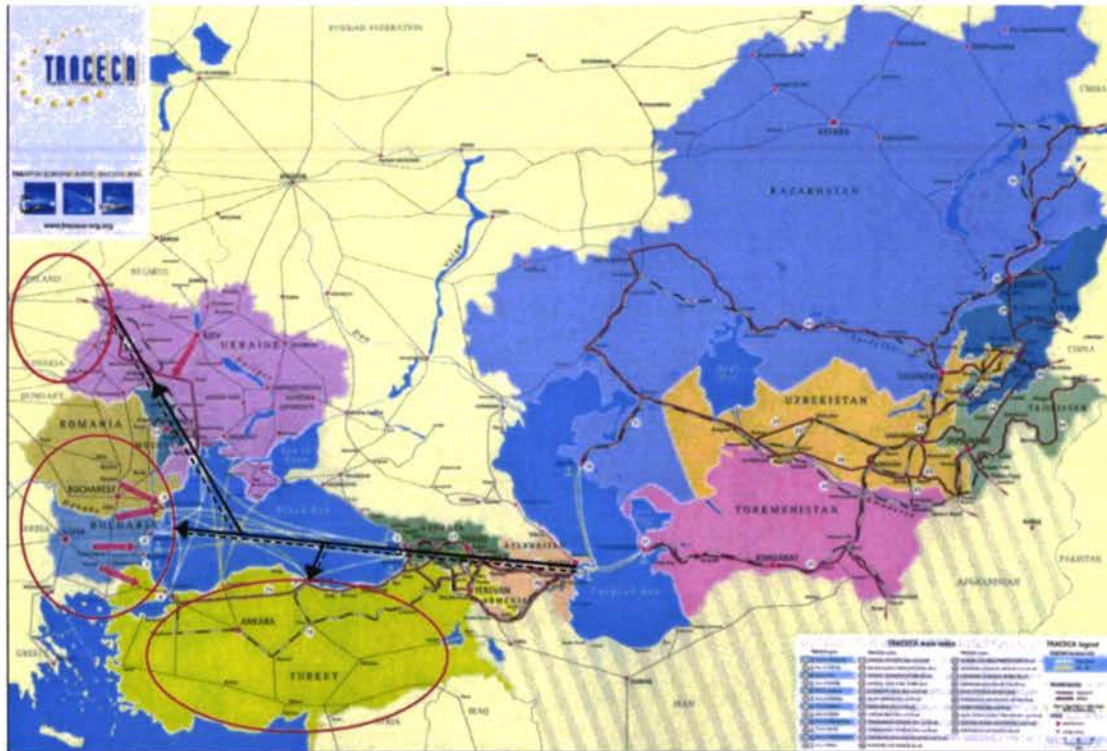


Map 3.2 Base case (dotted line) and project case (black line) corridors from Turkmenistan to consumption markets (red ovals)





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Map 3.3 Base case (dotted line) = project case (black line) corridors from Azerbaijan to consumption markets (red ovals)

2.3.1.3 Scenarios

The scenarios will focus on corridors as described above and will include a number of factors that may influence transported LPG volumes on the described corridors, like a growing demand for LPG in China, a shorter supply of LPG to Turkey from Algeria or geopolitical factors that may have an influence on the production and/or consumption volumes of LPG in the region.

The application of LPG is quite divers, primarily focused on:

- ❖ Contribution to basic household needs—provision of gas for cooking and heating where connection to the natural gas (piped distribution) network is impossible are too expensive;
- ❖ Provision of inputs (feed stock) for a variety of chemical industries;
- ❖ An (environment-friendly) fuel for motor vehicles.

As concerns 'household consumption' LPG is in competition with natural gas—where natural gas distribution networks are extended to reach more and more households LPG consumption may be reduced correspondingly.

Policy developments within the European Union may lead to further stimulation of LPG-automotive use. EU is advocating (among member states) to have, in year 2020, replaced 20% of fuel consumption in road transport by alternative fuels, such as CNG, LPG-automotive, biodiesels or hydrogen (fuel cells)¹—EU member states

¹ CNG and Hydrogen will require the development of new (distribution) infrastructure (tank stations); whereas constraints on LPG-automotive at tank stations has basically (technically) been resolved and rail transport of LPG is considered fairly safe already.



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are free to select their applications (mix). Similar policy developments may be expected worldwide, perhaps with some delays.

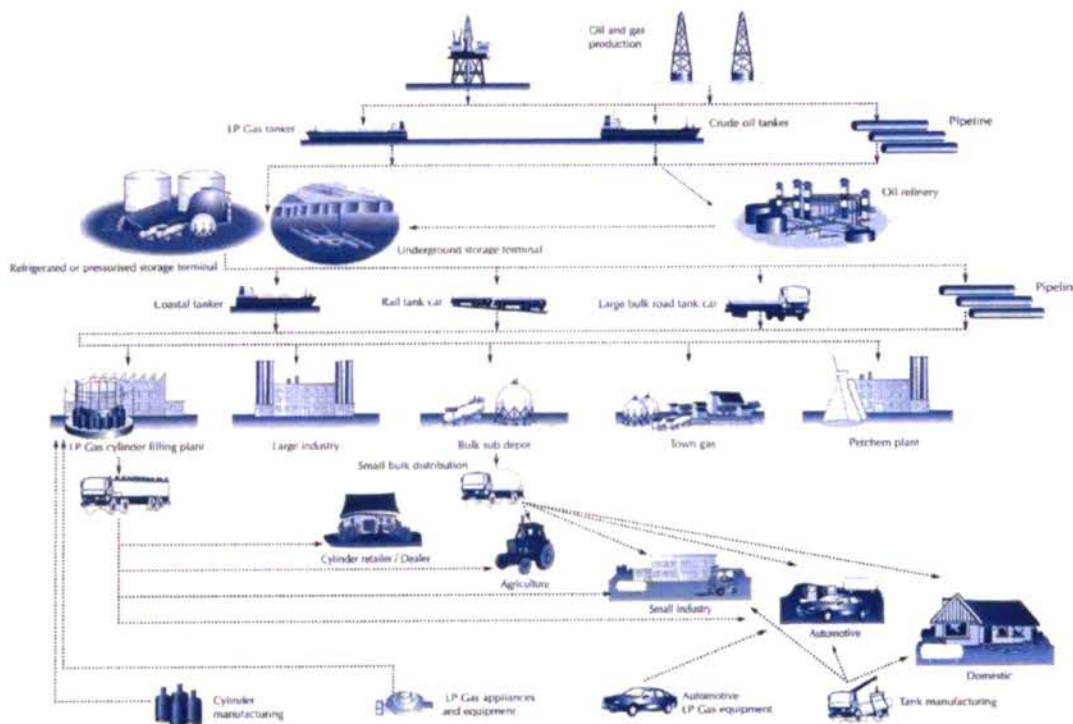
The various scenarios will influence the outcome of the economic analysis. Therefore a sensitivity analysis will be carried out on the key parameters, indicating the significance of the various scenarios.

2.3.2 Other determining factors for Feasibility of LPG Transport

2.3.2.1 Technical factors (transport infrastructure)

In figure 2.1 the LPG supply chain is presented. For the transport of LPG along the TRACECA corridor the consultant will especially look at transport by rail in combination with a maritime link, e.g. unit trains from production sources in Kazakhstan, Turkmenistan and Baku, straight to the destinations in the relevant hinterland of the Black Sea ports Samsun (TEN corridor 4), Varna (TEN corridor 8), Constanta (TEN corridor 7/4) and Ilyichevsk (TEN corridor 9). Besides the possibility of transport LPG by pipeline will be considered as a possible alternative for the Caucasian land bridge Azerbaijan-Georgia.

Figure 2.1 LPG Distribution Chain



Source: World LP Gas Association, Statistical Review of Global LP Gas 2005

There exist significant differences between the GOST LPG standards of the Former Soviet Union and the American and European standards which are commonly used in international markets today. The major issue that is commonly found with GOST standards is the allowance of high hydrogen sulphide content. In markets where high-tensile steels are used for making transportation tanks, the hydrogen sulphide can have detrimental effects, causing cracking and corrosion. Clients





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who want LPG as petrochemical feedstock will be especially sensitive to the product specification since impurities can cause problems in their plant's output. With the development of new production sites based on international technologies in Turkmenistan and Kazakhstan a significant improvement in the quality of the LPG can be expected, however the consultant will also keep an eye on this issue.

2.3.2.2 Safety aspects

In order to protect the safety of people, logistics objects and the environment, The United Nations has determined a list of over 3,000 dangerous goods and their characteristics. This list forms the basis for international legislation in the field of dangerous goods transport by water, road, air, and rail. The safety requirements for transport and warehousing depend on the type of goods and the type of transport. These requirements generally address the following main topics:

- ❖ Construction and equipment of means of transport;
- ❖ Marks and placarding, giving proper information on the nature of the goods;
- ❖ Maximum allowed quantities of certain substances;
- ❖ Capability of staff;
- ❖ Packaging;
- ❖ Stowage, segregation of certain substances.

Concerning safety this project will use the Guidelines for Good Safety Practice in the LPG Industry, developed by the United Nations Environment Programme and the World LPG Associations, as a major reference.

2.3.2.3 Environmental aspects

Gas flaring is associated with the release of a large number of pollutants. Improper combustion, as indicated by smoke from the flare stack, contributes to increasing the hazardous chemicals released into the environment including volatile organic compounds. The substances include:

- ❖ More than 250 identified toxins, including carcinogens such as benzopyrene, benzene, carbon disulphide (CS₂), carbonyl sulphide (COS), and toluene
- ❖ Metals such as mercury, arsenic, and chromium
- ❖ Nitrogen oxides
- ❖ Sour gas with H₂S and SO₂

Most gas flaring reduction is in essence a question of changing the purpose of the combustion at the oil field from gas elimination (flaring) to gas use, e.g. power production, or of moving the combustion away from the field—normally to a load centre where it will be combusted for industrial or power production purposes.

Besides constituting a waste of economically valuable resources, flaring and venting are also significant contributors to global warming. Reduced flaring implies reduced carbon dioxide (CO₂) emissions, the amount of which depends on whether the gas is reinjected or replaces other fossil fuels such as diesel or coal. This reduction in CO₂ not only benefits the country that achieves the emission reductions, but constitutes a contribution to global efforts to limit CO₂ emissions with the objective of preventing climate change. CO₂ emission reductions constitute a service to the global community by reducing the risk of damage to human health, water systems, agriculture, and fishing resulting from climate change. At the same time, Emissions Trading, Joint Implementation, and the Clean Development Mechanism under the Kyoto Protocol represent opportunities for the countries which restrict gas flaring to capture part of the global public benefits of emission reductions. And finally it is very important reduce the dangers of transport of dangerous goods to the environment by doing according to internationally approved regulations and standards, as described in next section.





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2.3.2.4 Legal aspects

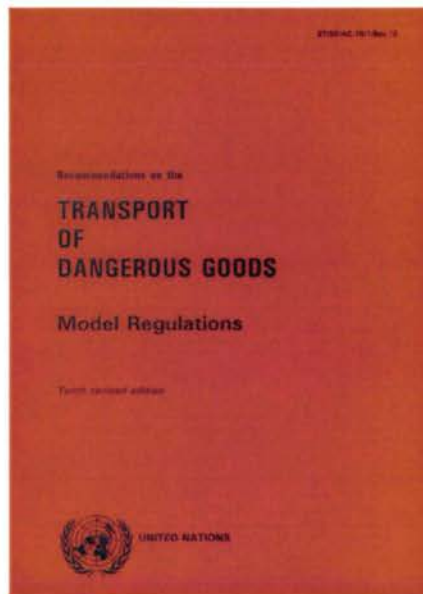
Transport legislation between TRACECA countries still differs substantially, while this forms a clear obstacle for the integration of transport systems within the TRACECA corridor. Especially within a very detailed subject as transport of dangerous goods, legislation differs more than in other subjects. As these details are many times contained within primary legislation, change of legislation takes a lot of time.

In this project emphasis will be laid on legislation on flaring and transport of LPG, while for the latter the application and possible implementation will be analysed, together with bilateral agreements on the transport of LPG.

International Legislation

UN Recommendations on the Transport of Dangerous Goods

The UN Recommendations on the Transport of Dangerous Goods haven been prepared by the United Nations (UN) Economic and Social Council's (ECOSOC) Committee of Experts on the Transport of Dangerous Goods (CETDG), and they were first published in 1956. Because of the colour of the cover the publication is known as "Orange book".



These Recommendations are addressed to governments and to the international organizations concerned with safety in the transport of dangerous goods. In response to developments in technology and the changing needs of users the Recommendations have been regularly amended and updated at succeeding sessions of the Committee of Experts. The latest publication is the fourteenth revised edition issued in 2005. The UN Model Regulations are revised every two years and the result of this is that the mode-specific regulations are also revised in the same cycle.

Maritime

International Maritime Dangerous Goods (IMDG) Code

Carriage of Dangerous Goods (SOLAS, Chapter VII)

International Convention for the Prevention of Pollution from Ships 1973, as modified by the protocol of 1978. (MARPOL) 73/78

Road

European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)





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Rail

Regulations concerning the International Carriage of Dangerous Goods by Rail (RID)

The Regulation concerning the International Carriage of Dangerous Goods by Rail (RID) shall apply to the international carriage of dangerous goods by rail on the territory of Member States of the COTIF.

National Legislation on transport of dangerous goods

Dangerous goods legislation is by nature always very detailed and complex. The project will broadly analyse the dangerous goods legislation of the beneficiary countries, benchmarked against the international legal texts above, with an emphasis on the transport of LPG.

Bilateral Agreements

Due to reasons of national interests the contents of bilateral agreements are not always public or easy to disclose. The project will try to include as much as possible the influence of existing bilateral agreements on the overall feasibility of transport of LPG along the TRACECA corridor.

2.3.2.5 Institutional aspects

A final aspect we will consider in our project is the institutional framework of transport of LPG/dangerous goods. Which Ministries and other agencies are involved, how do they promote transport of LPG and mostly how they do promote safety of transport of LPG/dangerous goods, are important question we like to address in this project.



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3 Project Planning

3.1 Objectives of the project

Overall project objectives: The introduction of an alternative, economic and modern transport scheme of LPG in the TRACECA region, which will minimize existing high transportation costs and improve safety in handling procedures of dangerous goods but not limited to LPG only

Specific project objectives: To deliver a feasibility study which includes the technical, economical, financial, environmental and legal/institutional appraisal for the transport of LPG through the TRACECA corridor.

3.2 Project approach and planned outputs

Project approach

The project approach will be a flexible one as the scope of the project is rather wide including economic, technical, legal, safety, environmental and institutional aspects of transport of dangerous goods, divided into 3 results and 8 tasks, as illustrated in figure 3.1.

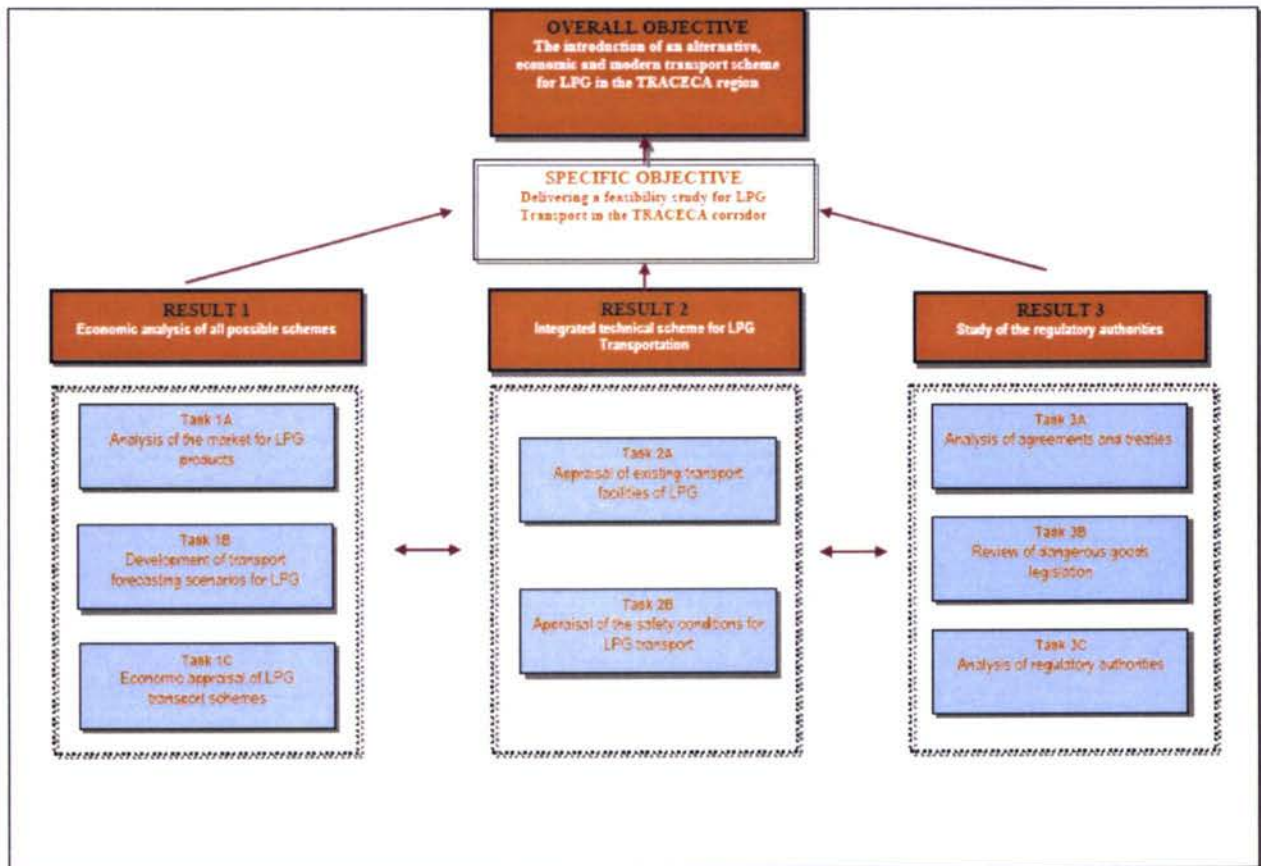


Figure 3.1 Project Approach; Relations between Results and Tasks





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Planned outputs:

Six Working Papers (WP) will be produced that correspond with the Tasks:

- ❖ WP 1 Market Analysis Report (Task 1A)
- ❖ WP 2 Transport Forecast Report (Task 1B)
- ❖ WP 3 Transport Facilities Appraisal Report (Task 2A)
- ❖ WP 4 Safety Conditions Report (Task 2B)
- ❖ WP 5 Legal and Institutional Framework report (Task 3)
- ❖ WP 6 Economic Appraisal Report (Task 2C)

Multi-country workshops and study tours

The project will organise three multi-country workshops and combine two of these with short study tours:

- ❖ WP 1 and 2 are planned to be presented and discussed in Istanbul, Turkey, combined with a short study tour, which makes it possible to have discussions with stakeholders from Turkey as described in the Terms of Reference.
 - ❖ WP 3 and 4 are planned to be presented in Hamburg, Germany, combined with a short study tour aiming at the technical aspects of transport of dangerous goods.
- WP 5 and 6 are planned to be presented and discussed in Baku.

3.3 Relationship with other projects

During the first visit to Baku, Azerbaijan between April 11-14, 2006 a good relationship has been established with the TRACECA "Freight Forwarder Training Courses Project" and the TRACECA "Trade Facilitation and Institutional Support Project", implemented by Dornier Consulting/KLC.

Co-operation will be established as well with the TRACECA "Maritime Training Project".

3.4 Constraints, risks and uncertainties

During the Inception Phase very few constraints, risks or uncertainties were identified. All countries have shown interest in the project, although it is not certain yet whether Turkmenistan also will support the project politically at governmental level. At present there is no letter of endorsement from Turkmenistan available.

It has to be mentioned that the Consultant will do his best together with the beneficiaries to minimise the level of uncertainties and risks and their influence on the project performance; the EU Project Manager will be kept informed about relevant problems met.

3.5 Project planning

3.5.1 Work plan

The updated work plan for the project containing:

- the Overall plan of operations
- the Overall output performance plan
- the Plan of operations for the next period (Work programme for the months June 2006 - November 2006)

is attached in the Tacis standard format as in Annex 1, Annex 2 and Annex 3 to the present Report.





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3.5.2 Deployment of experts

The core team of key experts consisting of

Team Leader/Transport Economist	: Arndt von Oertzen
Task Leader Engineering and Operations	: Klaus Broersma
Task Leader Legal and Environmental Matters	: Menno Langeveld
Project Manager Kazakhstan	: Nurzhan Saginaev
Project Manager Azerbaijan	: Rauf Mammadov
Project Manager Georgia	: Grigor Matuashvili

commenced its work on the Project as planned, no changes or replacements had to be made or proposed. An overall manning schedule is presented in Annex 5.

Local and regional support points

Local and regional support points have been established in Baku, Azerbaijan; in Aktau, Kazakhstan, and in Georgia. Additionally the project may benefit from project offices of the main contractor already in place in Kiev, Ukraine, and Istanbul, Turkey.

The key experts will visit this local support points continuously in order to ensure continuity and best coverage of the whole region.

The core team will be travelling around the beneficiary countries on a very regular basis and will guide the regional support points and the local project managers to achieve the project objectives.

3.5.3 Reporting

In accordance with the Terms of Reference and Tacis 'Guidelines for Administrative Reporting' the Reports as described below have to be prepared besides the present Inception Report. The present reporting schedule corrects the schedule presented within the Technical Proposal in order to be in line with the schedule commonly used by Tacis Projects.

First Progress Report:	End of Month 6
Second Progress Report:	End of Month 12
Draft Final Report:	End of Month 17
Final Report:	End of Month 18

The Final Report is revised version of the Draft Final Report, with the comments on the Draft Final Report from the beneficiary organisations and EU representatives incorporated.

Additional Working Papers (WP) will be produced :

- ❖ WP 1 Market Analysis Report (corresponding with Task 1A)
- ❖ WP 2 Transport Forecast Report (corresponding with Task 1B)
- ❖ WP 3 Transport Facilities Appraisal Report (corresponding with Task 2A)
- ❖ WP 4 Safety Conditions Report (corresponding with Task 2B)
- ❖ WP 5 Legal and Institutional Framework report (corresponding with Task 3)
- ❖ WP 6 Economic Appraisal Report (corresponding with Task 1C)

Reports will be produced in English and Russian in the quantities, and distribution as specified in the ToR.





3.6 Logical Framework

	Intervention logic	Objectively Verifiable Indicators	Sources of Verification	Assumptions
Overall objectives	<p>The introduction of an alternative, economic and modern transport scheme of LPG in the region, which will minimize existing high transportation costs and improve safety in handling procedures of dangerous goods but not limited to LPG only, which could:</p> <ul style="list-style-type: none"> attract further investments in the region in the transport as well as in the oil and chemical industry; Terms of reference stimulate interest from oil companies to Increase LPG production, which is currently at very low levels, since existing high costs of transportation will be minimized; create additional sources of income for countries involved, through the increase in LPG production and through additional transport and transit market opportunities; promote the use of an alternative, environmentally friendly clean fuel for both final consumers and industrial customers; expand the scope of the INOGATE and TRACECA projects to include an additional and potentially very profitable market, namely LPG. 	<ul style="list-style-type: none"> Transportation costs of LPG and other gaseous products Safety record in transportation Relative increase of transport in TRACECA region 	<ul style="list-style-type: none"> Freight forwarders, market prices Transport Safety statistics at National Bureaus of Statistics Transport and Trade statistics 	
Project purpose	<p>To deliver a feasibility study which includes the technical, economic, financial, environmental and legal/institutional appraisal for the transport of LPG through the TRACECA corridor.</p>	<ul style="list-style-type: none"> The project's appraisal as part of the feasibility study with separate volumes on economic, financial, environmental and legal/institutional aspects 	<ul style="list-style-type: none"> (draft) Final Report 	<ul style="list-style-type: none"> The economic and financial impact of the project is positive, as it will lead to more efficient exploitation of hydrocarbon natural resources in Central Asia, by lowering unit costs for transport, increasing return on capital investment, and creating jobs for the local economy. The overall environmental impact is positive, as oil drillers should be motivated to re-inject rather than flare natural gas, as a marketable means of transport of LPG can justify the cost of re-injection. LPG is a dispersible gas, inert and not environmentally harmful. The project has full cooperation and commitment of all major project partners involved.



	Intervention logic	Objectively Verifiable Indicators	Sources of Verification	Assumptions
Results	<p>1. An economic analysis of all possible schemes and modes of transportation of LPG in the region, with calculations and recommendations on the operational costs and capital investments</p> <p>2. The presentation of a completely integrated technical scheme for LPG transportation.</p> <p>This will include:</p> <ul style="list-style-type: none"> • means of storage and loading in Aktau and/or Kuryk (Yeralievo), Kazakhstan • means of storage and loading in Turkmenbashi or Okarem, Turkmenistan • optimal means of transportation across the Caspian, • means of storage and transshipment of LPG in Azerbaijan, • gas rail car transport of the LPG to end-users and/or to the port of Poti and/or Batumi via Azerbaijan, • means of storage and loading of LPG in Poti and/or Batumi, • optimal construction program in Ukraine (Yuzhny, Iljichevsk, Odessa). <p>3. A study of the regulatory authorities and their conformity with international and UN standards for the storage and transportation of LPG and chemicals.</p> <p>This implies the harmonisation of legislation and procedures along the lines of United Nations and European Directives.</p>	<ul style="list-style-type: none"> • Traffic analysis and forecast • Scenario analysis on traffic development • Assessment of costs and benefits • Economic appraisal <ul style="list-style-type: none"> • Analysis of storage and loading facilities • Analysis of optimal transportation means for different modes of transport • <ul style="list-style-type: none"> • Description of international standards • Gap analysis reports and gap plugging report on conformity of role of authorities 	<ul style="list-style-type: none"> • Working paper • Working paper <ul style="list-style-type: none"> • Working paper • (draft) Final Report <ul style="list-style-type: none"> • Working paper • (draft) Final Report <ul style="list-style-type: none"> • Working papers • Working papers 	<ul style="list-style-type: none"> • A common understanding on the need for a fast implementation of the necessary investments. • A good insight in costs and benefits related to the transportation of LPG in the region with a basic amount of relevant data accessible • Basic data availability as input for economic and financial analysis <ul style="list-style-type: none"> • Access to insight in current and future development plans for infrastructure and superstructure • Access to insight in storage and loading development plans • The environmental implications of the required changes can be dealt with properly <ul style="list-style-type: none"> • A high level of coordination and cooperation, which is required from the competent authorities within the beneficiary countries towards the creation of an integrated multimodal transport system can be attained • Proposed regulations are supported and adopted by national governments • The changes in regulation have a direct positive impact on transport harmonisation • The international regulation is stable



	Intervention logic	Objectively Verifiable Indicators	Sources of Verification	Assumptions
Activities	<p>Result 1: Economic analysis of all possible schemes and modes of transportation of LPG in the region</p> <ul style="list-style-type: none"> TASK 1A: Analysis of market for LPG products TASK 1B: Development of transport forecasting scenarios TASK 1C: Analysis of project appraisal <p>Result 2: Presentation of a completely integrated technical scheme for LPG transportation</p> <ul style="list-style-type: none"> TASK 2A: Appraisal of existing transport facilities of LPG TASK 2B: Appraisal of the safety conditions for LPG transport <p>Results 3: Study of the regulatory authorities and their conformity with international and UN standards</p> <ul style="list-style-type: none"> TASK 3A: Analysis of agreements and treaties TASK 3B: Review and harmonisation of dangerous goods legislation TASK 3C: Selection and Development of training measures TASK 3D: Analysis of regulatory authorities 	<p>Input and costs:</p> <p>Long-term international experts:</p> <ul style="list-style-type: none"> Team leader: 216 days Senior experts: 288 days <p>Long term local experts: 945 days</p> <p>Short-term international experts:</p> <ul style="list-style-type: none"> Senior experts: 140 days <p>Short-term local experts:</p> <ul style="list-style-type: none"> Senior experts: 110 days <p>Incidental expenditures on:</p> <ul style="list-style-type: none"> Travel costs and subsistence allowances for missions to be undertaken from the bases of operations in the beneficiary countries Financing of the operational costs of the regional offices Subsistence allowances for expert missions in the region, including workshops and seminars 	<ul style="list-style-type: none"> Proposal, contract and progress reports Proposal, contract and progress reports Proposal, contract and progress reports 	<ul style="list-style-type: none"> Relevant institutes and bodies are providing inputs on costs and benefits Full support and commitment from relevant parties in the logistic chain Full co-operation, support and commitment from regulatory authorities Availability of agreements, treaties and legislation



**Annex 1
FORM 1.4:**

OVERALL PLAN OF OPERATIONS

Project title : Transport of Dangerous Goods along the TRACECA Corridor	Project number : EUROPEAID/120569/C/SV/MULTI	Country : Azerbaijan, Georgia, Kazakhstan, Turkmenistan, Ukraine	Page : 1
Planning period :	Prepared on : May 2006	Contractor : NEA and its partners in the consortium HPTI, UMCO and Hoyer Gaslog	

Project objectives :
The introduction of an alternative, economic and modern transport scheme of LPG in the TRACECA region, which will minimize existing high transportation costs and improve safety in handling procedures of dangerous goods but not limited to LPG only. To deliver a feasibility study which includes the technical, economical, financial, environmental and legal/institutional appraisal for the transport of LPG through the TRACECA corridor.

No	MAIN ACTIVITIES	TIME FRAME												INPUTS					
		2006				2007				2008				PERSONNEL (Man-Days)		EQUIPMENT AND MATERIAL	OTHER		
		1	2	3	4	1	2	3	4	1	2	3	4	International	Local				
01	Analysis of the market for LPG products	xxx	xxx	xxx												70	130		
02	Development of transport forecasting scenarios for LPG		xxx	xxx												40	80		
03	Economic appraisal of LPG transport schemes				xxx	xxx	xxx	xxx								100	190		
04	Multi-Country Workshop/Study tour to present WP 1 and WP2 in Istanbul, Turkey			xxx												48	25		



Project title : Transport of Dangerous Goods along the TRACECA Corridor	Project number : EUROPEAID/120569/C/SV/MULTI	Country : Azerbaijan, Georgia, Kazakhstan, Turkmenistan, Ukraine	Page : 2
Planning period :	Prepared on : May 2006	Contractor : NEA and its partners in the consortium HPTI, UMCO and Hoyer Gaslog	

Project objectives :
The introduction of an alternative, economic and modern transport scheme of LPG in the TRACECA region, which will minimize existing high transportation costs and improve safety in handling procedures of dangerous goods but not limited to LPG only. To deliver a feasibility study which includes the technical, economical, financial, environmental and legal/institutional appraisal for the transport of LPG through the TRACECA corridor.

No	MAIN ACTIVITIES	TIME FRAME												INPUTS							
		2006				2007				2008				PERSONNEL (Man-Days)		EQUIPMENT AND MATERIAL	OTHER				
		1	2	3	4	1	2	3	4	1	2	3	4	International	Local						
05	Appraisal of existing transport facilities of LPG	xxx	xxx	xxx	xxx	xxx												108	205		
06	Appraisal of the safety conditions for LPG transport		xxx	xxx	xxx	xxx												35	90		
07	Multi-Country Workshop/Study tour to present WP 3 and WP4 in Hamburg, Germany					xxx												50	20		
08	Analysis of agreements and treaties	xxx	xxx	xxx														45	65		
09	Review of dangerous goods legislation	xxx		xxx	xxx													45	65		
10	Analysis of regulatory authorities	xxx		xxx	xxx	xxx	xxx											53	125		
11	Multi-Country Workshop/Study tour to present WP 5 and WP6 in Baku, Azerbaijan						xxx											50	60		
GRAND TOTAL																		644	1055		



Annex 2
FORM 1.5:

OVERALL OUTPUT PERFORMANCE PLAN

Project title : Transport of Dangerous Goods along the TRACECA Corridor	Project number : EUROPEAID/120569/C/SV/MULTI	Country : Azerbaijan, Georgia, Kazakhstan, Turkmenistan, Ukraine	Page : 1
Planning period :	Prepared on : May 2006	Contractor : NEA and its partners in the consortium HPTI, UMCO and Hoyer Gaslog	
<i>Major Outputs (to be described and target dates indicated)</i>	<i>Agreed Objective Verifiable Indicators</i>	<i>Constraints and Assumptions</i> C/A	
WP 1 Market Analysis Report (Task 1A)	WP available.	No major constraints or assumptions. Detail level of WP depends on willingness of all stakeholders to provide relevant information.	
WP 2 Transport Forecast Report (Task 1B)	WP available.	No major constraints or assumptions. Detail level of WP depends on willingness of all stakeholders to provide relevant information	
Combined Multi-Country Seminar/Study Tour 1A/1B Istanbul, Turkey	Seminar/Study tour realized. Number of participants registered.	Stakeholders are willing to participate.	
WP 3 Transport Facilities Appraisal Report (Task 2A)	WP available.	No major constraints or assumptions. Detail level of WP depends on willingness of all stakeholders to provide relevant information	
WP 4 Safety Conditions Report (Task 2B)	WP available.	No major constraints or assumptions. Detail level of WP depends on willingness of all stakeholders to provide relevant information.	
Combined Multi-Country Seminar/Study Tour 2a/2B	Seminar/Study tour realized. Number of participants registered.	Stakeholders are willing to participate.	
WP 5 Legal and Institutional Framework report (Task 3) Hamburg, Germany	WP available.	No major constraints or assumptions. Detail level of WP depends on willingness of all stakeholders to provide relevant information	
WP 6 Economic Appraisal Report (Task 2C)	WP available.	No major constraints or assumptions. Detail level of WP depends on willingness of all stakeholders to provide relevant information	
Combined Multi-Country Seminar/Study Tour 3/2C Baku/Azerbaijan	Seminar/Study tour realized. Number of participants registered.	Stakeholders are willing to participate.	



Annex 3
FORM 1.6:

PLAN OF OPERATIONS FOR THE NEXT PERIOD (Work programme)

Project title : Transport of Dangerous Goods along the TRACECA Corridor		Project number : EUROPEAID/120569/C/SV/MULTI				Country : Azerbaijan, Georgia, Kazakhstan, Turkmenistan, Ukraine			Page : 1		
Planning period :		Prepared on : May 2006				Contractor : NEA and its partners in the consortium HPTI, UMCO and Hoyer Gaslog					
Project objectives : The introduction of an alternative, economic and modern transport scheme of LPG in the TRACECA region, which will minimize existing high transportation costs and improve safety in handling procedures of dangerous goods but not limited to LPG only. To deliver a feasibility study which includes the technical, economical, financial, environmental and legal/institutional appraisal for the transport of LPG through the TRACECA corridor.											
		TIME FRAME						INPUTS			
		2006 (months)						PERSONNEL (Man-Days)		EQUIPMENT AND MATERIAL	OTHER
No	ACTIVITIES	05	06	07	08	09	10	International	Local		
01	Analysis of the market for LPG products	xxx	xxx	xxx	xxx	xxx		50	160		
02	Development of transport forecasting scenarios for LPG		xxx	xxx	xxx	xxx		40	80		
03	Economic appraisal of LPG transport schemes						10	8	15		
04	Multi-Country Workshop/Study tour to present WP 1 and WP2 in Istanbul, Turkey					xxx		48	25		



Project title : Transport of Dangerous Goods along the TRACECA Corridor	Project number : EUROPEAID/120569/C/SV/MULTI	Country : Azerbaijan, Georgia, Kazakhstan, Turkmenistan, Ukraine	Page : 2
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Planning period :	Prepared on : May 2006	Contractor : NEA and its partners in the consortium HPTI, UMCO and Hoyer Gaslog
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Project objectives :
The introduction of an alternative, economic and modern transport scheme of LPG in the TRACECA region, which will minimize existing high transportation costs and improve safety in handling procedures of dangerous goods but not limited to LPG only. To deliver a feasibility study which includes the technical, economical, financial, environmental and legal/institutional appraisal for the transport of LPG through the TRACECA corridor.

No	ACTIVITIES	TIME FRAME						INPUTS			
		2006 (months)						PERSONNEL (Man-Days)		EQUIPMENT AND MATERIAL	OTHER
		05	06	07	08	09	10	International	Local		
05	Appraisal of existing transport facilities of LPG	xxx	xxx	xxx	xxx	xxx	xxx	70	160		
06	Appraisal of the safety conditions for LPG transport	xxx	xxx	xxx	xxx	xxx	xxx	23	65		
07	Multi-Country Workshop/Study tour to present WP 3 and WP4 in Hamburg, Germany										
08	Analysis of agreements and treaties	xxx	xxx	xxx	xxx	xxx		30	70		
09	Review of dangerous goods legislation			xxx	xxx	xxx	xxx	15	60		
10	Analysis of regulatory authorities			xxx	xxx	xxx	xxx	20	45		
11	Multi-Country Workshop/Study tour to present WP 5 and WP6 in Baku, Azerbaijan										



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Annex 4

List of major meetings in the TRACECA Region and elsewhere during Inception Phase

Name	Position
Azerbaijan	
Mr Mustafayev, Akif	TRACECA National Secretary
Arzu Azimov	Socar Baku
Teimur Mamedov	Rail Baku
Vahid Akhmedov	Port Baku
Rafael Rachmanov	Caspian Shipping
Royad Mirzoeyev	Azertrans Baku
Georgia	
Mr. Steen L. Jensen	Batumi Greenoak Oil Terminal
Mr. Dimitry Kemoklidze	Director of Restructuring and Development Agency/Georgian Rail
Mr. Vasil Kenkishvili	Head of the Department of legal Support of Restructuring/Georgian Rail
Mr. Guram Tatumashvili	Deputy Director Restructuring and Development Agency/Georgian Rail
Mr. David Tsiklauri	Deputy Minister for Ministry of Economy Development of Georgia / National Secretary of Georgia in IGC TRACECA
Mr. Vladimir Khokhobai	Director on Production and Exploitation issues/Poti Port
Mr. Eduard Machavariani	Director in Investment issues/Poti Port
Mrs. Nana Gvasalia	Spectrum
Mr. David Jinjolia	Commercial Director, Georgian Railways
Mr. Gela Kalveslashvili	Operations Director, Georgian Railways
Mr. Mamouka Vadachkoria	Transport Coordinator, Batumi Oil Terminal
Kazakhstan	
Mr Murat Bekmagambetov	TRACECA National Secretary
Dmitry Zhelesniak	OOO Kondensate
Mr. Frank Winderlich	Kasger munai
Dmitry Zhelesniak	OOO Kondensate





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Nurzhan Seitzhanov	South Oil
Sherkhan M. Sugurbekov	Kazmortransflot
Vlалentina V. Guzenko	CNPC Aktobe
Vladimir Lobanov	Aktyau Port
Nurlan Chalgaspaev	Kascor- transservice
Nurlan Turikpenbaev	Kasmunaigas
Marat Urazbekov	Transport Ministry
Almasbek A. Mukhashov	Agip KCO
Ukraine	
Stepan Chernik + Team	NaftoGaz Ukraine
Vitaly Mudrov	Speztransservis
Viktor Illarionov	Interchem Odessa
Oleg Kramarenko	Antos Odessa
Olena Nevmerzhytska	Traceca Kiev Regional Office
Intergovernmental Commission TRACECA	
Mrs Trenkova, Lyudmilla	Intergovernmental Commission TRACECA , Permanent Secretariat, Secretary General
INO GATE	
Serguei Gorbachov	Senior Expert
Irina Arischenko	Promotional expert





Annex 5

Manning Schedule

Position in the Project	Name	Man-days in total	Month						
			1 4/06	2 5/06	3 6/06	4 7/06	5 8/06	6 9/06	7 10/06
Team Leader	Arndt von Oertzen	216							
Task Leader Engineering and Operations	Klaus Broersma	144							
Task Leader Legal and Environmental Matters	Menno Langeveld	144							
Project Manager Kazakhstan	Nurzhan Saginaev	315							
Project Manager Azerbaijan	Rauf Mammadov	315							
Project Manager Georgia	Grigor Matuashvili	315							
Short-term international senior experts		140							
Short-term local senior experts		110							



Position in the Project	Name	Month										
		8	9	10	11	12	13	14	15	16	17	18
Team Leader	Arndt von Oertzen											
Task Leader Engineering and Operations	Klaus Broersma											
Task Leader Legal and Environmental Matters	Menno Langeveld											
Project Manager Kazakhstan	Nurzhan Saginaev											
Project Manager Azerbaijan	Rauf Mammadov											
Project Manager Georgia	Grigor Matuashvili											
Short-term international senior experts												
Short-term local senior experts												



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Annex 6 Moscow Conference on LPG production of CIS Countries, Participants

COMPANY	PROFESSIONAL POSITION
OJSC "Sovkomflot"	Deputy Head of Ships purchase and sales and new projects group
Chevron, Global Supply & Trading	Trader
Chevron, Global Supply & Trading	CEO
TengizChevrOil	LPG Trade Manager, Marketing and Transportation Department
TengizChevrOil	Commercial Manager, Marketing and Transportation Department
FG TLN Limited	Director
FG TLN Limited	Business development Director
Letofin AS	Member of the Board
"Syrievye resursy-Bel"	Director
Butane Company	Managing Director of LPG Trading
Butane Company	no information
Aygas A.S.	Planning manager
Aygas A.S.	Planning specialist
Aygas A.S.	no information
"MZTM"	Deputy General Director
"MZTM"	Head of Car building Marketing Department
OY Letofin Trading	Member of the Board
"Protos" LLC	Director
«Kitex Company»	Commercial Director
«Kitex Company»	Executive Director
«Kitex Company»	Logistics Manager
Citco Waren - HandelsGesmbH	LPG Trading
Citco Waren - HandelsGesmbH	Sales Execuive
BULMARKET DM	Representative for Russia Bulmarket DM
BULMARKET DM	Inner Trade and Marketing Director
Genver Ltd	Consultant
Genver Ltd	Representaion Department
"LUKOIL"	Deputy Head of Gas and energy activity Coordination Department
"LUKOIL"	Main Specialist of Gas and energy activity Department
"Alautransgas-Almaty"	Director
"Noyabrskgazdobyicha" "Gazprom"	Deputy Chief Engineer for Perspective Development
"Maktren Nafta"	no information
Naphta Impex GmbH	Managing Director
MOL Plc.	Director
MOL Plc.	Expert
Vitalis Handles GmbH	Manager
"TNK-BP Management"	Project Manager Eastern Siberia Gas
SGS Vostok Limited	SGS Business Manager
"Gazprom"	Deputy Head of Marketing and Industrial production Department
SHELL Gaz Polska SP. z.o.o.	no information
"Titan" Group of companies	Director of Sales Department





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"Deloitte & Touche Regional Consulting Services Ltd" Representation	Business Development Manager, Consulting
"Petrolsib"	General Director
"Syrieviye resursy-Bel"	Deputy Commercial Director
"Renova Project Ltd" Representation (Cyprus)	Investment Director
"Renova Project Ltd" Representation (Cyprus)	Analyst
BARRAGE Consulting GmbH	Managing Director
"LUKOIL-Nizhegorodnefteorgsintez"	no information
"Kazmunaygaz"	Senior Manager of Oil products Sales and Retail Chain Development Department
Transiidikeskuse AS	Development Director
OAD "TNK-BP Management"	Director of Gas Trading, Sales and Shipment Department
OAD "TNK-BP Management"	Director of Marketing, Planning and STL Control Department
Tezet Gaz Movement S.A.	no information
Tezet Gaz Movement S.A.	no information
Pan-Chemical Company Inc	Заместитель Главы Представительства в Москве
"Gasexport" LLC	Director of "Gasneftekhim"
"Gasexport" LLC	Chief Expert "Gasneftekhim"
"Gasexport" LLC	Chief Expert "Gasneftekhim"
JSC "Saurida"	Wholesale director
JSC "Saurida"	General director
"Aktobemunaygas"	Head of Gas Sales Department
"Aktobemunaygas"	Deputy Head of Gas Sales Department
Tamas Kelemen	LPG Sales Department Consultant
"Inpromleasing"	Chairman of Board
KRAK-GAZ sp.z.o.o.	no information
OY TEBOIL AB	Export Manager
Tecainvest	Member of the Board
Tecainvest	Managing Director
"Nadezhda"	Director
"Nadezhda"	Deputy Director
"Nadezhda"	Head of LPG Loading Department
Tyczka Energie GmbH & Co. KgaA	Manager LPG Trading
Tyczka Energie GmbH & Co. KgaA	Sales Manager LPG Trading
"Gazenergaset"	Head of Control and Transportation Department
"Gazenergaset"	General director
UAB BALTSEVERSTAL	Director
"Altaikraigazservice"	Deputy General Director
EURO GAS d.o.o.	Supply manager
Borealis A/S	Trader
Borealis A/S	Feedstock Purchasing Manager
Nesteoil Oy	Manager
VERTONIX TRADE CORPORATION	LPG supply&trading manager
GT Traiding OY	no information
Poten (UK) Ltd	LPG Consultant





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Neste Oil Oyj	Manager
Neste Oil Oyj	Supply Manager
LPG Moravia s.r.o.	Foreign economic activity Consultant
LPG Moravia s.r.o.	Foreign economic activity Consultant
"SG-Trans"	Commercial Director
"SG-Trans"	no information
Brothers Gaz Bottling and Distr. Co. (LLC)	General Manager
Brothers Gaz Bottling and Distr. Co. (LLC)	Plant Manager Engieneer
British Petroleum	New business development analyst
British Petroleum	Business Development Leader
"TNK-BP Management"	Main Specialist, Oil products export Department
"Khim-oil-transit-Ukrain" LLC	no information
"Stroytransgas"	Chief Manager
"Stroytransgas"	Senior Manager
"Itera"	Senior Specialist
"Itera"	Department Director
"Moskovskaya neftyanaya kompaniya" (Moscow Oil Company)	Deputy General Director
CHEM-LINE Sp z.o.o.	President
CHEM-LINE Sp z.o.o.	Vice-President
«Uralvagonzavod»	Deputy Engineering Manager
OJSC "TNK-BP Management"	Vise-President
"Trans-Region"	Head of Department
KEG ZRT (Central European LPG Terminal SA)	Managing Director
MILANGAZ LPG DAGITIM TICARET VE SANAYI A.S.	Member of the Board
MILANGAZ LPG DAGITIM TICARET VE SANAYI A.S.	Executive Committee Member
"Barvil Novorossijsk" LLC	Deputy General Director
UNIPETROL RAFINERIE a.s.	Sales Specialist
UNIPETROL RAFINERIE a.s.	Sales Specialist
STASCO	LPG Trading Manager - Europe
STASCO	LPG / Mogas Trader
Kazpolmunay Ltd.	Marketing Department Manager
Kazpolmunay Ltd.	Director of Marketing Department
"Novorostsement"	Chairman of Board
NEA Transport research and training	Consultant
"Tengiztransgas"	Chairman of Board
GASPOL S.A.	Supply & Logistics Manager
GASPOL S.A.	Region Director
Lukoil Polska Sp. Z o.o.	no information
VNT S.A	Sales Manager
VNT S.A	Sales Manager
VNT S.A	Sales Manager
«Sibur Holding»	Marketing Service Expert
"Kazmortransflot"	Director of Corporate development Department





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VITERBO S.A.	no information
"RIP-gas" Ltd	President
NV PetrusSA	Manager
Greenoak Shipping Limited	Director of Shipping projects
Petrotrans Limited	Commercial Director
Koc Holding	President of Energy Group
Koc Holding	Energy Group Coordinator
Spetsistserny (Special cisterns)	Adviser to General Director
Representation of "Smann SA" (Switzerland)	Manager
Simpson Spence and Young	Shipbroker
Arab Maritime Petroleum Transport Company	Commercial Manager
Salbatring International d.o.o.	President
BIALCHEM GROUP SP. Z.O.O.	President
BIALCHEM GROUP SP. Z.O.O.	Manager
Purvin & Gertz Inc.	Snr. Principal
Polski Gaz Sp. Z.o.o.	Supply Director Polski Gaz
Polski Gaz Sp. Z.o.o.	Member of Board
Polski Gaz Sp. Z.o.o.	Director of Transgaz terminal
Opet Aygas Bulgaria	General Manager
INA d.d. Zagreb	Member of the Board
LPGGroup LLC	no information
JSC OTEKO	President of OTEKO Group of Companies
JSC OTEKO	Commercial Manager of OTEKO
JSC OTEKO	Business Development Manager of OTEKO
Bluewater Energy Services B.V.	Product Development Manager
Bluewater Energy Services B.V.	Proposal + Estimating Manager
Trading House "PetroKazakhstan" Ltd	Export Development Manager
Trading House "PetroKazakhstan" Ltd	Sales Manager
MILANGAZ LPG DAGITIM TICARET VE SANAYI A.S.	Chairman of foreign relations & projects
OJSC "Tatneft"	Senior Engineer, Department for Balance and petroleum products distribution in the inner market
Gazpromtans LLC	1st Deputy General Director
Gazpromtans LLC	Deputy General Director of shipping
Gazpromtans LLC	Deputy General Director for Commerce
Plaske SA	President Plaske SA (Switzerland)
Plaske JSC	Director General Plaske JSC (Ukraine)
Ukrainian Railway	Deputy head of commercial department of Ukrainian Railway (Ukraine)
«Complex investment solutions» LLC	General director
«Complex investment solutions» LLC	1st Deputy General Director
Deutsche Eisenbahn AG	Logistics Manager
Gazexport LLC	Head of Contract and legal Department





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